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The University of Texas at Arlington

University Profile

The University of Texas at Arlington is a Carnegie Research-1 Institution (Very High Research Activity) whose mission is the advancement of knowledge and the pursuit of excellence in research, teaching, and service to the community. The mission statement affirms UT Arlington's commitment to expanding academic research; to attracting and retaining high-quality faculty scholars who actively engage students; to providing a well-rounded academic experience that promotes student involvement, service learning, and free discourse; to employing alternative access venues to meet students' needs; and to developing public and private partnerships.

Founded in 1895 as a private liberal arts institution, UT Arlington has evolved through a succession of names and missions. The institution achieved senior college status in 1959 and became part of The University of Texas System in 1965. The government of UT Arlington is vested in a nine-member Board of Regents of the UT System, nominated by the governor and approved by the Texas Senate. The Office of the Chancellor is the chief administrative office of the UT System and is located in Austin. The chief administrative officer of UT Arlington is the University president, under the authority of the Office of the Chancellor of the UT System and the Board of Regents. A complete statement of the authority and duties of the Regents and of the several officers, together with an account of the organization of the system, is published in the Rules and Regulations of the Board of Regents of The University of Texas System.

As of December 2019, authorized by the Texas Higher Education Coordinating Board, UT Arlington offers 77 baccalaureates, 69 master's, and 26 doctoral degree programs. The University of Texas at Arlington is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, master's, and doctoral degrees. Contact the Commission on College at 1866 Southern Lane, Decatur, Georgia 30033-4097 for questions about the accreditation of UT Arlington. <http://www.sacscoc.org>

In addition, many of UT Arlington's academic departments and schools have received national accreditation from specific agencies. These accreditations are detailed under the individual listings for departments and schools in this catalog.

As of fall 2019, UT Arlington serves 60,035 students, according to the Integrated Postsecondary Education Data System. Our student body is drawn from almost every state in the United States and more than 100 countries. The average age of all students in fall 2019 was 29, while the average age of all graduate students was 34. UT Arlington's student population is becoming more traditional and residential. The size of the incoming first-time degree seeking students for fall 2019 was 3,707. Since becoming a degree-granting institution at the baccalaureate, master's, and doctoral levels, UT Arlington has awarded more than 220,000 degrees, with 14,076 of those awarded during the 2018-19 academic school year.

UT Arlington is one of the most ethnically diverse campuses in the United States, according to rankings of national universities published by *U.S. News & World Report* in 2020. In fall 2019, the student population was 26% Hispanic, 14% African American, 11% Asian, and 10% international. UT Arlington has been designated a Hispanic-Serving Institution by the U.S. Department of Education.

In response to societal needs, UT Arlington has evolved into a renowned university within the state and one of emerging position nationally and internationally. The University's history of achievement can be attributed to its outstanding faculty, a strong student body, a record of success by graduates in their respective fields, and the growth of the Dallas/Fort Worth area as a nationally and internationally significant metropolis.

Mission Statement

The University of Texas at Arlington is a comprehensive research, teaching, and public service institution whose mission is the advancement of knowledge and the pursuit of excellence. The University is committed to the promotion of lifelong learning through its academic and continuing education programs and to the formation of good citizenship through its community service learning programs. The diverse student body shares a wide range of cultural values and the University community fosters unity of purpose and cultivates mutual respect.

As a University, we affirm our commitment to the following objectives:

- The University is committed to comprehensive programs of academic research. This research effort requires attracting and retaining scholars who promote a culture of intellectual curiosity, rigorous inquiry, and high academic standards among their fellow faculty and the students they teach. We ensure a culture of creativity, innovation, and entrepreneurship, which includes the translation of university discoveries for the benefit of society.
- The University prepares students for full, productive lives and informed and active citizenship. To that end, we have developed undergraduate and graduate curricula and classroom practices that engage students actively in the learning process. Outside the classroom a wide range of student organizations and activities contribute to the learning environment. Our service learning program offers students the opportunity to supplement their academic study with internships in a variety of community settings, testing their skills and aptitudes and challenging their values. State-of-the-art teaching technologies, distance education, and offsite instruction afford access to off-campus as well as traditional students. Non-degree certificate and continuing education programs offer practical, aesthetic, and intellectually stimulating opportunities for community learners, for individual courses or a sustained program of study.

- The mission of a university can be achieved only when its students, faculty, staff, and administrators value and promote free expression in an atmosphere of tolerance, responsibility, and trust. The University regards these attributes as prerequisites for any community of learners and vigilantly strives to maintain them.
- Mindful of its role as a resource to the community, locally, nationally, and internationally, the University continually seeks partnerships with public and private concerns in order to advance the economic, social, and cultural welfare of its constituencies. We serve the needs of the North Texas community by sponsoring public lectures and academic symposia, as well as artistic, musical, and dramatic productions.

Non-Discrimination Policy and Procedure

It is the policy of The University of Texas at Arlington that no person shall, on the basis of race, color, national origin, religion, age, sex, sexual orientation, disabilities, genetic information, and/or veteran status, be denied employment with or admission to the University; or be excluded from participation in, denied the benefits of, or subject to discrimination under, any program or activity that the University sponsors or conducts. Retaliation against persons who oppose a discriminatory practice, file a charge of discrimination, or testify for, assist in, or participate in an investigative proceeding relating to discrimination is prohibited. Constitutionally-protected expression will not be considered discrimination or harassment under this policy.

The University of Texas at Arlington complies with the Equal Pay Act of 1963, Titles VI and VII of the Civil Rights Act of 1964, Executive Order 11246, the Age Discrimination in Employment Act of 1967, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, the Uniformed Services Employment and Reemployment Rights Act of 1994, Title II of the Genetic Information Nondiscrimination Act of 2008, the Vietnam Era Veterans' Readjustment Act of 1974, the Texas Commission on Human Rights Act and their subsequent amendments, as well as other applicable federal and state laws and regulations, the Rules and Regulations of the Board of Regents of The University of Texas System, and policies and standards issued by The University of Texas System Administration.

This policy applies to all students and employees of the University, to visitors to the University, and to applicants for admission to or employment with the University. For further details, including definitions, complaint procedures, and contact information, please review the University policy Procedure 14-2 (<https://www.uta.edu/policy/procedure/14-2/>).

Sexual Harassment and Misconduct, and Consensual Relationships Policy

The University of Texas at Arlington is committed to an academic and working environment free from inappropriate conduct of a sexual nature. Sexual harassment and misconduct is prohibited and will be in violation of this policy. Sexual harassment is a prohibited practice for employees under Title VII of the 1964 Civil Rights Act as amended by the Equal Employment Opportunity Act of 1973 and the Texas Commission on Human Rights Act, and under Title IX of the Education Amendments of 1972 for students. The university will take prompt disciplinary action against any individuals on this campus who engage in actions that violate this policy.

This policy and its complaint procedures apply to all administrators, faculty, staff, students, visitors, and applicants for employment or admission. It is also applicable regardless of the gender of the complainant or the alleged harasser. For further details, including definitions, complaint procedures, and contact information, please review the University policy Procedure 14-1 (<https://www.uta.edu/policy/procedure/14-1/>).

Publication Date

The date of publication of this catalog edition is June 3, 2019.

Official University Academic Calendar 2021-22

The academic calendar is a source for information about notable dates, including registration timelines, final exam dates and student holidays/campus closings.

Below is a general calendar for regular sessions in the 2021-22 academic year. Specific calendars such as grade report schedules and dynamic course dates can be found on the UTA website in the calendar section of the Office of the Registrar (<https://www.uta.edu/records/calendars/>).

Summer 2021

PRE-TERM

Date	Description
Apr. 5 (2021)	Registration begins for Summer 2021 & Fall 2021 terms

Full Session

Date	Description
May 16	Registration Ends for Summer 14 Weeks
May 17 - 18	Late registration
May 17	First day of classes
May 31	Memorial Day Holiday
June 7	Census Date
June 12	Last day to drop classes; submit requests to advisor prior to 4:00pm
Aug 12	Last day of classes
Aug 16 & 17	Final exams
Aug 18	Commencement ceremony

Summer Sub-Sessions

- Intersession (<https://www.uta.edu/academics/academic-calendar/summer-intersession-2021/>)
- 11 Week Session (<https://www.uta.edu/academics/academic-calendar/summer-11-weeks-2021/>)
- 1st Five-Week Session (<https://www.uta.edu/academics/academic-calendar/summer-1st-five-weeks-2021/>)
- 1st Seven-Week Session (<https://www.uta.edu/academics/academic-calendar/summer-1st-seven-weeks-2021/>)
- 2nd Five-Week Session (<https://www.uta.edu/academics/academic-calendar/summer-2nd-five-weeks-2021/>)
- 2nd Seven-Week Session (<https://www.uta.edu/academics/academic-calendar/summer-2nd-seven-weeks-2021/>)

Fall 2021

Regular Session

Date	Description
Aug. 24	Registration Ends for Fall Term (Regular Session)
Aug. 25 - Aug. 30	Late registration
Aug. 25	First day of classes
Sept. 6	Labor Day Holiday
Sept. 10	Census date
Nov. 5	Last day to drop classes; submit requests to advisor prior to 4:00pm
Nov. 24	No classes scheduled
Nov. 25 - Nov. 26	Thanksgiving Holiday
Dec. 7	Last day of classes
Dec. 8	Student Study Day (no classes)
Dec. 9 - Dec. 15	Final exams
Dec. 16, 17 & 18	Commencement ceremonies

Fall Sub-Sessions

- 1st Five-Week Session (<https://www.uta.edu/academics/academic-calendar/fall-1st-five-weeks-2021/>)
- 1st Eight-Week Session (<https://www.uta.edu/academics/academic-calendar/fall-1st-eight-weeks-2021/>)
- 2nd Five-Week Session (<https://www.uta.edu/academics/academic-calendar/fall-1st-eight-weeks-2021/>)
- 2nd Eight-Week Session (<https://www.uta.edu/academics/academic-calendar/fall-2nd-eight-weeks-2021/>)
- 3rd Five-Week Session (<https://www.uta.edu/academics/academic-calendar/fall-3rd-five-weeks-2021/>)

Spring 2022

PRE-TERM

Date	Description
Nov. 8 (2021)	Registration begins for Spring 2022 term

Regular Session

Date	Description
Jan. 17	Martin Luther King Jr. Holiday
	Registration ends for Spring Term - Regular Session
Jan. 18	First day of classes
Jan. 18 - Jan.21	Late registration
Feb. 2	Census date
Mar. 14 - Mar. 20	Spring break
Apr. 1	Last day to drop classes; submit requests to advisor prior to 4:00pm
Apr. 4	Registration begins for Summer 2022, Fall 2022 & Spring 2023
May 3	Last day of classes
May 4	Student Study Day (no classes)
May 5	Final exams
May 12, 13 & 14	Commencement ceremonies

Spring Sub-Sessions

- 1st Five-Week Session (<https://www.uta.edu/academics/academic-calendar/spring-1st-five-weeks-2021/>)
- 1st Eight-Week Session (<https://www.uta.edu/academics/academic-calendar/spring-1st-eight-weeks-2021/>)
- 2nd Five-Week Session (<https://www.uta.edu/academics/academic-calendar/spring-2nd-five-weeks-2021/>)
- 2nd Eight-Week Session (<https://www.uta.edu/academics/academic-calendar/spring-2nd-eight-weeks-2021/>)
- 3rd Five-Week Session (<https://www.uta.edu/academics/academic-calendar/spring-3rd-five-weeks-2021/>)

ADDITIONAL RESOURCES

In addition to the sessions above, for more detailed information pertaining to winter, summer and other sessions, view the complete academic calendar here (<https://www.uta.edu/academics/academic-calendar/>).

Degree Programs

College of Architecture, Planning, and Public Affairs (p. 123)

Department of Architecture

- Architecture – BS
- Architecture - MS
- Sustainable Building Technology – MS

Department of City and Regional Planning (p. 149)

- City & Regional Planning – MCRP
- Urban Planning and Public Policy – PhD

Department of Interior Design

- Interior Design – BS

Landscape Architecture

- Landscape Architecture - MLA
- Sustainable Urban Design – BS

Public Administration

- Accelerated Online Master of Public Administration – MPA
- Public Administration – MPA

Public Policy

- Public Policy – MPP
- Public Administration & Public Policy – PhD

College of Business (p. 241)

Department of Accounting (p. 254)

- Accounting - BBA
- Accounting - BS
- Accounting - MS
- Professional Accounting - MPA
- Taxation - MS
- Accounting - PhD

Business Administration, Undergraduate Programs (p. 242)

- International Business Administration – Chinese – BBA
- International Business Administration - French - BBA
- International Business Administration - German – BBA
- International Business Administration - Korean - BBA
- International Business Administration - Russian - BBA
- International Business Administration - Spanish - BBA

Business Administration, Graduate Programs (p. 273)

- Business Administration - MBA (Flexible Format)
- Business Administration - MBA (Professional Cohort)
- Executive Business Administration - MBA
- Business Administration - PhD

Department of Economics (p. 284)

- Economics - BBA
- Economics - BS

Department of Finance and Real Estate (p. 297)

- Finance - BBA
- Real Estate - BBA
- Quantitative Finance - MS
- Finance (Business Administration) - PhD

Health Care Administration Program (p. 312)

- Health Care Administration - MS

Department of Information Systems & Operation Management (p. 316)

- Information Systems - BBA
- Information Systems - BS
- Operations and Supply Chain Management – BBA
- Business Analytics - BS
- Business Analytics - MS
- Information Systems - MS
- Information Systems (Business Administration) - PhD
- Mathematical Sciences, Information Systems - PhD

Department of Management (p. 338)

- Management - BBA
- Human Resource Management - MS
- Management (Business Administration) - PhD

Department of Marketing (p. 351)

- Marketing - BBA
- Marketing Research - MS
- Marketing (Business Administration) - PhD

College of Education (p. 365)

Department of Curriculum and Instruction (p. 375)

- Education with EC-6 Bilingual Teacher Certification – BA
- Education with EC-6 ESL Teacher Certification – BA
- Education with 4-8 Middle-Level English Language Arts/Social Studies Teacher Certification – BA
- Bachelor of Science in Education with 4-8 Middle-Level Math/Science Teacher Certification – BS
- Education with EC-12 Special Education and EC-6 Core Subjects Teacher Certification – BS
- Teaching with Teacher Certification (early childhood, middle and secondary levels) – MEdT
- Curriculum & Instruction – MEd
- Curriculum & Instruction, Science – MEd
- Curriculum & Instruction, Mathematics – MEd
- Curriculum & Instruction, Literary Studies – MEd
- Mind, Brain and Education – MEd
- Special Education – MEd

Department of Educational Leadership and Policy Studies (p. 408)

- Educational Leadership and Policy Studies, with Principal Certificate Courses – MEd
- Educational Leadership and Policy Studies, with Higher Education Administration Emphasis – MEd
- Educational Leadership & Policy Studies with Higher Education Administration Emphasis – BA to PhD track

- Educational Leadership and Policy Studies – PhD
- Dual Degree: Social Work / Educational Leadership and Policy Studies with Higher Education Administration Emphasis – MSW /MEd

College of Engineering (p. 425)

Department of Bioengineering (p. 434)

- Biomedical Engineering - BS
- Biomedical Engineering - MS
- Biomedical Engineering - BS to PhD
- Biomedical Engineering - PhD

Department of Civil Engineering (p. 460)

- Civil Engineering - BSCE
- Civil Engineering - MEngr
- Civil Engineering - MEngr Fast Track
- Civil Engineering - MS
- Civil Engineering - PhD

Department of Computer Science and Engineering (p. 517)

- Computer Engineering - BSCSE
- Computer Science-BSCS - BSCS
- Software Engineering - BS
- Computer Engineering - MS
- Computer Science - MS
- Software Engineering - MSWEN
- Computer Engineering - BS to PhD
- Computer Engineering - PhD
- Computer Science - BS to PhD
- Computer Science - PhD
- Mathematical Sciences, Computer Science - PhD
- Interdisciplinary - Data Science - MS

Department of Electrical Engineering (p. 558)

- Electrical Engineering - BSEE
- Electrical Engineering Fast Track - BSEE
- Electrical Engineering - MEngr
- Electrical Engineering - MS
- Electrical Engineering - MS Fast Track
- Electrical Engineering - BS to PhD
- Electrical Engineering - PhD

Department of Industrial and Manufacturing Systems Engineering (p. 586)

- Industrial Engineering - BSIE
- Engineering Management - MS
- Industrial Engineering - MEngr
- Industrial Engineering - MS
- Logistics - MS
- Systems Engineering - MS
- Industrial Engineering - BS to PhD
- Industrial Engineering - PhD

Department of Materials Science and Engineering (p. 610)

- Materials Science and Engineering - MEngr
- Materials Science and Engineering - MS

- Materials Science and Engineering - BS to PhD
- Materials Science and Engineering - PhD

Department of Mechanical and Aerospace Engineering (p. 625)

- Aerospace Engineering - BSASE
- Aerospace Engineering Fast Track - BSASE
- Aerospace Engineering - MS
- Aerospace Engineering - MEngr
- Aerospace Engineering - BS to PhD
- Aerospace Engineering - PhD
- Mechanical Engineering - BSME
- Mechanical Engineering - MS
- Mechanical Engineering - MEngr
- Mechanical Engineering - BS to PhD
- Mechanical Engineering - PhD

Co (p. 689)lege of Liberal Arts (p. 689)

Department of Sociology and Anthropology (p. 960)

- Anthropology - BA
- Sociology - BA
- Sociology - MA

Department of Art & Art History (p. 697)

- Art - BA
- Art History - BA
- Art (with teacher certification) - BFA
- Art - BFA
- Art - MFA

Department of Communication (p. 726)

- Communication - Advertising - BA
- Communication - Broadcasting - BA
- Communication - Communication Technology - BA
- Communication - Journalism - BA
- Communication - Public Relations - BA
- Communication Studies - Organizational Communication - BA
- Communication Studies - Interpersonal Communication - BA
- Philanthropy - BA
- Communication - MA

Department of Criminology & Criminal Justice (p. 745)

- Criminology & Criminal Justice - Bachelor - BCRCJ
- Criminology and Criminal Justice - BA
- Criminology and Criminal Justice - MA

Department of English (p. 760)

- English - BA
- English Teaching - BA
- English With Creative Writing Minor - BA
- English With Writing Minor - BA
- English - MA
- English - PhD

Department of History (p. 789)

- History - BA
- History Pre-Law BA - BA
- History Teaching - BA
- History Teaching with Social Studies - BA
- History - MA
- Transatlantic History - BA to PhD
- Transatlantic History - PhD

Department of Linguistics (p. 819)

- Linguistics - BA
- Linguistics - MA
- Teaching English to Speakers of Other Languages (TESOL) - MA
- Linguistics - PhD

Department of Modern Languages (p. 849)

- Critical Languages and International Studies - BA
- French - BA
- French Teaching - BA
- Modern Languages - BA
- Spanish - BA
- Spanish Teaching - BA
- Modern Languages (Spanish or French concentration) - MA

Department of Music (p. 888)

- Music, All Level Band Emphasis - BM
- Music, All Level Choral/Voice Concentration - BM
- Music, All Level Orchestra Emphasis - BM
- Music, Business - BM
- Music, Composition - BM
- Music, Instrumental Orchestra Performance - BM
- Music, Instrumental Performance Band - BM
- Music, Jazz Studies - BM
- Music, Keyboard Pedagogy - BM
- Music, Keyboard Performance - BM
- Music, Audio Production- BM
- Music, Voice Performance - BM
- Music Theory - MM
- Music Performance – MM
- Music Jazz Composition – MM
- Music Education – MM

Department of Philosophy and Humanities (p. 933)

- Philosophy - BA
- Philosophy General Track - BA
- Philosophy Pre-Professional Track - BA

Department of Political Science (p. 943)

- Political Science - BA
- Political Science - MA

Department of Theatre Arts (p. 984)

- Theatre Arts - BA
- Theatre Arts - BFA
- Theatre Arts Teaching - BA

C (p. 1007)ollege of Nursing and Health Innovation (p. 1007)

Department of Nursing (p. 1007)

- Nursing - BSN
- Nursing RN to BSN - BSN
- Graduate Nursing, Accelerated Online Nursing Administration - MSN
- Graduate Nursing, Accelerated Online Nursing Education - MSN
- Graduate Nursing, Accelerated Online, Adult / Gerontology Acute Care Nurse Practitioner – MSN
- Graduate Nursing, Accelerated Online, Adult / Gerontology Primary Care Nurse Practitioner – MSN
- Graduate Nursing, Accelerated Online, Family Nurse Practitioner, MSN
- Graduate Nursing, Accelerated Online, Pediatric Acute Care Nurse Practitioner – MSN
- Graduate Nursing, Accelerated Online – DNP
- Graduate Nursing, Pediatric Primary Care Nurse Practitioner – MSN
- Graduate Nursing, Adult / Gerontology Acute Care Nurse Practitioner – MSN
- Graduate Nursing, Adult / Gerontology Primary Care Nurse Practitioner – MSN
- Graduate Nursing, Family Nurse Practitioner – MSN
- Graduate Nursing, Neonatal Nurse Practitioner – MSN
- Graduate Nursing, Pediatric Acute Care Nurse Practitioner – MSN
- Graduate Nursing, Pediatric Primary Care Nurse Practitioner – MSN
- Graduate Nursing, Psychiatric Mental Health Nurse Practitioner – MSN
- Graduate Nursing – DNP
- Graduate Nursing – PhD
- Graduate Nursing – BSN to PhD

D (p. 1049)epartment of Kinesiology (p. 1049)

- Exercise Science - BS
- Kinesiology - BA
- Kinesiology All-Level - BA
- Athletic Training - MS
- Exercise Science - MS

C (p. 1094)ollege of Science (p. 1094)

Department of Biology (p. 1101)

- Biology - BA
- Biology - BS
- Biology Teaching - BA
- Biology Teaching - BS
- Medical Technology - BS
- Microbiology - BS
- Biology - MS
- Quantitative Biology - BS to PhD
- Quantitative Biology - PhD

Department of Chemistry & Biochemistry (p. 1134)

- Biochemistry - BS
- Biological Chemistry - BS
- Chemistry - BA
- Chemistry - BS

- Chemistry Teaching - BA
- Chemistry Teaching - BS
- Chemistry - MS
- Chemistry - BS to PhD
- Chemistry - PhD

Department of Earth and Environmental Sciences (p. 1184)

- Environmental and Earth Science - BS
- Geology - BA
- Geology - BS - Professional Option
- Geology – BS -Engineering Option
- Geology – BS -Environmental Option
- Environmental Science- BS
- Geology Teaching - BA
- Earth and Environmental Science MS – Environmental Science Thesis Option
- Earth and Environmental Science MS – Environmental Science Non Thesis Option
- Environmental and Earth Science MS – Professional Environmental Science Option
- Earth and Environmental Science MS – Geoscience Non Thesis Option
- Earth and Environmental Science MS – Geoscience Thesis Option
- Earth and Environmental Science MS – Energy Geoscience Professional Option
- Earth and Environmental Science - BS to PhD
- Earth and Environmental Science - PhD

Department of Mathematics (p. 1215)

- Mathematics - BA
- Mathematics - BS
- Mathematics with Secondary Teaching Certificate – BS
- Mathematics (Actuarial Science Option) - BS
- Mathematics (Biology Option) - BS
- Mathematics (Data Science Option) - BS
- Mathematics (Applied Mathematics Option) - BS
- Mathematics (Pure Mathematics Option) - BS
- Mathematics (Statistics Option) - BS
- Mathematics (General Mathematics) - MS
- Mathematics (General Statistics) - MS
- Mathematics - MA
- Mathematics (General Mathematics) - BS to PhD
- Mathematics (General Mathematics) - PhD
- Mathematics (General Statistics) - BS to PhD
- Mathematics (General Statistics) - PhD
- Mathematics (Data Science) – BS to PhD
- Mathematics (Data Science) – PhD

Fast-Track Degrees

- Accelerated BS/MS: Bachelor of Science in Mathematics and Master of Science in Mathematics
- Accelerated BS/MS: Bachelor of Science in Mathematics and Master of Science in Biomedical Engineering

Department of Physics (p. 1255)

- Physics - BA
- Physics - BS
- Physics Teaching - BA
- Physics - MS

- Physics and Applied Physics - BS to PhD
- Physics and Applied Physics - PhD

Department of Psychology (p. 1278)

- Psychology - BA
- Psychology - BS
- Psychology, Experimental - MS
- Psychology, Health/Neuroscience - MS
- Psychology, Industrial and Organizational - MS
- Psychology, Experimental - PhD
- Psychology, Health/Neuroscience - PhD

S (p. 1305)chool of Social Work (p. 1305)

- Social Work - Substance Use Treatment--BS
- Social Work - BSW
- Social Work - MSW
- Social Work - PhD

Di (p. 1345)vision of Student Success (p. 1345)

- University Studies - BS

The University of Texas System Administration

<http://www.utsystem.edu/>

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University Requirements & Policies

Students are held individually responsible for complying with all requirements of the rules and regulations of the University and the Board of Regents of The University of Texas System. Failure to read and comply with policies, regulations and procedures will not exempt a student from being governed by and accountable to them.

Many departments and programs issue program manuals, procedures and policy manuals, student handbooks and other informational publications for students and faculty in its programs. These publications provide detailed and useful information; however, they are not statements of official policy or binding contracts of The University of Texas at Arlington or of The University of Texas System.

In all matters, the Rules and Regulations of the Board of Regents of The University of Texas System, the Handbook of Operating Procedures of The University of Texas at Arlington, and the University Catalog of The University of Texas at Arlington shall supersede departmental, program or college publications.

Admissions

The Office of Admissions handles over 70,000 applications per year to the university's graduate and undergraduate programs. Admission to the university is open to qualified applicants regardless of race, color, gender, sexual orientation, creed, age, national origin or educationally unrelated handicaps. Once applications are received by the office, the applicant will be notified of the documents which must be submitted in order for an assessment to be made and admissibility determined. Determination of admission is made in the academic department for graduate applicants while undergraduate student's admissibility is determined by the Office of Admissions based on approved university admissions requirements. Students are notified of the admissions decision both by email and by a letter to the home address.

The department seeks to encourage life-long learners to become partners in the educational enterprise and provide a seamless transition throughout the application and enrollment process.

UTA does not admit incarcerated students. A student is considered to be incarcerated if serving a criminal sentence in a federal, state, or local penitentiary, prison, jail, reformatory, work farm or similar correctional institution (whether it is operated by the government or a contractor). A student is not considered to be incarcerated if in a half-way house or home detention or is sentenced to serve only on weekends.

Graduate Admissions (p. 26)

Undergraduate Admissions (p. 37)

Graduate Admissions

Admission

Basic admission requirements must be met before a student can be accepted. In meeting these requirements, an applicant 1) must have a bachelor's degree from a regionally accredited U.S. college or university or its foreign equivalent, with a satisfactory grade-point average; 2) must have an acceptable and current score on the aptitude tests of the Graduate Record Examination or the Graduate Management Admission Test, as specified by the department or program to which application is being made; 3) demonstrate potential for graduate work in the chosen field through previous academic performance; and 4) be approved for admission by the department in which a degree is sought. Certain programs require students to submit to and satisfactorily complete a background check review as a condition of admission and/or participation in education experiences. Students who refuse to submit to a background check or who do not pass the background check may be dismissed from the program. Applicants should examine departmental requirements with care.

The following sections detail the minimum standards required for admission to a graduate program at the University of Texas at Arlington. Meeting them does not guarantee acceptance into a departmental degree program because most departments have more stringent admission standards. The University may limit the number of students accepted in a program if the number of applicants exceeds the resources needed to support the educational objectives of that program. Admission to graduate programs is competitive. Therefore, students meeting admission requirements who are less well qualified than other applicants may be denied admission.

Applicants must complete the online application for admission (<https://www.uta.edu/admissions/graduate/apply/index.php> (<https://www.uta.edu/admissions/graduate/apply/>)). Since admission requirements vary and are program specific, go to <http://www.uta.edu/admissions/graduate> (<http://www.uta.edu/admissions/graduate/>) and look up current admission requirements in the current Graduate Catalog for the program or department to which admission is sought.

The admission policies of the academic departments of The University of Texas at Arlington comply with standards specified by the Texas Education Code, Section 51.842. Specifically, performance on a standardized test is not the sole criterion for consideration of an applicant for admission or the primary criterion to end consideration of the applicant for admissions. Relevant experience, commitment to the field of planned study, multilingual proficiency, and socioeconomic background (to the extent that it can be identified) may also enter into these decisions. This law does not apply to standardized tests used to measure the English language proficiency of non-native English speakers without a bachelor's or master's degree from a regionally accredited U.S. institution.

Basic Admission Requirements

Application

Application for admission must be made on official application forms. Students may complete the application online by accessing our Web site <http://www.uta.edu/admissions/graduate> (<http://www.uta.edu/admissions/graduate/>). Please note, you may only submit one application, and be considered for admission to one program at a time.

APPLICATION EVALUATION CHARGES

A non-refundable application evaluation charge is required of all applicants. Payment must be received before processing can begin. There are no exceptions to this policy.

A non-refundable evaluation charge of \$75 is required of all U.S. citizens and U.S. Resident Alien applicants who have attempted all of their college or university work at institutions located in the United States. A \$90 evaluation charge is required of all U.S. citizens and U.S. Resident Alien applicants who have attempted some or all undergraduate or graduate coursework at an institution located outside of the United States.

All international students are required to pay a non-refundable \$90 application evaluation charge.

Required Official Transcripts, Marksheets, and Diplomas

Application processing for admission to a graduate program requires receipt of official U.S. transcripts or foreign country transcripts or marksheets and diplomas. Notarized, student emailed or fax copies of U.S. transcripts, foreign country transcripts, marksheets, and diplomas/degree verification and other academic records are not acceptable for processing purposes. Acceptable transcripts, marksheets, and diplomas/degree verification from U.S. and international institutions are described below. Documents meeting the indicated criteria will be accepted by Graduate Admissions for admission purposes. Unacceptable documents will prevent or cause delays in admission processing.

U.S. Transcripts

Official transcripts from U.S. institutions are those issued electronically or sent by mail directly from the Registrar or transcript issuing office of the college or university of enrollment. Currently or previously enrolled UT Arlington students do not have to request their UT Arlington transcript.

Foreign Country Transcripts or Marksheets and Diplomas

Official foreign country transcripts or marksheets and diplomas/degree verifications are those issued electronically or sent by mail directly from the Registrar or transcript issuing office of the college or university of enrollment. A degree verification statement must accompany the transcript or marksheets if a degree was awarded but not stated on the transcript or marksheets. If not issued in English, an exact word for word original English translation bearing the original university or translation agency attestation must accompany the transcript or marksheets and degree verification.

Grade Point Average Calculation for Admission

Students With Degrees From U.S. Institutions

The grade-point average for admission to graduate school at The University of Texas at Arlington is calculated according to Texas law and the policies and procedures of Graduate Admissions. For applicants completing work in U.S. institutions of higher learning, calculation of the grade-point average for admission purposes is based on the last two years of courses from the bachelor's degree transcript, on a 4.0 scale. In practice, this grade-point average is based on approximately the last 60 semester hours or the equivalent in quarter hours (90 quarter hours) shown on an applicant's bachelor's degree transcript.

In cases in which an applicant's transcript shows repeated courses, the grade-point calculation includes all grades earned in those courses.

For an applicant who applies before official receipt of the bachelor's degree, the last 60 semester hours grade-point calculation will include senior college and university work completed to date. The grade-point average will not be automatically recalculated upon receipt of the degree.

An applicant wishing to have undergraduate courses completed after their degree has been awarded included in the grade-point calculation may submit a written request to Graduate Admissions at the time the application for admission is submitted.

An additional grade-point average is calculated for an applicant awarded or completing a master's or doctoral degree at the time application to UTA is made. For master's level students, the grade-point calculation will include all graduate level courses taken subsequent to the bachelor's degree at the institution from which the degree has been or will be awarded. For doctoral level students, the grade-point calculation will include all graduate level courses taken subsequent to the bachelor's and master's degree at the institution from which the doctoral degree has been or will be awarded. The grade-point average will be calculated on the basis of information provided at the time application to UTA is made and will not be automatically recalculated upon completion of on-going work or award of a degree.

International applicants and others with degrees earned outside the United States should see the grade-point calculation information under Admission of International Students and Resident Aliens.

The following are not included in grade-point calculations for admission purposes:

1. courses completed at junior or community colleges
2. courses completed by examination or correspondence
3. incomplete grades or withdrawals
4. pluses and minuses
5. personal improvement courses such as activity courses in physical education
6. graduate courses or any courses completed in graduate student status (a graduate grade-point average will be calculated and reported separately)
7. courses in which the grade is a P, pass, credit, satisfactory or other such designation

Students With Degrees From International Institutions

The calculation of the GPA for international applicants and U.S. resident aliens who have earned degrees from colleges or universities in the United States follows the policies and procedures for U.S. applicants. The diversity of marksheets and transcripts from foreign universities requires flexibility in calculating approximate equivalents of U.S. GPAs. Generally, GPAs for applicants with foreign degrees are calculated using the final grade for courses taken in the last two years of the applicants' undergraduate program. For an applicant who applies pending receipt of the bachelor's degree, the GPA calculation will include final course grades for the last two years of undergraduate work available at the time the application is submitted for processing. All grades are converted to the U.S. 4-point scale. Pluses and minuses, graduate courses, and personal improvement courses such as physical education are not included in these calculations.

GPA Calculation under Academic Fresh Start Statute

Admission to Undergraduate Programs

Texas residents may seek to enter undergraduate programs at U.T. Arlington under provisions of the "academic fresh start" statute, Section 51.931 of the Texas Education Code. When applicants inform U.T. Arlington admissions officials in writing of their decision, U.T. Arlington will not consider in the admissions decision any academic course credits or grades earned 10 or more years prior to the starting date of the semester in which the applicant seeks to enroll. Applicants who decide to apply under this statute may not receive any course credit for courses taken 10 or more years prior to enrollment under academic fresh start.

Admission to Postgraduate/Professional Programs

Applicants who have earned baccalaureate degrees under the "academic fresh start" statute, Section 51.931 of the Texas Education Code, and who apply for admission to a postgraduate or professional program will be evaluated on only the grade-point average of the course of work completed for that baccalaureate degree and the other criteria stated herein for admission to the postgraduate or professional program.

Standardized Test Requirements

Official test score reports for the Graduate Record Exam (GRE), Test of English as a Foreign Language (TOEFL), and TOEFL iBT are issued by the Educational Testing Service (ETS) and sent by ETS directly to Graduate Admissions. Official test score reports for the Graduate Management Admission Test (GMAT) are issued by the Graduate Management Admission Council (GMAC) and sent by GMAC directly to Graduate Admissions. Current information about GRE, GMAT, TOEFL, and TOEFL iBT test dates, locations and registration procedures is published by ETS at www.ets.org. For current information about the GMAT including test dates, locations, registration procedures, and time frames for test score validity, access www.mba.com. Official test scores for the International English Language Testing System (IELTS) are reported on an IELTS issued Test Report Form (TRF) and sent directly to Graduate Admissions from IELTS. Current information about IELTS test dates, locations and registration procedures is published by IELTS at www.ielts.org.

GRE and GMAT Minimum Scores

The University of Texas at Arlington does not set minimum GRE or GMAT requirements that apply to all students. Individual programs or departments determine GRE and GMAT requirements for admission to their programs. Individual departments and programs may evaluate GRE or GMAT scores as one of several criteria to determine admissibility. Test scores do not constitute the sole or primary basis for admission or for ending consideration of an applicant. Applicants should refer to individual departmental or program section for test requirements.

TOEFL iBT or IELTS Score Minimums

The University of Texas at Arlington sets test score minimums for tests that measure English proficiency such as the TOEFL iBT, and IELTS; however, individual departments and programs may give preference to students who exceed these minimums. An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies. Applicants are expected to submit a score of at least 6.5 on the IELTS, or achieve a minimum TOEFL iBT total score of 79. Further, when the TOEFL iBT is taken, sectional scores of at least 22 on the writing section, 21 on the speaking section, 20 on the reading section, and 16 on the listening section are preferred. However, admission to any graduate program is limited and competitive. Meeting the minimum admission requirements does not guarantee acceptance and programs may give preference to students with higher scores. Information regarding program-specific preferences can be found in the each program's description of admission qualifications.

An applicant holding either a bachelor's or a master's degree from a regionally accredited U.S. college or university is not required to submit a TOEFL iBT, or IELTS score for admission purposes. Any other waivers of the score requirements must be recommended by the applicant's Graduate Advisor and approved by the college or school dean.

TOEFL iBT or IELTS Requirements for Graduate Teaching Assistants

Before being appointed to an assistantship at UT Arlington, a student whose native language is not English must demonstrate acceptable skill with spoken English. An applicant who is a non-native speaker of English must submit a TOEFL iBT score of at least 23, or a score of at least 7 on the Speaking section of the IELTS, or take and pass the UTA Developmental English course to meet this requirement. Only official scores provided directly to UT Arlington by ETS or IELTS are acceptable. The English proficiency requirement will be waived for non-native speakers of English who possess a bachelor's degree from an accredited U.S. institution.

Application Deadlines

United States Citizen Applicants

A U.S. citizen student may complete the application online. Since admission requirements vary and are program specific, go to our Web site at <http://www.uta.edu/admissions/graduate> (<http://www.uta.edu/admissions/graduate/>) for admission criteria specific to each individual department and program. The application and following required credentials should be submitted preferably 90 days prior to the date of expected enrollment:

1. one set of official transcripts of all undergraduate and graduate college work; currently or previously enrolled UTA students do not have to request UTA transcripts
2. official GRE or GMAT test score as required by the intended program
3. official TOEFL or IELTS test score, if applicable
4. letters of recommendation as required by the intended program
5. essay or statement of general academic plans as required by the intended program
6. a nonrefundable application evaluation charge of \$75, if no foreign college or university work or \$90, if foreign college or university work

Some graduate programs may set deadlines for application or consideration of applicants for graduate assistantships that are earlier than general deadlines established by Graduate Admissions. Such deadlines will be included in descriptions of admission requirements provided by each department.

Applicants should read those materials carefully and submit their application materials before a departmental deadline passes. If the department does not specify a deadline, applicants should meet the Graduate Admissions deadlines described above.

International and U.S. Resident Alien Applicants

An International or U.S. Resident Alien applicant may complete the application online. Since admission requirements vary and are program specific, use this link <http://www.uta.edu/admissions/graduate> (<http://www.uta.edu/admissions/graduate/>) and look up current admission requirements in the current University Catalog for the program or department to which admission is sought. The application and following required credentials should be submitted preferably 120 days prior to the date of expected enrollment: 1) all international students must submit a nonrefundable application evaluation charge of \$90. U.S. Resident Alien applicants WITH foreign college or university work must submit a non-refundable application evaluation charge of \$90. U.S. Resident Alien applicant WITHOUT foreign college or university work must submit a non-refundable application evaluation charge of \$75; 2) one set of official marksheets, diplomas or transcripts of all undergraduate and graduate coursework; 3) official GRE or GMAT test score as required by the intended program; 4) official TOEFL or IELTS test score, if applicable; 5) three letters of recommendation; 6) general academic plans; 7) financial and/or immigration documentation as specified in the application instructions.

Changes to a Submitted Application

Starting Semester, Degree Program, or Degree Level

Current applicants wishing to change the semester in which they plan to start study at UT Arlington, programs in which they wish to be considered for admission, or degree levels (e.g., master's or doctoral) for which they initially applied, may request that their application be reprocessed for possible admission by completing the form "Reactivate an Admissions Application". This form is completed online at our Web site <http://www.uta.edu/admissions/graduate> (<http://www.uta.edu/admissions/graduate/>). Applicants may submit only one "Reactivate an Admissions Application" at a time. The initial admission decision does not automatically apply when an applicant requests these types of changes to their application. When a request is received, the appropriate non-refundable U.S. Citizen, Resident Alien or International Student application evaluation charge must be paid in order to begin processing the request. Once the fee is paid the application is thoroughly re-evaluated to ensure it is complete and current and a new admission decision will be made. This rule does not apply to an applicant who was admitted but did not enroll because of deployment as a member of the armed forces of the United States serving on active duty in a combative operation outside the United States. For an applicant requesting a change in their semester start date because of deployment in a combative operation outside the United States the initial program admit decision and standardized test scores submitted for admission to the initial program automatically apply to the change in semester start date and the application evaluation charge for the change in semester start date is waived (TEC Sec. 51.844).

Retention of Application Materials

Application materials become property of The University of Texas at Arlington and cannot be returned.

Notification of Applicants Regarding Admissions Decisions

While admission related information received from the graduate program to which an individual has applied may be important and useful, such information does not constitute official notice of admission into a graduate program at The University of Texas at Arlington.

Official notification of the admission decision is issued by Graduate Admissions and sent directly to the applicant. It is very important that applicants read this notice carefully because it describes any conditions or restrictions placed on admission that must be addressed. Many of these conditions must be satisfied before the end of the first semester of enrollment. If they are not, a student may be barred from enrolling in subsequent semesters. Thus applicants should read the notice and keep it for future reference. Admission conditions described in official notification letters are described in the following section.

Types of Admission Decisions

After an applicant's credentials have been evaluated by the Graduate Advisor in the applicant's major area the applicant will be notified by letter and email sent by Graduate Admissions of : 1) acceptance and admission under one of the categories of admission listed below; or 2) denial of application; or 3) deferral of application for reasons listed in the letter. If accepted, the acceptance notification will state conditions for admission, if any, and period of validity of the acceptance. Applicants who have not received an admission notification one week prior to the beginning of classes for the semester for which admission is sought should contact Graduate Admissions for information concerning the status of their application.

Unconditional Admission

An applicant who meets all requirements is normally considered for unconditional admission.

Probationary Admission

An applicant who does not meet all requirements for unconditional admission nevertheless may show promise for successful graduate study and, upon recommendation of the Graduate Advisor, Committee on Graduate Studies and with approval of the academic dean may be granted probationary admission. Special course requirements or other conditions may be imposed by the advisor, Committee on Graduate Studies and/or dean.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but whom otherwise appears to meet admission requirements may be granted provisional admission upon recommendation of the appropriate Graduate Advisor and Committee on Graduate Studies. Complete and satisfactory credentials must be received by Graduate Admissions before the end of the semester in which the student has registered in a provisional status. A student will not be permitted to enroll with a provisional status for more than one semester. Provisional admission does not guarantee subsequent admission on an unconditional basis. International applicants residing outside of the United States at the time of application are not admitted on a provisional basis. A student may not hold an assistantship while in provisional status.

Deferred Admission

If an applicant is not able to supply required application materials or must complete additional preparatory work before their admissibility can be determined, the admission decision may be deferred until records are complete. The applicant will be sent an Admission Deferral Notice specifying the data that must be provided or the work that must be completed before the application will be reconsidered. The application may be reactivated for reprocessing by submitting the "Request to Reactivate Application." An application evaluation charge will be required for each reprocessing request unless the request is made for the original semester and program.

Denied Admission

Admission is typically denied if an individual fails to meet more than one of the admission standards of the department to which he or she applied and the admission committee feels that there is insufficient basis to justify a probationary, provisional or deferred admission recommendation. As the admission process is competitive, students meeting basic admission requirements who are less well qualified than other applicants may also be denied admission.

Applicants denied admission to a graduate program may not take or reserve graduate courses for graduate credit. Applicants may reapply for admission if the deficiencies in credentials that led to denial are remedied. An application evaluation charge will be required for each reprocessing request. Applicants denied admission may ask the Graduate Advisor in the program to which they applied about the reasons for the denial.

Pathways Admission

Applicants who are admitted by the graduate advisor of their program but who do not meet the University of Texas at Arlington (UTA) English language requirements, may be granted admission to the Pathways Program run by the English Language Institute (ELI) in the Department of Linguistics and TESOL at UTA. Students admitted through Pathways will be required to take the ELI's Gateways to English Success Program (GESP) entrance exams prior to the beginning of the semester for which they have been admitted. The results of these exams are subdivided by English skill (writing, reading, listening, speaking) and determine the particular GESP courses (if any) that students must take in the Pathways Program to improve all of the skills in which they lack proficiency.

All students must meet UTA and any departmental English language requirements before enrolling in academic courses. Students who score a 6 or higher in all four skills of the GESP entrance exams meet the UTA English language requirements. However, individual departments may set a higher English language requirement. Students who meet the English language requirements for both UTA and their department will be allowed to register solely in academic courses. Students who do not meet both of these conditions will be required to enroll in GESP courses. Students must take the appropriate GESP courses for all skills in which they score a 4 or 5. Students who score a 6 in some skills but not others may be eligible to concurrently enroll in academic and GESP courses (with advisor approval). Students who do not meet these score requirements must enroll in full-time English language study and may not undertake any academic coursework until they complete the appropriate GESP course(s) at the required level. Further, students who score a 3 or lower in any skill will not be allowed to enroll in any academic courses and may be required to enroll in the ELI's English for Academic Purposes (EAP) program until they demonstrate sufficient proficiency to enter GESP courses.

Students complete and exit the Pathways Program by earning acceptable scores on the GESP entrance examinations or successfully completing GESP courses at required levels.

When students exit the Pathways program, they may begin full-time study in the academic program to which they were initially admitted at the start of the next available semester.

GESP tuition charges, important dates, and other information can be found at <https://eli.uta.edu/GESP> (<https://na01.safelinks.protection.outlook.com/?url=https%3A%2F%2Feli.uta.edu%2FGESP&data=02%7C01%7C%7C4b0c3310157940738c1d08d6296ecec7%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636741953217891207&sdata=QN%2BNRd7yVmzZ0DjVKGfRM7R9lj3yFn1WnLUKppHjIEs%3D&reserved=0>) or by contacting the GESP Coordinator at the English Language Institute, Box 19560, Arlington, Texas 76019. Email: atherton@uta.edu

Special Admissions Programs for UT Arlington Undergraduates

Outstanding UT Arlington Undergraduates

Upon the recommendation of the Graduate Advisor, outstanding graduates of The University of Texas at Arlington may be admitted to a master's degree program or B.S. to Ph.D. track by facilitated admission. To qualify, the student must meet the following minimum requirements:

1. The student must have graduated from a commensurate bachelor's degree program at UT Arlington no more than one academic year prior to the semester for which admission to a graduate program is sought. A commensurate bachelor's degree program is one that is a normal feeder program for the master's degree program to which the student seeks admission. Undergraduate students in their final year of study are also eligible; in such cases, facilitated admission is conditional upon successful completion of the bachelor's degree.
2. The student's grade-point average must equal or exceed 3.5 in each of two calculations:
 - a. the grade-point average in the last 60 hours of study as calculated in Graduate Admissions for admission purposes
 - b. all work completed at UT Arlington to date

Students who qualify for facilitated admission will be admitted directly to graduate school without completing the application for admission, submitting an application evaluation charge or taking the GRE or GMAT. Students who believe they may qualify for this program should contact the appropriate Graduate Advisor. Some programs may require a higher grade-point average to qualify. Not all graduate programs participate in Facilitated Admission of Outstanding Undergraduates.

Admission With Graduate Record Examination Waived

Upon recommendation of the Graduate Advisor, outstanding UT Arlington graduates may qualify for waiver of the requirements for the Graduate Record Examination (GRE). To qualify, the applicant must meet the following minimum requirements:

1. The student must have graduated from a commensurate bachelor's degree program at UT Arlington no more than three academic years prior to admission to the graduate program (as measured from the start of the semester for which admission is sought). A commensurate bachelor's degree program is one that is a normal feeder program for the master's degree program to which the student seeks admission. Undergraduate students in their final year of study are also eligible; in such cases, admission with the GRE waiver is contingent upon successful completion of the bachelor's degree.
2. The student's UT Arlington grade-point average must equal or exceed 3.0 in each of two calculations: (a) in the last 60 hours of study as calculated for admission by Graduate Admissions; (b) in all undergraduate coursework completed at UT Arlington.

Applicants qualifying for waiver of the GRE who do not qualify for facilitated admission, must comply with all other requirements for admission, i.e., submitting the application for admission, paying fees, providing official transcripts from other institutions, and meeting any requirements established by the admitting graduate program. The GRE waiver must be recommended by the Graduate Advisor at the time of admission. The waiver of GRE program applies to applicants for master's degree programs only. Some programs may require higher grade-point averages to qualify. Not all graduate programs participate in the GRE waiver program.

Fast Track to Master's Degree

The Fast Track program is designed to encourage gifted UT Arlington undergraduate students to complete a master's degree at UT Arlington, by enabling them to complete their undergraduate studies without delay and reducing the time and the number of additional courses needed to complete a master's degree. It is available in some graduate programs to outstanding UT Arlington undergraduate students and admission to these programs is highly selective. Participating undergraduate students use a set of courses specified by their graduate program to satisfy both undergraduate bachelor degree and graduate master's degree requirements. Students must formally apply to and be accepted as a Fast Track student by a participating graduate program to receive the full benefits of the program. Admitted students going on to complete all program requirements successfully will be automatically admissible to the associated master's program when they receive their bachelor's degree. They will not have to submit the formal application for admission to Graduate Admissions, pay an application evaluation fee, or take the GRE. Students who do not complete the Fast Track program may apply for admission per regular means but must take all required tests and pay all required fees. Admission in such cases is not automatic and will be based on the published admission requirements of the program applied to all regular applicants. Not all programs offer a Fast Track option. Interested students should consult with their intended program's graduate advisor prior to their senior year for detailed information regarding requirements and application procedures.

Non-Degree Seeking (Special) and Graduate Certificate Applicants

A person holding a bachelor's degree from a regionally accredited U.S. institution or its foreign equivalent wishing to take graduate courses at The University of Texas at Arlington but not planning to pursue a graduate degree may apply for admission as a special non-degree seeking student or graduate certificate student. In most cases, admission as a special non-degree seeking student is granted only for the purpose of participating in special graduate course offerings, or for taking courses to be transferred to another institution. A student who has been denied admission to or been dismissed from graduate studies may not be permitted to enroll as a special non-degree seeking or graduate certificate student.

Before submitting an application for admission, an applicant for special non-degree seeking student or graduate certificate should consult with the Graduate Advisor in the department or program in which the graduate course or graduate certificate is offered. Applicants may complete the application online. In addition to the application, applicants must submit an official transcript of previous college work showing evidence of an undergraduate degree.

and, if applicable, a graduate degree. Special non-degree seeking student admission status is granted for the semester for which the application is submitted. Further enrollment as a special non-degree seeking student must be approved on a semester-by-semester basis. Graduate certificate enrollment is limited to the courses and length of time required to complete the graduate certificate program. Special non-degree students and graduate certificates may not hold graduate assistantships or enroll in research, thesis, internship or dissertation courses.

Up to 12 graduate level (5000 and above) semester credit hours earned as a special non-degree seeking student may be applied to a graduate degree program, subject to the policies on grades and graduate credit described in the General Information and Regulations section of this catalog. Review and approval of the appropriate Committee on Graduate Studies and the approval of Graduate Admissions are required. All grades in courses taken as a special non-degree seeking student and graduate certificate status will be considered in computing a student's graduate grade-point average.

A former or currently enrolled special student or graduate certificate student wishing to apply for admission to a graduate degree program must submit a graduate admissions application online, all supporting documents listed in the Admission section of this catalog, and the appropriate non-refundable application evaluation charge. Admission as a special student or graduate certificate student in no way guarantees subsequent admission into a graduate program in graduate school.

NOTE: Immigration regulations do not generally permit international students to study as special non-degree seeking or certificate students. If you are an international student, please contact Graduate Admissions before submitting an application so that eligibility to apply as a special non-degree seeking or graduate certificate student can be determined.

Readmission

A student previously enrolled in graduate school at The University of Texas at Arlington, wishing to resume graduate work after an absence of a fall or spring term or longer (summer excluded) must submit an "Application for Readmission" form online and pay the required non-refundable application evaluation charge. This rule does not apply to a student who withdraws with an Approved Leave of Absence or to a student who withdraws from the university because of deployment as a member of the armed forces of the United States serving on active duty in a combative operation outside the United States. A student returning from an Approved Leave of Absence as scheduled will be automatically readmitted and will not be required to submit an application or pay an application fee. For a student withdrawing due to deployment in a combative operation outside the United States readmission will be granted upon request, the readmission fee waived, previously submitted standardized test scores will remain acceptable and credit toward for any work previously completed applied. (TEC Sec. 51.844). In addition, the student may be eligible for the same financial assistance provided before the student's withdrawal (TEC, Section 51.9242).

The "Application for Readmission" is completed online at our Web site <http://www.uta.edu/admissions/graduate> (<http://www.uta.edu/admissions/graduate/>). Students may submit only one "Application for Readmission" at a time. A \$30.00 application charge is required of all U.S. Citizen and U.S. Resident Alien applicants who have attempted or completed all of their college or university work at institutions located in the United States. A \$60 evaluation charge is required of all U.S. Citizen and U.S. Resident Alien applicants who have attempted or completed some or all of their coursework at an institution located outside of the United States. A \$60 evaluation charge is required of all International students. Payment must be received before processing can begin. An application evaluation charge is required with each readmission application form submitted. International students and U.S. Resident Alien students should submit this form and pay the required non-refundable evaluation charge 120 days prior to their expected semester of enrollment, and U.S. Citizen students 90 days prior to their expected date of enrollment.

A former student wishing to apply for a dual degree program must complete the "Application for Readmission" form online.

An applicant for readmission should consult with the Graduate Advisor of the program, or the Graduate Advisors of the dual degree programs, before submitting the readmission form and fee to Graduate Admissions. This is particularly important when requesting readmission to a new program or requesting readmission to a dual degree program.

An applicant for readmission who has enrolled at other institutions during their absence from UT Arlington (including those in UT Arlington concurrent enrollment) must submit official transcripts showing such coursework to Graduate Admissions.

Change of Graduate Major, Program, or Degree Level for Current Students

Students wishing to change graduate major, program or degree level (master's or doctoral classification) from the one in which they are enrolled currently or in which they were enrolled during the most recent semester at UT Arlington, must initiate the change by completing the "Change of Program or Degree Level" form online. Students may submit only one "Change of Program or Degree Level" form at a time. Additional forms will not be processed until a final decision on any prior request has been made. Students intending to change majors should consult the Graduate Advisor of the new program regarding program admission and degree requirements before completing this form. Similarly, students wishing to change degree level should submit the request after discussing the matter with the appropriate Graduate Advisor.

Students wishing to change from one program to a dual degree program must complete the "Change of Program or Degree Level" form online available at <https://www.uta.edu/records/graduation/enrollment-continuation.php>

Master's, Doctoral and Certificate Programs

The University of Texas at Arlington offers approximately 100 different master's and doctoral degrees across a wide spectrum of academic and professional programs. In addition to typical classroom instruction suited to either full or part-time students, a number of degrees can be pursued through

distance educational formats. Numerous certificate programs not requiring admission in a particular master's or doctoral degree program are also available for persons seeking to enhance their professional skills and careers.

Master's Programs of Study

- Accounting
- Aerospace Engineering
- Architecture
- Art
- Biology
- Biomedical Engineering
- Business Administration
- Business Analytics
- Chemistry
- City and Regional Planning
- Civil Engineering
- Cohort Masters of Business Administration
- Communication
- Computer Science
- Computer Science and Engineering
- Construction Management
- Criminal Justice
- Criminology and Criminal Justice
- Economic Data Analytics
- Education Administration
- Education Curriculum and Instruction
- Education Leadership and Policy Studies
- Education Teaching
- Electrical Engineering
- Engineering Management
- Engineering Mechanics
- English
- Environmental and Earth Science
- Environmental Design
- Environmental Science and Engineering
- Executive Masters of Business Administration
- Exercise Physiology
- Foreign Language
- French
- Geology
- German
- Government
- Health Care Administration
- History
- Humanities
- Human Resource Management
- Industrial Engineering
- Information Systems
- Interdisciplinary Science
- International MBA
- International Business Administration
- Landscape Architecture
- Linguistics
- Logistics

- Management of Technology
- Marketing Research
- Materials Science
- Materials Science and Engineering
- Math Teaching
- Mathematics – General Mathematics
- Mathematics – General Statistics
- Mechanical Engineering
- Modern Languages (French or Spanish)
- Music
- Nursing
- Nursing Administration
- Nursing Practitioner
- Nursing – Adult Nurse Practitioner
- Nursing – Acute Care Nurse Practitioner
- Nursing – Adult Psychiatric-Mental Health Nurse Practitioner
- Nursing – Emergency Nurse Practitioner
- Nursing – Family Nurse Practitioner
- Nursing – Family Psychiatric-Mental Health Nurse Practitioner
- Nursing – Gerontological Nurse Practitioner
- Nursing – Pediatric Nurse Practitioner
- Nursing – Pediatric Acute Care Nursing Practitioner
- Online Computer Science
- Online Computer Science & Engineering
- Online Electrical Engineering
- Online Business Administration
- Personnel and Human Resource Management
- Physics
- Political Science
- Professional Accounting
- Psychology
- Public Administration
- Public Administration – Online
- Quantitative Finance
- Real Estate
- Social Work
- Sociology
- Software Engineering
- Spanish
- Systems Engineering
- Taxation
- Teaching English to Speakers of Other Languages (TESOL)
- Urban Affairs

Doctoral Programs of Study

- Administration Business
- Administration
- Administration Social Work
- Administration Urban Affairs
- Aerospace Engineering
- Applied Chemistry
- Applied Physics

- Biology
- Biomedical Engineering
- BSN to PhD in Nursing – Administration
- BSN to PhD in Nursing – Clinical
- Business Administration
- Business Administration – concentration in Accounting
- Business Administration – concentration in Economics
- Business Administration – concentration in Finance
- Business Administration – concentration in Information Systems
- Business Administration – concentration in Management
- Business Administration – concentration in Marketing
- Business Administration – concentration in Taxation
- Chemistry
- Civil Engineering
- Computer Science
- Computer Science and Engineering
- Educational Leadership
- Educational Leadership and Policy Studies (K-16)
- Electrical Engineering
- English
- Environmental and Earth Science
- Environmental Science and Engineering
- Experimental Psychology
- General Experimental Psychology
- Industrial Engineering
- Linguistics
- Materials Science
- Materials Science and Engineering
- Mathematics – General Mathematics
- Mathematics – General Statistics
- Mathematical Science
- Mechanical Engineering
- Nursing
- Public and Urban Administration
- Social Work
- Transatlantic History
- Urban Planning and Public Policy

Certificates

- Administrative Certificate (Social Work)
- Adult Gerontology Acute Care Nurse Practitioner
- Adult Gerontology Primary Care Nurse Practitioner
- Applied Statistics Program (Math)
- Archival Administration
- Automotive Engineering
- Big Data Management and Data Sciences
- Construction Management
- Development Review
- Education Curriculum and Instruction - Reading Spec
- Education Curriculum and Instruction -Bilingual
- Education Curriculum and Instruction-Second Language
- Education in Teaching - All Level

- Education in Teaching - Early Childhood
- Education in Teaching - ESL/EC-6
- Education in Teaching - Middle Level
- Education in Teaching -Secondary Level
- Electronic Packaging
- Entrepreneurship
- Executive MBA Asian Business
- Family Nurse Practitioner
- Family Psychiatric Nurse Practitioner
- French
- Geographic Information Systems
- Graduate Advanced Studies
- Health Care Administration
- LEAD Superintendent
- LEAD Superintendent-(via Accelerated Online program)
- Manufacturing
- Neonatal Nurse Practitioner
- Nursing Administration
- Nursing Administration
- Nursing Education
- Pediatric Nurse Practitioner Acute Care
- Pediatric Nurse Practitioner Primary Care
- Performance
- Performance (Harpichord)
- Performance (Organ)
- Performance (Piano)
- Public Budgeting and Financial Management
- Public Health
- Real Estate Development
- Spanish
- Taxation
- TESOL
- Unmanned Vehicle Systems
- Urban Non-Profit Management
- Vertical Lift/Rotorcraft
- Women's and Gender Studies

Undergraduate Admissions

Office of Admissions

Application for Admission

New prospective students who wish to enroll at The University of Texas at Arlington must apply for admission. They should apply as early as possible. All application materials—signed application (or certified if online), appropriate application fee or fee waiver documentation, official copies of transcripts of all high school and all college work attempted, and official test scores when appropriate—should be submitted by the priority deadlines. Completed applications will be accepted after the priority deadlines until the ApplyTexas application closes approximately two weeks prior to the start of the term. Adherence to the deadlines ensures careful evaluation of credentials resulting in an admission decision and notification of that decision to the student in time for orientation, academic advising, registration, and tuition/fee payment.

All documents, including official transcripts submitted to the Office of Admissions, become the property of the University and will not be returned to the student. Official transcripts must be currently dated with an issue date that closely corresponds to the date the admission application is submitted. Once transcripts from other institutions are received at UT Arlington we will not provide students with a copy of the transcript(s). Students must contact the granting institution where the transcript was originally obtained. Offer of admittance to UT Arlington is only valid for the semester indicated on the admission application. Applicants wishing to be considered for a future semester other than the one identified on their first application must submit a new application. Although a new application must be completed, a second application fee will not be required if the application is being updated for the first time within the same academic year. If the second or subsequent admission application reflects a change in academic history, the student must provide the new official transcripts and test scores reflecting any new work completed since the first application was submitted. Once complete, the student's admission status will be re-evaluated. The application for admission can be found at www.ApplyTexas.org (<https://www.applytexas.org>).

PRIORITY DEADLINES

Application Deadline	Fall Semester	Spring Semester & Winter Intersession	Summer Semester & Summer Intersession
Freshman	June 1	December 1	April 1
Transfer students	June 1	December 1	April 1
Former students	June 1	December 1	April 1
International students	May 1	October 1	March 1
Transient students	June 1	December 1	April 1

The above priority deadlines may not apply to some academic programs which are offered exclusively online. Please consult the specific web site of the online program you will be participating in for application deadline information.

Apply Texas Application

Pursuant to Section 51.762 and 51.763 of the Texas Education Code, the Texas Higher Education Coordinating Board adopted a uniform undergraduate admission application called the Apply Texas Application. All undergraduate freshmen, transfer, former and transient students applying to a Texas public institution of higher education must use this form. It may be accessed and sent electronically via the Internet at www.applytexas.org (<https://www.applytexas.org/>).

Admission Application Fee

All new undergraduate applicants to UT Arlington must pay a non-refundable \$75 application fee. The fee may be paid online using a credit card at the time the application is submitted. Undergraduate Admissions supports a Fee Waiver program for qualifying students. Please refer to our Admissions (<https://www.uta.edu/admissions/freshmen/apply/>) page for qualification information. Fee waivers are not available for students applying to the Accelerated Online programs. Admission decisions will not be made until after the application, application fee and all official academic credentials are received and reviewed. Applicants who are not admitted or who do not enroll on the basis of their original admission application may receive one free update within the same academic year upon completion of an update application.

International Students

All prospective students from countries other than the United States who are not immigrants and have not been granted permanent residency must submit:

1. an International Student Application.
2. the application processing fee of \$60 U.S., which is not refundable.
3. **Entering freshmen** must present completed official secondary school transcripts, diplomas, certificates and/or national test examination scores as appropriate for the educational systems in their country. In order to be considered for freshman admission you must have completed a secondary school series equivalent to that of United States high school graduation. Transcripts and exam marks should be attested as true copies of the originals by the school you attended. Notarized copies are not used for admission. If documents are written in a language other than English, complete and official English translations must be provided with the original language transcripts, exam records and diplomas. Official SAT I or ACT

scores are required for entering freshmen with less than 24 semester hours of university level course work (equivalent to one year of full time study). The minimum required SAT I (old format) score for entering freshmen educated in a country other than the U.S. is 900. The minimum required SAT I (redesigned format) score for entering freshmen educated in a country other than the U.S. is 980. The minimum ACT score is 19. International Freshman applicants educated in the U.S. must meet U.S. freshman admission standards regarding high school class rank and SAT I or ACT scores. Scores must be sent directly to UT Arlington from the Testing Service in order to be considered official. Student score reports are not used for admission processing.

4. **International Transfer Students** must submit official transcripts or mark-sheets of all college or university level course work showing subjects completed and grades (marks) earned. Transcripts and diplomas must be attested as true copies of the originals by the school you attended or UT Arlington. Notarized copies are not used for admission. If documents are written in a language other than English, complete and official English translations must be provided with the original language transcripts, exam records and diplomas.
5. Official TOEFL scores are required from International students (entering freshman and transfer students) from non-native English speaking countries on the following visas: B, C, D, F, H-4 dependents of H-1C, H-2A, and H-2B visa holders, J, M, O-2, O-3, P, Q, S, TN, TD, TWQV. Applicants who have graduated from secondary schools or colleges in the following countries are exempt from the TOEFL: Anguilla, Antigua, Australia, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Canada (except Quebec), Cayman Islands, Dominica, Grenada, Grand Cayman, Guyana, Ireland, Jamaica, Liberia, Montserrat, New Zealand, Sierra Leone, St. Kitts and Nevis, St. Lucia, St. Vincent, Trinidad/Tobago, Turks and Caicos Islands, and United Kingdom.
The TOEFL will be waived for those applicants:
 - a. who have an SAT I verbal score of at least 480 or an ACT I English score of 19, or
 - b. who have completed English Composition I and II with a grade of C or better, plus 24 additional transferable hours at a college or university located in the U.S.
 The minimum acceptable score on the TOEFL is 79 on the Internet-based test, 550 on the paper-based test and 213 on the computer-based test. The IELTS can be substituted for TOEFL scores. The minimum acceptable overall score of 6.5 is required for admission. Scores must be sent directly to UT Arlington from the Testing Service in order to be considered official. Student score reports are not used for admission processing.
6. The applications of prospective students from countries other than the United States are reviewed on an individual basis, and admission decisions are based on the strength of the previous academic work, scores on the SAT if required, and the Test of English as a Foreign Language score. Academic background and curriculum are important considerations in decisions on admissibility.
7. International students who plan to attend UT Arlington on an F-1 (student visa) and who wish to be issued an I-20 must present a copy of their passport, I-94 card and evidence of sufficient financial support while studying in this country. Please see the latest Financial Statement Form at UT Arlington's Web site at www.uta.edu/admissions (<http://www.uta.edu/admissions/>) for the most current estimate to be documented and types of acceptable documentation.
8. International Students on any visa other than F-1 must present a copy of their passport and I-94 card.
9. Prior to course registration each prospective International student must clear through the Office of International Education. In addition, International students on the following visas are required to attend an International Orientation before registering for classes: A-2, e-2, F-1 (including transfer students) H-4, J-1, J-2, L-2, O-3, R-2, TD.
10. Prior to course registration each prospective International student must have a Tuberculosis screening and/or chest X-ray in order to enroll. The University of Texas Board Of Regents has passed Regents Rule 50402 (<http://www.utsystem.edu/board-of-regents/rules-regulations/rules/50402-health-insurance-requirements-international-students/>), which now requires only F1, F2, J1 and J2 students who are currently enrolled, to have medical insurance compliant with the federal Patient Protection and Affordable Care Act (PPACA). The UT Student Health Insurance Plan (UT-SHIP) meets these requirements. New students will have the opportunity to enroll in the UT-SHIP at international student orientation. The charge will be automatically added to your student MyMav account (https://sis-portal-prod.uta.edu/psp/AEPPRD/EMPLOYEE/EMPL/h/?tab=PAPP_GUEST) and paid when you pay your tuition and fees. The UT System has established criteria in which an international student can request a waiver from the UT-SHIP by providing alternate health insurance coverage. In order to be approved for a waiver, your alternate health coverage must meet or exceed the requirements as set in the System regulation and be PPACA compliant. Waivers must be submitted online and approved each semester to have the insurance charge removed from your student account.

Meningitis Requirement

As of Jan. 1, 2012, incoming Texas college students under 30 years old as of the first day of classes for the term in which they intend to enroll must be immunized against bacterial meningitis before they enroll in any Texas institution of higher education per SB 1107 (<http://www.capitol.state.tx.us/BillLookup/History.aspx?LegSess=82R&Bill=SB1107>). The law was subsequently updated for students entering the Spring 2014 to be under the age of 22 years old instead of 30. Students transferring from another institution and students who are re-enrolling following a break of at least one fall or spring semester must be inoculated against the illness. Students who plan to audit a course also must comply with the law. Students enrolling in only online classes are exempt from the legislation.

It is imperative that students who plan to enroll at UT Arlington be vaccinated as soon as possible. Under the law, new college students must have received the vaccine within the past five years. Proof of inoculation is required 10 days before the start of the semester as the vaccine is considered effective several days after it is administered. Additionally, the vaccine must have been administered within the past five years. Limited exemptions are specified in state law. Upon acceptance to the university, the student will receive detailed information sent to their UT Arlington email address

concerning compliance with the law. Students enrolled in classes who must meet the requirement will be dropped from their classes the day prior to the first day of class if they have not completed the requirements as defined by the law.

Frequently asked questions (<http://www.uta.edu/news/info/meningitis.php>) regarding this requirement are available online at UT Arlington's web site.

Major Classifications

All entering students will be classified either as undeclared majors, intended-majors or majors. All entering students who are not ready to declare a major will be admitted as undeclared majors. **Note:** Applications for students interested in the Architecture or Interior Design programs will only be accepted for the Fall semester.

All first-time freshman students and freshman transfer students will be advised by the University Advising Center in University College for their first year and then advised by departmental advisors thereafter. Undeclared majors beyond the first year will continue be advised in the University Advising Center until they are ready to move into an intended major or major.

Transfer students will be advised by a departmental advisor for the intended major or major, unless admitted as an undeclared major and be advised by the University Advising Center.

Enrollment as a Non-Degree Student

A student who holds a bachelor's degree from an accredited institution, including The University of Texas at Arlington, may choose to apply for admission as a non-degree student in one of the undergraduate colleges or schools and is subject to the rules that apply to other undergraduates. Students may, with the approval of the director of admissions and the academic dean, change to degree-seeking status in an undergraduate college.

Consideration for the non-degree option is made by submitting an admission application, application fee and an official transcript showing the awarding of at least a bachelor's degree. Materials must be submitted by the deadline for undergraduate admission.

Admission to a Degree Program

Admission to the University's degree programs is determined by application to the academic unit offering the degree. Before being admitted to a degree program, students must fulfill all departmental and college requirements. Degree programs may require students to complete additional courses or hours in residence prior to applying for admission to the degree program. Until students are admitted into a degree program, students will remain on pre-major status.

Criminal Background Check

Some programs require a criminal background check as a condition of admission or program completion or licensure expectations concerning acceptable qualifications. Applicants should examine departmental requirements with care.

Academic Fresh Start

Section 51.931 of the Texas Education Code provides that a resident of Texas may apply for admission to the University as an undergraduate student without consideration of course credit or grades earned 10 or more years prior to the semester the applicant plans to enroll. To be admitted, the applicant must meet the admissions standards in effect at the time of application. Students admitted under the "fresh start" option may not receive credit for any course work taken 10 or more years prior to enrollment. The Academic Fresh Start provision does not affect Texas Success Initiative exemptions claimed on the basis of college credit earned prior to September 1989.

After enrollment, a message will be posted to the student's academic record at UT Arlington indicating admission has been granted through the Academic Fresh Start provision. Once this option has been claimed and the student has enrolled at any state institution, the provision cannot be reversed. An applicant may use the Academic Fresh Start provision only once at UT Arlington.

- Fresh Start must be requested at the time of application to UTA
- If previously accepted to UTA without applying for Fresh Start, it may be requested during readmission to the University if one calendar year has lapsed since last enrollment
- Students must demonstrate college readiness to enroll in courses subject to TSI standards
- Students who have earned a bachelor's degree are not eligible for Fresh Start at UTA
- Courses removed by the Fresh Start program are not applicable to core curriculum requirements or course prerequisites
- Credit and GPA earned prior to the student's Fresh Start will not be used to evaluate admission to graduate or professional programs
- All requests for Fresh Start should be made to the Office of Admissions by completing an Academic Fresh Start form (<https://www.uta.edu/admissions/transfers/apply/fresh-start.php>)

Orientation and Early Registration

Orientation and Early Registration is a program which includes placement testing, group sessions to prepare for the transition to UT Arlington, resources for academic success, and an introduction to social and extracurricular opportunities. A highlight of the program is early advising and registration.

Upon completion of the admission requirements and admittance to the University, students are sent information regarding orientation from the UT Arlington Division of Student Affairs. The orientation program is required for all first-time freshmen students.

For students starting UT Arlington in the fall semester, several orientation options are available. New freshman students may attend one of several one-and-a-half-day sessions offered in June, July and August. Students have the option to stay overnight in the residence halls. Parents of freshman students are invited to attend a separate but concurrent program. There are limited accommodations for parents or guests on campus. Transfer students are also required to attend a one-day program in July or August. All Orientation programs conducted during the summer include Academic Advising and Early Registration. For students starting in the other semesters, Orientation and Early Registration is offered prior to the start of the semester. Please contact the UTA Division of Student Affairs for additional information regarding the orientation programs.

International Student Orientation

The New International Student Orientation provides new international students with information about immigration matters, health services and health insurance, registration procedures, academic rules and regulations, cultural adjustment, and Office of International Education programs and activities. Attendance at this orientation program is required for all non-immigrants who are new to UT Arlington, including transfer students. Orientations are offered on various days in the two weeks preceding each semester. Students are notified by letter of this New International Student Orientation at the time of notification of admission. The dates and details of orientation are included in this letter. Attendance at any other UT Arlington orientation does not substitute for attendance at the New International Student Orientation. Those who do not attend will not be allowed to register during regular registration and must attend a makeup orientation program before being allowed to register in late registration.

College Credit by Examination

The University of Texas at Arlington recognizes that many excellent students have gained academic achievement in certain subject areas prior to entering an institution of higher education. UT Arlington strongly encourages such superior attainment, recognizes it for academic purposes and permits students who have done such work to obtain course credit through examination. Students will be given the opportunity to receive credit by examination in courses within the regular curricular offerings of the University where proficiency may be practically and validly determined by examination.

UT Arlington uses several examination programs to assess the prior academic achievement of undergraduate students. The University awards credit for scores on certain tests from the College Board Advanced Placement Program (AP), the College Board College Level Examination Program (CLEP), the College Board SAT II: Subject Tests, the DANTES Subject Standardized Test (DSST), and the International Baccalaureate Program (IB). UT Arlington also offers advanced standing examinations prepared by departmental faculties.

The following policies govern the awarding of credit by examination by UT Arlington:

- Credit by examination (<http://www.uta.edu/universitycollege/prospective/testing-services/credit-by-examination/>) is available to undergraduate students with a completed application on file, currently enrolled students, and formerly enrolled students who meet eligibility requirements. Provided the student has neither passed nor failed that course at the University of Texas at Arlington (including a Z in English). Credit by examination will not be given for a course the student previously passed or failed, or received transfer credit at UT Arlington. Additional eligibility requirements for certain courses are listed in Assessment Services Credit by Examination brochure or on their Web site.
- Prospective students may take examinations to establish their eligibility to receive credit, however, credit is awarded only to currently enrolled students or to former students who meet eligibility requirements. A prospective student may claim credit prior to enrollment but the credit will be posted as earned credit after Census day of the first enrolled semester.
- Credit by examination may not be used for graduate credit and no such credit, graduate or undergraduate, may appear on graduate student transcripts.
- Credit earned by examination satisfies degree requirements in the same way as credit earned by passing courses except it does not count as credit earned in residence. Credit by examination cannot be used to satisfy general degree requirements for: (a) 30 semester hours in residence, (b) at least 18 semester hours in residence of advanced course work (courses numbered 3000 and 4000), to include 12 hours of advanced course work in the major field. Credit by examination can be used to meet prerequisites for higher-level courses.
- After the official Census Date, students may earn credit by examination for a course they are enrolled in only if the student drops the course with a W or upon written approval of the chair of the appropriate academic department. Once a grade is posted for the course the student may not petition for credit earned by exam.
- Most academic departments award semester hours of credit, but no letter grades. In a few subjects, credit may be awarded with grades of A, B or C, depending on the level of test performance. For each course in which grades are assigned, students may choose to accept credit hours recorded either with the letter grade or as credit only. Accepting credit only will not affect a student's cumulative grade point average. After credit has been posted to the academic record, a student's choice, letter grade or credit only, cannot be changed.
- To have credit reported to Office of Admissions, official test scores must be sent to Testing Services for credit by examination to be awarded. Students must complete a Petition to Record Credit by Examination at the Testing Services office. Credit by examination will be posted to a student's

official record after the student has enrolled and completed one semester at UT Arlington. Unsuccessful attempts to earn credit by examination are not recorded on students' academic records.

- Credit by examination on a transcript from another institution of higher education is considered transfer work and will transfer to UT Arlington, subject to the same conditions as corresponding resident course work from that institution. The Office of Admissions is responsible for evaluating all transfer work.

Further information regarding test dates, registration procedures and deadlines, fees, current eligibility criteria and petitioning to record credit may be obtained from the Testing Services Office (<http://www.uta.edu/universitycollege/prospective/testing-services/>).

Placement Examinations

Certain departments offer (or require of) the student an exemption from taking courses based on departmental placement examinations. Such exemption does not grant credit for the course but permits the student to enroll in the next course in the subject area.

Modern Language Placement Examination

The Modern Language Department recommends that students who are native speakers, have high school credit, or equivalent knowledge of French, German or Spanish language take a placement exam prior to enrolling in certain lower-division language courses. Modern Language placements tests are the CLEP (<http://www.uta.edu/universitycollege/prospective/testing-services/credit-by-examination/clep.php>) French, German, or Spanish Language exams and may be taken in an attempt to earn credit by examination. Students have the option to choose credit with letter grade or credit without letter grade for credit earned depending on level of test performance.

Texas Residency for Tuition Purposes

The Office of Admissions determines Texas residency (<http://www.uta.edu/admissions/residency.php>) status for all new and continuing UT Arlington students. A review of responses on the admission application is conducted by the residency determination official in accordance with Title 19, Chapter 21, Subchapter B of the Texas Administrative Code (<http://www.sos.state.tx.us/tac/>).

When incomplete, insufficient or conflicting information is presented on the admission application, the student will be sent a Core Residency Questionnaire. This should be completed and returned to the Office of Admissions (Box 19114, Arlington, TX 76019-0114) with the appropriate supporting documentation prior to registration. After the Core Residency Questionnaire has been reviewed, the student will receive a written response of the residency determination from the Office of Admissions.

Report of Medical History

A Report of Medical History form will be sent to students when they are accepted to the university.

First-time students: Prior to registration, a first-time student must submit a Report of Medical History to UT Arlington Health Services (<http://www.uta.edu/healthservices/>). It is the responsibility of the student to complete the health form and mail it to UT Arlington Health Services at least two weeks prior to registration. A Report of Medical History form will be sent to students when they are accepted for admission.

Students who are from countries other than the United States and who are not immigrants or have not been granted permanent residency: All students who are from countries other than the United States and who are not immigrants or have not been granted permanent residency must submit to UT Arlington Health Services an International Health Card issued within the past year. The International Health Card must note that the student has tested negative for tuberculosis. Once the card has been presented, the student will be cleared to register for classes. Students who do not present this card will not be permitted to enroll in classes.

International students: In addition to the International Health Card requirement, all international students must be tested by a U.S. medical facility for tuberculosis prior to the 25th class day. Failure to receive clearance from a U.S. medical facility will result in the removal from classes. Testing is available at UT Arlington Health Services.

First-time Non-U.S. Citizen/Non-Permanent Resident and Intensive English students: The University of Texas at Arlington requires all entering Non-U.S. Citizen/Non-Permanent Resident and Intensive English students to:

- Have a Tuberculosis screening and/or chest X-ray performed at UT Arlington Health Services upon arrival to the University for classes. TB screening or chest X-ray will be performed even if the student has been vaccinated with BCG (vaccine for TB usually administered to children and effective for 8-10 years-not widely used in the U.S.).
- Ensure that all documentation is complete and submitted to UT Arlington Health Services by the 25th class day or the student will be dropped from classes without reinstatement privileges. Students dropped from classes due to non-compliance will not be eligible for a refund of tuition or fees.

For the complete text of the UT Arlington policy concerning Tuberculosis screening, please visit UT Arlington Health Services (<http://www.uta.edu/healthservices/>).

Freshman Admission Overview

A freshman applicant to The University of Texas at Arlington must have graduated from an accredited high school or is on track to graduate from high school prior to enrollment at UT Arlington. Applicants must submit an application for admission, an application fee, an official high school transcript indicating rank-in-class and official scores on the Scholastic Assessment Test (SAT) or the American College Test (ACT). Applicants ranked in the Top 25% of their class are not required to submit official SAT or ACT scores, however are encouraged to do so to be eligible for scholarship opportunities. Students enrolled in dual credit courses at a college while in high school are encouraged to submit an official college transcript. If an admission offer is made prior to high school graduation, a second official transcript that identifies the graduation date and final class rank will be required prior to the first day of classes.

All applications for admission from prospective freshmen are reviewed individually. Decisions are based on factors that predict academic success: rank-in-class; and scores on standardized admission tests at the freshman level.

Applicants who meet the minimum SAT/ACT requirements listed in this section or who graduated in the top 25 percent of their class from an accredited high school are guaranteed admission. Those who have a different pattern of rank and test scores will be considered on an individual basis and may be asked to submit additional information such as recommendations from teachers and counselors and/or a writing sample or an interview. Applicants who do not meet unconditional criteria will also be evaluated on the following factors:

- the socioeconomic background of the applicant
- whether the applicant would be the first generation of the applicant's family to attend or graduate from an institution of higher education
- whether the applicant has bilingual proficiency
- the applicant's responsibilities while attending school, including whether the applicant has been employed, whether the applicant has helped to raise children, or other similar factors
- the applicant's region of residence
- whether the applicant is a resident of a rural or urban area or a resident of a central city or suburban area in the state
- the applicant's involvement in community activities
- the applicant's extracurricular activities
- the applicant's commitment to a particular field of study

In addition to current university requirements for admission, Texas Education Code, Sections 51.803, 51.804, 51.804(2) require applicants to also have either:

1. successfully completed the Texas curriculum requirements for the Foundation High School Program or its equivalent; **OR**
2. satisfied ACT's College Readiness Benchmarks on the ACT assessment applicable to the applicant (minimum 18 on the English, 22 on Math, 21 on Reading, and 24 on Science) **OR** earned on the SAT assessment a score of at least 1,500 (Critical Reading + Math + Writing) out of 2,400 or the equivalent.

If the applicant does not meet admission requirements after individual review, admission may be deferred pending completion of a minimum of 24 transferable credit hours at another college with a grade point average of at least a 2.25. Students with at least a 2.0 but less than a 2.25 overall GPA are encouraged to apply and may be considered on a space available basis.

Current minimum freshman admissions requirements:

Rank in High School Graduating Class	Minimum Acceptable SAT Score	Minimum Acceptable ACT Score
Top 25%	No minimum score.	No minimum score.
Second quarter	1130	22
Third quarter	Individual review	Individual review
Fourth quarter	Individual review	Individual review
No class rank	Individual review	Individual review
Minimum SAT scores are based on the highest Critical Reading score added to the highest Math score.		
Engineering: For full-major status, applicants to the College of Engineering are required to present the following minimum test scores in addition to meeting other criteria specified in the College of Engineering section of this catalog:	1200	28

Prospective engineering majors who meet general university requirements for admission, but not the above listed test scores, will be reviewed and considered on the basis of individual merits by the College of Engineering for admission as pre-majors.

Meeting the above minimum university admissions requirements does not guarantee admission.

An applicant is entitled to automatic admission if the applicant meets the minimum requirements and is a child of certain public servants who were killed or sustained a fatal injury in the line of duty.(Section 51.803(e), Texas Education Code.

ENTRANCE EXAMINATION

Freshman applicants for admission must take the Scholastic Assessment Test (SAT) or the American College Test (ACT). The SAT is given nationally in October, November, December, January, April, May and June. Any student graduating from high school in 2006 or later, must also submit the writing score from the new SAT or the writing score from the ACT. Students taking the ACT should make sure they sign up for the writing exam since it is an optional component of the regular ACT. Test applications and a sample test bulletin can be obtained from the Educational Testing Service, College Board ATP, CN 6200, Princeton, N.J. 08541-6200 or online at www.collegeboard.com/student/testing/sat/about.html (<http://www.collegeboard.com/student/testing/sat/about.html>). The ACT is given nationally in October, December, February, March and June. Test applications and a sample test bulletin can be obtained from American College Testing Program, P.O. Box 414, Iowa City, Iowa 52243 or online at www.actstudent.org (<http://www.actstudent.org>). Test applications can also be obtained from a local high school or from the Office of Testing Services at UT Arlington. Applications will not be accepted later than one month prior to the test date. The applicant should complete one of the examinations at least three months prior to the start of the semester for which admission is sought. Test scores are only considered official if they are received directly from the testing service or are included on an official transcript and are less than five years old.

Students age 25 or older as of the first day of classes for the term they wish to enroll are not required to submit SAT or ACT scores. Their admission will be determined by individual approval.

HIGH SCHOOL PREPARATION

It is recommended that students complete the college preparatory program of study offered by their high schools. For purposes of admission as a freshman to the University, passing the General Educational Development Test (GED) is not considered to be the equivalent of graduating from high school. An applicant with a GED certification may be eligible for admission under the Individual Approval clause explained later in this section of the catalog.

In order for majors in architecture, engineering, biology, biochemistry, chemistry, mathematics, and physics, and B.S. candidates in geology and psychology to start their mathematics sequence with analytic geometry, applicants should have at least 3 1/2 units of high school mathematics. Those who made low scores on the mathematics part of the SAT or the ACT examination are required to take, without credit toward a degree, the necessary mathematics courses prerequisite to taking analytic geometry.

HONORS ACADEMY DUAL CREDIT PROGRAM

Honors Academy Dual Credit Program is designed for high school students who wish to earn college credit at UT Arlington while still attending high school. It is possible for students in some school districts to earn high school credit for their university course work. Students should contact their school district or one of the UTA dual credit programs for further information.

The Honors Academy Dual Credit Program offers on-campus and a limited number of online courses.

High School students can participate in UTA Dual Credit Programs by demonstrating college readiness through **one** of the following:

- Rank in the top 20% of your current class, **or**
- PSAT score of at least 480 on Evidence-based reading and writing, and 530 on Math, **or**
- PLAN composite score of at least 23, **or**
- 3.5 unweighted grade point average (4.0 scale), **or**
- SAT score of at least 1070 in combined Critical Reading + Math (test taken prior to March 2016) or SAT score of at least 1140 in combined Evidence-based Reading + Math (redesigned test taken after March 2016), **or**
- ACT composite score of at least 23.

Additionally, students must satisfy the Texas Success Initiative requirement for college readiness (TSI) by achieving the minimum passing standards on the TSI Assessment Test or equivalent.

Equivalent methods to satisfy the TSI requirement include:

- Achieving an SAT score of at least 1070 in Critical Reading and Math (with a minimum score of 500 in Critical Reading and 500 in Math) if taken prior to March 2016, **or**

- An SAT score of 480 in Evidenced-based Reading and 530 in Math on the Redesigned SAT taken after March 2016; **or**
- An ACT composite score of at least 23 with scores of at least 19 in both Math and English.
- STAAR math score of at least 4000 for the Final Level II Score for Algebra II I exempts from the math requirement. STAAR English/language arts score of at least 2000 for the Final Level II Score for English III exempts from the reading and writing requirements.

Visit the UT Arlington TSI (<http://www.uta.edu/universitycollege/current/academic-planning/uac/Texas-Success-Initiative-TSI.php>) page for more information.

Students admitted into a dual credit program will be enrolled in regular University courses and will receive credit for the course work completed at the end of the semester.

A permanent academic record will be established for each student enrolled under a Dual Credit Program.

Granting of dual credit is subject to the policies of each independent school district under the guidelines of the Texas Education Agency.

Dual Credit Admission

To apply for the Honors Academy Dual Credit Program students must submit the following:

- Online Apply Texas One Application www.uta.edu/dualcredit (<http://www.uta.edu/dualcredit/>)
- Application Fee: \$60.00
- Official high school transcript (including any scores for admission/TSI)
- UT Arlington Dual Credit Admissions Agreement
- Course Selection form

Cost

The cost to participate in the Honors Academy Dual Credit Program is \$50 per semester hour. Books and Parking are extra. Some courses have additional equipment and/or lab fees. Distance education courses are an additional \$37.50 fee.

Upon completion of high school, an Honors Academy student who wishes to continue enrolling at UT Arlington must complete an Update Application for Admission and submit an official final high school transcript.

Admission to the Dual Credit Program does not guarantee acceptance to the university following high school graduation.

FERPA

Once the student attains the age of 18 **or** attends an institution of higher education, regardless of age, FERPA rights transfer from the parent to the student. Under FERPA, parents have no inherent rights of access to their students' education records.

Additional details are available at the FERPA website (<http://www.uta.edu/records/about/ferpa.php>).

Contact Information

UT Arlington Honors Academy Dual Credit Program
Box 19222
Arlington, TX 76019-0222

817-272-7215

INDIVIDUAL APPROVAL

Graduation from an accredited high school is a prerequisite for admission to the University for most individuals. However, freshmen with the following educational profiles may be considered for admission under certain circumstances and will be automatically reviewed by Admissions officials:

- Graduates from unaccredited high schools
- Graduates from home schools
- Graduates with a General Educational Development (GED) certificate
- Students who are high school graduates and are age 25 or older. These students are not required to submit ACT or SAT scores.
- Texas residents age 21 or older who did not graduate from high school but scored at least 1090 on the SAT or 22 on the ACT.

Applicants should submit an admission application, application fee or fee waiver documentation, official transcripts of all high school grades completed from all unaccredited or home schools, official transcripts of all partially completed grades from accredited high schools, GED test scores if applicable, and official SAT or ACT test scores. Admission will be based on the freshman criteria stated in the Freshman Admission section of this catalog

with emphasis placed on each individual's academic preparation and readiness to begin a college-level curriculum. Applicants with exceptional circumstances are encouraged to discuss their educational plans with an admission counselor.

Individuals age 25 or older who have graduated from an accredited high school may be considered for admission without taking the SAT or the ACT. Such students may, however, be ineligible for federal student aid under the "Ability to Benefit" rules. An individual admitted under this waiver will be required to enroll as an undeclared major until 30 semester hours have been successfully completed. An application for admission, an official copy of the high school transcript, official transcripts of all attempted college work and the application fee will be required for admission consideration. The testing waiver does not apply to international students who must submit the results of the SAT and TOEFL for admission purposes.

An applicant seeking admission under the Individual Approval provisions who has any course credit from previous college enrollment must meet the University transfer requirements for all college work attempted. Passing the General Educational Development (GED) Test is not recognized by UT Arlington as being equivalent to graduation from an accredited high school.

ADMISSION APPEAL

Students denied admission may appeal the decision by sending a letter of written appeal addressed to the Admissions Appeal Committee, The University of Texas at Arlington, Box 19111, Arlington, TX 76019. In the letter, students should provide the committee with the reason(s) they feel they should be admitted to the university and provide any additional information not provided at time of application including letters of recommendation, new transcripts, and new test scores. Students can expect a decision from the committee within two weeks from its receipt of the appeal.

Transfer Admission Overview

Prospective students who have graduated from high school or earned a GED, earned college level credit following high school graduation or earning a GED, and attempted college-level courses beyond 24 hours are considered transfer students. An applicant who is not eligible to continue at another institution for academic or disciplinary reasons is not eligible for admission to The University of Texas at Arlington. Applicants, whether a new or former student, who have attended another collegiate institution may not disregard any part of their academic record except as permitted under the "fresh start" option described in this section. Applicants who fail to list all previously attended institutions on their application for admission are subject to disciplinary action, including expulsion, and possible loss of credit for subsequent work taken at the University.

All college-level courses except those determined to be developmental or pre-college-level courses are used to compute a transfer grade point average. Grades earned in every course attempted are part of this calculation with the exception of 10 hours of repeated courses. In the case of repeated courses, the second course attempt is counted and the first forgiven even if the second attempt is a withdrawal. Subsequent attempts after the second time a course is taken are counted toward the grade point average calculated for transfer admission. To be considered for admission, transfer applicants must have a minimum 2.25 GPA on all previous college work. Students with at least a 2.0 but less than a 2.25 overall GPA are encouraged to apply and may be considered on a space available basis.

Freshman Transfers

(less than 24 college hours completed)

Applicants who meet the transfer student definition above and who have completed fewer than 24 hours of transferable credit must have a grade point average of at least 2.25 to be admitted. In addition, they must meet the admission requirements for entering freshmen at UT Arlington. Freshman transfer students must submit: 1) an official score report from a national administration of the SAT I or ACT, 2) an official high school transcript showing graduation and rank-in-class, 3) a completed undergraduate application form, 4) official transcripts of all college work attempted, and 5) the application fee or fee waiver documentation. Students taking college classes while still in high school will be considered freshmen instead of transfer students.

Transfers With Sophomore or Higher Classification

(24 or more college hours completed)

Applicants who meet the transfer student definition above and who have completed 24 or more hours of transferable credit must have at least a 2.25 grade point average to be admitted. Students taking college classes while still in high school will be considered freshmen instead of transfer students.

Prospective transfer students who have completed 24 or more transferable credit hours must submit: 1) an undergraduate application for admission, 2) an official transcript from each accredited college or community college attended, and 3) the application fee or fee waiver documentation.

Transfers With Degrees

An applicant who has received a degree from another accredited senior college or university will be admitted as a degreed undergraduate. Acceptance into specific academic programs will be subject to the criteria set by each academic department. Applicants seeking a second baccalaureate degree must submit an application for admission, application fee, and an official transcript from each college attended as an undergraduate student to the Office of Admissions. The applicant should submit required credentials for admission by the priority deadline date. Non-degree seeking applicants must submit an application for admission, application fee, and an official transcript from the degree-granting institution. An applicant who wishes to take graduate course work before gaining admission to the Graduate School should contact the Office of Admissions and the graduate advisor in the appropriate academic department.

Credit Evaluation

The Office of Admissions completes an evaluation of transfer credit for all admitted degree-seeking students. This evaluation does not constitute approval of the credit for use toward a degree. Decisions on which transferred courses satisfy degree requirements are solely within the jurisdiction of a student's academic department. Policies governing the evaluation of transfer credit include the following:

- Transfer credit is generally awarded for academic course credit earned from regionally accredited institutions or from institutions that are candidates for regional accreditation if the course credit was earned during the candidacy period.
 - Occupational or some workforce courses from junior/community colleges, developmental courses, and courses classified as below freshman level by the sending institution are not transferable and will not count toward a degree.
 - Workforce courses that are agreed upon in articulation agreements between accredited institutions of higher education and UT Arlington are transferable. In addition, where workforce courses support a degree program, the Dean of the college may approve those courses. Courses earned as part of an Associate of Applied Science program from a regionally accredited school are accepted, with some limitations, for the Bachelor of Science in University Studies degrees.
 - Junior/community college courses transfer as lower-division (freshman or sophomore) credit. Undergraduate courses from senior colleges transfer at the same level, lower- or upper-division, as they were taken.
 - Graduate level course work may be transferred as upper-division credit at the written request of the student. Any graduate courses transferred in as upper-division undergraduate work will not be eligible for use at a later date in the graduate school.
 - No limit is placed on the total amount of course credit accepted in transfer from either junior or senior institutions. However, use of transfer credit toward a degree may be limited by the student's academic department.
 - Credit-by-examination earned at other institutions is treated as transfer credit only if the sending institution posts such credit on the student's transcript with regular catalog course numbers and with a grade of at least C, with the symbol CR, or with a similar designation representing credit earned without letter grade.
 - Evaluation of military transcripts that include ACE, AARTS, DD214, SMART, CCAF and the Defense Language Institute are evaluated for all admitted students. Eligible former members of the armed forces admitted as an undergraduate or readmitted as an undergraduate (after having withdrawn to perform military service) will be given course credit for all physical education courses the institution requires for an undergraduate degree and for additional semester credit hours, not to exceed 12, to satisfy any elective course requirements for the student's degree program for courses outside the student's major or minor. To be eligible, the student must have graduated from a public or private high school accredited by a generally recognized accrediting organization or from a high school operated by the US Department of Defense and is an honorably discharged former member of the armed forces of the United States who completed at least two years of service in the armed forces or discharged because of a disability per *Texas Education Code*, Section 51.3042. The University of Texas at Arlington will determine whether to award lower division academic course credit after a student is admitted to the university and has submitted the any of the following to the Office of Admissions:
 - A. An official ACE military transcript that describes the substance of the training completed by the student and verifies the student's successful completion of that training, as well as the recommended ACE credit to be awarded.
 - B. An official high school transcript from an accredited public or private high school or high school operated by the U.S. Department of Defense indicating the student's official graduation.
 - C. The student's DD214 indicating that the student was honorably discharged AND completed at least two (2) years of military service OR was discharged because of disability.
 - Credit in which a grade of D was earned is not transferable and will not count toward a degree.
 - Grade Point Averages earned at other institutions are not transferred to UT Arlington.
 - Transfer credit evaluations.
1. University course numbers may be modified in transfer credit evaluations to reflect differences in the number of credit hours. For example, if a course has 4 hours from the sending institution such as Mathematics "College Algebra," the course will be brought in as MATHTRAN 1000, since UT Arlington's "College Algebra" is a three-hour course.
 2. Courses taught at other institutions often have no direct UT Arlington equivalents, but may be accepted in transfer. If such a course is in a discipline offered at the University, credit without a specific course number is awarded in the appropriate academic department. General elective credit may be awarded if no equivalent department exists at the University; use of elective credit toward a degree may be restricted by the student's academic department.
 3. Courses taught at other institutions that are determined to be developmental are not accepted as transfer credit. Transfer credit of English courses taught at institutions in non-native English-speaking countries may be restricted or not accepted.

Transfer of Lower Division Course Credit

UT Arlington operates in accordance with Section 61.821, et seq., of the Texas Education Code. This statute recognizes that all lower division academic courses are fully transferable among public institutions and count toward the same degree at any public college or university in Texas. As such,

any Texas Higher Education Coordinating Board approved core or field of study curricula are fully transferable to equivalent UT Arlington academic programs with the following stipulations:

- No institution shall be required to accept in transfer more credit hours in a major than the number set out in the applicable Coordinating Board-approved Transfer Curriculum for that major, as prescribed by the current issue of the Coordinating Board's guide, *Transfer of Credit Policies and Curricula*.
- In any major for which there is not a Coordinating Board-approved Transfer Curriculum, no institution shall be required to accept in transfer more lower division course credit in the major applicable to a baccalaureate degree than the institution allows their non-transfer students in that major.
- The university will only accept grades of C or higher in transfer credit.
- No university shall be required to accept in transfer or toward a degree more than sixty-six (66) semester credit hours of academic credits earned by a student in a community college. Universities, however, may choose to accept additional credit hours.

UT Arlington is also a participant in the Texas Common Course Numbering System (TCCNS), a voluntary, co-operative effort among 136 Texas community colleges and universities to facilitate transfer of freshman and sophomore level general academic coursework. In alignment with *Texas Education Code, Section 61.830*, TCCNS provides a shared, uniform set of course designations for students and their advisors to use in determining both course equivalency and degree applicability of transfer credit on a statewide basis. When students transfer between two participating TCCNS institutions, a course taken at the sending institution transfers as the course carrying the same TCCNS designation at the receiving institution. For additional information, visit <https://www.tccns.org/>.

Catalog Eligibility for Texas Community College Transfers

A student transferring from an accredited public community college in Texas has the same choice of catalog, designating degree requirements, that would have been possible if the student's dates of attendance at the University had been the same as the dates of attendance at the community college. However, the student's choice of major may affect whether or not transferable course work may be counted toward a degree.

Resolution of Transfer Disputes

If the University refuses to accept lower-division credit earned at another Texas public institution of higher education, students and the institution where the credit was earned will be given written notice that the transfer credit was denied. If the denial of transfer credit is contested, the University will attempt to resolve the issue with the student and the sending institution according to applicable rules and guidelines of the Texas Higher Education Coordinating Board. If the dispute is not resolved to the student's satisfaction or to the satisfaction of the sending institution within 45 days of the initial notification, the University will notify the Coordinating Board of the denial of the transfer credit and the reason for the denial. The Coordinating Board will resolve the dispute and notify all involved parties of its findings. For more information contact the Office of Admissions at 817-272-6287.

Former and Continuing Students

A student who has attended UT Arlington previously, but has not been enrolled for one calendar year must reapply for admission by submitting an application for admission and application fee to the Office of Admissions. Continuing students, those who have been officially enrolled at UT Arlington during the calendar year, do not need to reapply for admission.

If a former student has attended another college or university since last enrolling at UT Arlington, the student must submit official transcripts from all institutions attended. Academic performance in such work may be factored into the enrollment/eligibility process. Former students on academic probation or suspension upon resigning from UT Arlington may be required to obtain special permission to re-enroll from the academic dean's office of their intended major or from the University Advising Center.

Any student who withdraws from the University to perform active military service (not including Texas National Guard training exercises) will not have to reapply for admission, but will be readmitted upon a request made within one year of being released from active military services and may be eligible for the same financial assistance provided before the student's withdrawal. This right to readmission is afforded under Section 51.9242, *Texas Education Code*.

Applicants cannot be re-admitted without required credentials. Former international students seeking readmission must refer to the catalog requirements for international students.

Transient Admission Overview

Undergraduate students who are pursuing degrees at other colleges and universities during the long session (fall and spring semesters) and wish to continue their studies at the University for one semester may be admitted to some undergraduate programs as transient students. Individuals who wish to enroll as a transient student must submit an admission application, application fee and official transcript from their home campus. Admittance requires good academic standing from the home institution. Transient students will be classified as non-degree seeking students and therefore are not eligible for Financial Aid through UT Arlington. Transient students may not enroll in two consecutive semesters at UT Arlington. A transient student who wishes to be admitted to the University on a regular basis must apply for admission in accordance with the procedures, criteria and deadlines governing transfer admission. All transcripts from previously attended institutions must be submitted. Students who attend the University as transient students and then are admitted on a regular basis are immediately subject to the University's academic regulations as well as the rules of the Texas Success Initiative (see

section below). In particular, such students will be placed on scholastic probation upon enrollment if their grade point average for work undertaken as a transient student at the University is below 2.0. All transient students are classified as non-degree seeking and therefore not eligible for Financial Aid.

Texas Success Initiative Overview

All new entering UT Arlington undergraduate degree-seeking students must meet the requirements of the Texas Success Initiative (TSI). (Texas Education Code, Section 51.3062 and 19 Texas Administrative Code §4.51, et seq. ([https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage/?sl=T&app=2&p_dir=N&p_rloc=187781&p_tloc=&p_ploc=1&pg=28&p_tac=106040&ti=19&pt=1&ch=4&rl=51](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=T&app=2&p_dir=N&p_rloc=187781&p_tloc=&p_ploc=1&pg=28&p_tac=106040&ti=19&pt=1&ch=4&rl=51)))

The Texas Success Initiative has been developed by the state legislature to ensure student success at institutions of higher education. The two major steps of the program are (1) assessment of each student's academic skills in reading, writing, and math before enrolling and, (2) advisement into appropriate developmental coursework for any academic skills that need improvement. Under the Texas Success Initiative, all new incoming students must take the TSI Assessment test unless the student is exempt.

You are exempt if you:

- took the SAT I less than 5 years ago and scored: 1) at least 480 on the Evidence-Based Reading and Writing portion and 2) 530 on the math portion (There is no combined score.)
- took the ACT less than 5 years ago and made a qualifying score of 23 composite, with 19 English and 19 math.
- took the STAAR EOC exams less than 5 years ago and made a qualifying English III score of 4000+ and Algebra II score of 4000+.
- took the TAKS test less than 5 years ago and made a qualifying score of 2200 on the math subsection and/or 2200 on the English Language Arts subsection, with a score of at least 3 on the writing subsection.
- have a bachelor's or associate degree from an institution of higher education.
- are serving on active duty as a member of the armed forces of the United States, the Texas National Guard, or as a member of a reserve component of the armed forces of the United States and have been serving for at least three years preceding enrollment.
- were honorably discharged, retired or released from active duty on or after August 1, 1990 as a member of the armed forces of the United States, the Texas National Guard, or as a member of a reserve component of the armed forces of the United States.
- a student who has previously attended any institution and has been determined to have met readiness standards by that institution.
- a student who is enrolled in a certificate program of one year or less (Level-One certificates, 42 or fewer semester credit hours or the equivalent) at a public junior college, a public technical institute, or a public state college.
- are a non-degree seeking or non-certificate-seeking student.

Taking the TSI Assessment

UT Arlington requires incoming students who are not exempt to take the TSI Assessment Exam. The UT Arlington Testing Services (<https://www.uta.edu/student-success/resources/testing-services/proficiency-and-other-exams/tsi/>) office offers the opportunity for students to take this exam.

If you took the TSI Assessment and did not have the scores sent to UT Arlington, please contact Testing Services. (<https://www.uta.edu/student-success/resources/testing-services/>)

If you attended a Texas public college for dual credit while you were in high school or are transferring from a Texas public college, your test scores should be listed on the transcript you submit to UT Arlington. It is your responsibility to ask your community college to send an official transcript to the UT Arlington Office of Admissions.

If you do not pass (<https://www.uta.edu/student-success/advising/advising-resources/tsi/>) a section of the TSI Assessment, you are required to enroll in developmental coursework for the failed areas. You should speak with your advisor to ensure that you are enrolled in the right courses.

Degree Requirements

General Core Requirements (p. 50)

Undergraduate Degree Requirements (p. 54)

Graduate Degree Requirements (p. 60)

Students are responsible for requesting the preparation of a degree plan through their departmental academic advisor during the semester following admission to a degree program. No deviation from a degree plan will be allowed except with the written approval of the departmental advisor. Students should follow the graduation procedures described in the Graduation section of this catalog (p. 117) in order to be eligible for degree conferral.

Each student must complete degree requirements in accordance with the Catalog in force at the time the student entered the program in which the degree will be awarded or, at the student's option, the catalog of any subsequent year in which the student was in residence. If a student chooses to complete degree requirements in accordance with the catalog of a year subsequent to that in which he/she entered the degree program.

Please note that changes in University regulations and policies become effective for all enrolled students in the year for which the catalog is in force, regardless of the year of initial enrollment. Thus, students may choose to satisfy degree requirements specified in an earlier catalog, but all must observe University regulations and follow graduation procedures prescribed in the Catalog in force in the intended semester of graduation.

General Core Requirements

GENERAL CORE CURRICULUM FOR A BACHELOR'S DEGREE

The University requires the following courses for each degree:

COMMUNICATION

Select two of the following:

6

COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING
ENGL 1301	RHETORIC AND COMPOSITION I
ENGL 1302	RHETORIC AND COMPOSITION II
THEA 1303	FUNDAMENTALS OF PRESENTATION

Total Hours

6

CREATIVE ARTS

Select one of the following:

3

ARCH 1301	INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN
ART 1301	ART APPRECIATION
ART 1309	INTRODUCTION TO ART HISTORY I: PREHISTORIC THROUGH 16TH CENTURY
ART 1310	INTRODUCTION TO ART HISTORY II: 17TH CENTURY TO THE PRESENT
DNCE 1300	DANCE APPRECIATION
ENGL 1375	INTRODUCTION TO CREATIVE WRITING
THEA 1342	THEATRE AND FILM APPRECIATION
THEA 1343	INTRODUCTION TO THEATRE
MUSI 1300	MUSIC APPRECIATION
MUSI 1302	JAZZ APPRECIATION
MUSI 1304	HISTORY OF ROCK MUSIC
MUSI 2300	INTRODUCTION TO WORLD MUSIC
MUSI 2301	APPRECIATION OF MUSIC IN FILM

Total Hours

3

GOVERNMENT/POLITICAL SCIENCE

POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3

Total Hours

6

LANGUAGE, PHILOSOPHY AND CULTURE

Select one of the following:

3

ANTH 2322	GLOBAL CULTURES
ARAB 2310	ARABIC CULTURE IN THE WORLD
ARAB 2314	INTERMEDIATE ARABIC II
ARCH 2300	MASTERWORKS OF WESTERN ARCHITECTURE
ART 1317	INTRODUCTION TO ART HISTORY III: AFRICA, ASIA, AMERICAS
ASL 2314	INTERMEDIATE AMERICAN SIGN LANGUAGE II
CHIN 2310	CHINESE CULTURE IN THE WORLD
CHIN 2314	INTERMEDIATE CHINESE II
CLAS 1300	INTRODUCTION TO CLASSICAL MYTHOLOGY
DIVR/WOMS 2315	INTRODUCTION TO LGBTQ+ STUDIES
ENGL 2303	TOPICS IN LITERATURE
ENGL 2309	WORLD LITERATURE
ENGL 2319	BRITISH LITERATURE
ENGL 2329	AMERICAN LITERATURE

FREN 2310	FRENCH AND FRANCOPHONE CULTURES IN THE WORLD
FREN 2314	INTERMEDIATE FRENCH II
GLOBAL 2301	INTRODUCTION TO GLOBAL ISSUES
GREK 2314	GREEK LEVEL IV
HIST 2377	FLIGHT CULTURE AND THE HUMAN EXPERIENCE
KORE 2310	KOREAN CULTURE IN THE WORLD
KORE 2314	INTERMEDIATE KOREAN II
LATN 2314	LATIN LEVEL IV
LING 2371	LANGUAGE IN A MULTICULTURAL USA
MAS 2300	INTRODUCTION TO MEXICAN AMERICAN STUDIES
PHIL 1304	CONTEMPORARY MORAL PROBLEMS
PHIL 2300	INTRODUCTION TO PHILOSOPHY
PORT 2314	INTERMEDIATE PORTUGUESE II
RUSS 2310	RUSSIAN CULTURE IN THE WORLD
RUSS 2314	INTERMEDIATE RUSSIAN II
SOCI/INTS 1310	INTRODUCTION TO POPULAR CULTURE
SPAN 2314	INTERMEDIATE SPANISH II
SPAN 2310	HISPANIC CULTURE IN THE WORLD
SPAN 2315	INTERM SPAN HERITAGE SPEAKERS

Total Hours

3

LIFE AND PHYSICAL SCIENCE

Select two of the following:

6

ASTR 1345	INTRODUCTORY ASTRONOMY I
ASTR 1346	INTRODUCTORY ASTRONOMY II
BIOL 1333	DISCOVERING BIOLOGY: MOLECULES, CELLS AND DISEASE
BIOL 1334	LIFE ON EARTH: EVOLUTION, ECOLOGY AND GLOBAL CHANGE
BIOL 1441	CELL AND MOLECULAR BIOLOGY
BIOL 1442	EVOLUTION AND ECOLOGY
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I
BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II
CHEM 1345	CHEMISTRY IN THE WORLD AROUND US
CHEM 1400	INTRODUCTORY CHEMICAL PRINCIPLES
CHEM 1441	GENERAL CHEMISTRY I
CHEM 1451	CHEMISTRY FOR HEALTH SCIENCES
ENVR 1301	INTRODUCTION TO ENVIRONMENTAL SCIENCE
ENVR 1330	GLOBAL WARMING
GEOL 1301	EARTH SYSTEMS
GEOL 1302	EARTH HISTORY
GEOL 1330	GLOBAL WARMING
GEOL 1340	WEATHER AND CLIMATE
GEOL 1350	INTRODUCTION TO OCEANOGRAPHY
GEOL 1360	GEOLOGIC HAZARDS
PHYS 1300	INTRODUCTION TO MUSICAL ACOUSTICS
PHYS 1301	PHYSICS FOR NON SPECIALISTS I
PHYS 1302	PHYSICS FOR NON SPECIALISTS II
PHYS 1351	ENERGY AND ENVIRONMENT
PHYS 1441	GENERAL COLLEGE PHYSICS I
PHYS 1442	GENERAL COLLEGE PHYSICS II
PHYS 1443	GENERAL TECHNICAL PHYSICS I

PHYS 1444

GENERAL TECHNICAL PHYSICS II

Total Hours

6

MATHEMATICS

Select two of the following:

6

MATH 1301	CONTEMPORARY MATHEMATICS
MATH 1302	COLLEGE ALGEBRA
MATH 1303	TRIGONOMETRY
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS
MATH 1324	ALGEBRA AND TRIGONOMETRY
MATH 1325	ANALYTIC GEOMETRY
MATH 1327	ARCHITECTURAL CALCULUS WITH ANALYTIC GEOMETRY
MATH 1330	ARITHMETICAL PROBLEM SOLVING
MATH 1331	GEOMETRICAL INFERENCE AND REASONING
MATH 1332	FUNCTIONS, DATA, AND APPLICATIONS
MATH 1421	PREPARATION FOR CALCULUS
MATH 1426	CALCULUS I
PHIL 2311	LOGIC

Three (3) semester credit hours must be selected from the Mathematics list above. The remaining required 3 semester credit hours can be selected from the Mathematics list above or from the following courses: MATH 2425 Calculus II, MATH 2326 Calculus III

Total Hours

6

SOCIAL AND BEHAVIORAL SCIENCE

Select one of the following:

3

AAS 2300	INTRODUCTION TO AFRICAN AMERICAN STUDIES
ANTH 1306	INTRODUCTION TO ANTHROPOLOGY
ANTH 2339	INTRODUCTION TO ARCHAEOLOGY
CRCJ 2334	INTRODUCTION TO THE CRIMINAL JUSTICE SYSTEM
ECON 2305	PRINCIPLES OF MACROECONOMICS
ECON 2306	PRINCIPLES OF MICROECONOMICS
ECON 2337	ECONOMICS OF SOCIAL ISSUES
FINA 2330	MONEY, FINANCE AND THE MODERN CONSUMER
GEOG 2302	HUMAN GEOGRAPHY
GEOG 2303	WORLD REGIONAL GEOGRAPHY
IE 2308	ECONOMICS FOR ENGINEERS
KINE 2350	PUBLIC HEALTH: PRINCIPLES AND POPULATIONS
LING 2301	INTRODUCTION TO THE STUDY OF HUMAN LANGUAGE
MANA 2302	COMMUNICATIONS IN ORGANIZATIONS
MODL 2301	INTRODUCTION TO WORLD LANGUAGES
PSYC 1315	INTRODUCTION TO PSYCHOLOGY
SOCI 1311	INTRODUCTION TO SOCIOLOGY
SOCI 2312	SOCIAL PROBLEMS
SOCW 2302	LIFE SPAN DEVELOPMENT AND HUMAN BEHAVIOR
SOCW 2361	INTRODUCTION TO SOCIAL WORK
SPAN 2300	SPANISH IN THE UNITED STATES

Total Hours

3

U.S. HISTORY

Select two of the following:

6

HIST 1301	HISTORY OF THE UNITED STATES TO 1865
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HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
Total Hours		6

FOUNDATIONAL COMPONENT AREA OPTION

Any course listed above. A course may only fulfill one component area. 3

Total Hours 3

TOTAL HOURS

Total Hours 42

OLD--through summer 2014*

ENGLISH COMPOSITION

Six hours (1301 and 1302 or suitable substitutes).

LITERATURE

Three hours of English or modern language literature or other approved substitute.

LIBERAL ARTS ELECTIVE

Three hours above the freshman level of literature, or social and cultural studies designated as taught in the College of Liberal Arts, or fine arts or philosophy, or technical writing.

U.S. HISTORY

Six hours of American history or three hours of American and three hours of Texas history. (This requirement is mandated by state law and cannot be waived.)

U.S. POLITICAL SCIENCE

Six hours covering U.S. and Texas constitutions. (This requirement is mandated by state law and cannot be waived.)

MATHEMATICS

Six hours (MATH 1301 or higher. Credit will not be given for both MATH 1301 and 1302.)

NATURAL SCIENCE

Eight hours in lab science (biology, chemistry, geology and/or physics).

SOCIAL/CULTURAL STUDIES

Three hours*.

FINE ARTS

Three hours from art, dance, music, architecture or theatre arts.

*The Social and Cultural Studies requirement will be satisfied by designated courses which have been approved by the Undergraduate Assembly. For a list of approved courses, contact the University Advising Center or see <https://www.uta.edu/universitycollege/current/academic-planning/uac/index.php>. (<https://www.uta.edu/universitycollege/current/academic-planning/uac/>)

International students whose secondary education was taught in their native tongue (other than English) may meet the modern language requirement for the Bachelor of Arts degree by successfully completing six additional hours in English beyond the general requirements for a bachelor's degree. The eight additional hours needed to fulfill the total degree requirements must be approved by the student's major department and must be included in the degree plan. The major department has the right to stipulate the modern language permitted for the bachelor's degree, provided the language is taught at UT Arlington.

Undergraduate

Undergraduate Admission to a Degree Program

Admission to the University's degree programs is determined by application to the academic unit offering the degree.

Degree Plan

Students are responsible for requesting a degree plan through their major department advisor during the semester following admission to a degree program. No deviation from a degree plan will be allowed except with the written approval of the department advisor, the chair of the major department and the academic dean.

Multiple Undergraduate Degrees at UT Arlington

While a student should carefully consider with an academic advisor if obtaining multiple undergraduate degrees is necessary for a given career path, it is possible for students to earn more than one undergraduate degree under the certain conditions and limitations.

Double Major

A student who fulfills the specified requirements for two different majors under a single degree, simultaneously prior to graduation, completes a double major. For example, a student may complete a Bachelor of Arts in History and a Bachelor of Arts in Political Science – both B.A. degrees - or a Bachelor of Science in Psychology and a Bachelor of Science in Biology – both B.S. degrees. Prerequisite and field of study courses are required to complete both majors.

When applying for graduation, a student should note on the application that he/she will be completing an additional major. One diploma is issued and both majors are recorded on a student's transcript and diploma. Also, upon graduation, a student can attend multiple commencement ceremonies if the majors span across different colleges, though both majors are announced at any ceremony and college-specific policies apply for each ceremony.

Dual Degree

A student who fulfills the specified requirements for two different majors from different degrees, simultaneously prior to graduation, will complete a dual degree. For example, a student may complete a Bachelor of Science in Biology and a Bachelor of Arts in Public Relations – a B.S. degree and a B.A. degree. The student must complete a minimum additional 30 credit hours beyond the degree plan with the greater required credit hours and also complete all prerequisite and field of study courses for both degrees.

Upon graduation, the student must complete two graduation applications (one application for each degree) and pay the processing fee for each degree. Upon graduation a student can attend multiple commencement ceremonies if the majors span across different colleges, though both degrees are announced at any ceremony and college-specific policies apply for each ceremony.

Second Baccalaureate Degree

A student who earns a bachelor degree subsequent to receiving the first bachelor degree will complete a second baccalaureate degree. The student must complete at least 30 credit hours in residence, above and beyond the minimum number of hours to complete the first degree. One diploma is issued and the new degree is added to the student's transcript.

Academic Advising and Limitations

Students seeking a double major or dual degree must:

- seek regular advising for each degree program from the department offering the major.
- understand the requirements to remain in and graduate from each degree program.
- adhere to proper course sequencing and complete the proper prerequisite and field of study courses for each degree program.

All requirements to enter a major in a given department must be met in order to pursue that major/degree. Students who are not meeting the requirements to remain in a particular degree program can be removed from that major/degree and prohibited from further enrolling in coursework to earn the additional undergraduate degree.

A student can only work on two major/degree programs simultaneously. Some degree programs may limit or not permit the pursuit of a double major or dual degree. Students should discuss possible limitations with both departmental advisors to determine what limitations may apply. Additional major degrees cannot be added to students' degree plans until they have completed at least 30 hours of college coursework. It is also important to note that once a degree has been conferred and applied to a student's transcript the degree cannot be removed from the academic record.

Graduate Course to Undergraduate Program

Graduate level course work may be transferred as upper-division credit at the written request of the student. Any graduate courses transferred in as upper-division undergraduate work will not be eligible for use at a later date in the graduate school.

Minor Field of Study

A minor requires at least 18 semester hours in a given program, including six hours of advanced work. Specific course sequences for a minor are determined by the program offering the minor. Since some undergraduate degree programs do not offer minors, students should consult an advisor in their program of study.

In a case where the student wishes to pursue a minor comprised of courses within the same college as that which offers his/her major program of study, the student and his/her advisor will propose a program of study/list courses for approval by the dean of the college.

In a case where the student wishes to pursue a minor which includes one or more courses offered by a different college from that which offers his/her major program of study, the student and his/her advisor will propose a program of study/list of courses for approval by both (a) the dean of the college which offers his/her major, and (b) the dean of the college which offers the minor courses.

In either case, the approved minor program of study will be forwarded to the Office of the Registrar for verification and notation on the student's transcript.

The Core Curriculum

Given the rapid evolution of necessary knowledge and skills and the need to take into account global, national, state, and local cultures, the core curriculum must ensure that students will develop the essential knowledge and skills they need to be successful in college, in a career, in their communities, and in life. Therefore, with the assistance of the Undergraduate Education Advisory Committee and pursuant to *Texas Education Code*, Section 61.821, the Texas Higher Education Coordinating Board approved a 42 semester credit hour core curriculum for all undergraduate students in Texas, including a statement of purpose, six core objectives, and common component areas.

Statement of Purpose

Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Core Objectives

- **Critical Thinking Skills** - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Communication Skills** - to include effective development, interpretation and expression of ideas through written, oral and visual communication
- **Empirical and Quantitative Skills** - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- **Teamwork** - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
- **Personal Responsibility** - to include the ability to connect choices, actions and consequences to ethical decision-making
- **Social Responsibility**: to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

The UT Arlington Core Curriculum is comprised of the following component areas:

- Communication
- Mathematics
- Life and Physical Sciences
- Language, Philosophy and Culture
- Creative Arts
- American History
- Government/Political Science
- Social and Behavioral Sciences
- Foundation Area Option

Click here (p. 50) for the requirements and approved courses.

Core Complete: Students who transfer from a Texas public community college or public university and are certified as core complete shall have satisfied the core requirements of UT Arlington. Academic departments may, in some instances, require specific courses outside their major as prerequisites for major course work. (See "Credit Evaluation" and "Transfer of Lower Division Course Credit" under Undergraduate Admission section, p.15-16.)

Transcript Codes: The Transcript Codes identify specific core requirements on a student's transcript. For further information on core transferability, consult with an academic advisor, or refer to the Texas Administrative Code.

Field of Study: Students who complete an approved field of study curriculum in whole or in part will receive academic credit for the equivalent courses within their selected field of study at UT Arlington. View the field of study curriculum approved by the Texas Higher Education Coordinating Board at www.thecb.state.tx.us (<http://www.thecb.state.tx.us/>).

Note: Consult a specific academic department in this catalog regarding further requirements for a degree in your area of interest.

Competence in Computer Use

Graduating students should be proficient in the use of computers. Proficiency is understood as the ability to use word-processing, database/spreadsheet and representative software of one's major discipline. Each student should be able to tap the communications, analytical and information-retrieval potential of computers to solve research problems and be able to evaluate the results. Students should consult their departmental, school or college advisors to determine the mechanisms by which they can demonstrate proficiency. An examination or completion of a department- or college-designated course may be required.

Competence in Communication

Students should have proficiency in communication skills including interaction in classroom settings to meet the needs of course work and the use of acceptable grammar and pronunciation in formal presentations. Students should consult their individual department, school or college advisors to determine the mechanisms by which they can demonstrate this competency. A proficiency examination or completion of a department- or college-designated course may be required.

Tuition for Excessive Undergraduate Hours

Pursuant to state law, students who first enrolled in any college or university in Fall 1999 or a later semester may be required to pay a higher tuition rate if attempted undergraduate credit hours exceed a designated limit. Students who first entered a college or university in Fall semester 1999 through Summer semester 2006 may be required to pay a higher tuition rate when the credit hours attempted at publicly-funded Texas colleges or universities exceed by 45 or more the hours required for the student's declared baccalaureate degree. Students who first entered a college or university in Fall semester 2006 and thereafter may be required to pay higher tuition rates when the credit hours attempted at publicly-funded Texas colleges or universities exceed by 30 or more the hours required for the student's declared baccalaureate degree. This requirement applies only to the first baccalaureate degree earned; students already holding one baccalaureate degree are exempt when enrolled in a second baccalaureate degree program.

This requirement applies to **all credit hours attempted at any publicly-funded Texas institution, including courses with a grade of D, F, or W**, as well as courses serving as a grade replacement and courses that have been grade replaced or grade excluded or grade forgiven. Credit hours earned at a private or an out-of-state institution are not counted toward the limit. Some other exceptions may apply.

For more information about this state law, see www.statutes.legis.state.tx.us (<http://www.statutes.legis.state.tx.us/Docs/ED/htm/ED.54.htm#54014>) (Texas Education Code, secs. 54.014 and 61.0595), or UT Arlington's excessive hours website (http://www.uta.edu/aao/recordsandregistration/content/student_services/excessive_hours.aspx).

Residency Requirements

The degree requirements for graduation in specific divisions of the University are explained at the beginning of each division in the catalog. In addition:

- The University of Texas at Arlington (UT Arlington) requires that each candidate for an undergraduate degree must complete and receive credit earned in residence at UT Arlington for a minimum of 25 percent of the semester credit hours required for a degree. The term "in residence" is defined as in residence at the U.T. System component which ultimately grants the degree. Types of credit that do not meet UT Arlington's credit-in-residence requirement are:
 - Transfer work of any kind
 - Credit by examination
 - Advanced placement credit
 - International Baccalaureate credit
 - High school dual enrollment credit
 - Military training
 - Foreign study credit that appears on the student's transcript as transfer credit
- Each candidate for an undergraduate degree must complete and receive credit in residence for at least 18 semester hours of advanced (3000/4000 level) course work, to include 12 hours of advanced courses in the major subject
- Successful completion of a course of study prescribed by the major department, including a minimum of 36 advanced hours, is required for an undergraduate degree at UT Arlington. Courses numbered with a first digit of 3 or 4 are classified as advanced courses.
- A minimum overall grade point average of 2.000 (C average) is required for an undergraduate degree. In addition, a minimum grade point average of 2.000 in the major is required. Individual units will determine the specific courses to be included in the calculation of the GPA in the major, and may have higher overall GPA requirements for graduation than a 2.000. (The College of Business requires a 2.000 overall grade-point average, 2.000 on all course work taken in the college, and 2.000 within the major and concentration area for those majors having a concentration.)
- Transfer credit is generally awarded for academic course credit earned from regionally accredited institutions or from institutions that are candidates for regional accreditation if the course credit was earned during the candidacy period. At the undergraduate level, no more than 30 of the semester hours required for any degree may be completed by correspondence and/or extension, but may include online course work or other coursework

approved by the Dean of the academic department. This includes coursework from non-regionally-accredited institutions and Workforce Education courses. Workforce courses that are agreed upon in articulation agreements between accredited institutions of higher education and UT Arlington are transferable. In addition, where workforce courses support a degree program, the Dean of the college may approve those courses. Courses earned as part of an Associate of Applied Science program from a regionally accredited school are accepted, with some limitations, for the Bachelor of Science in University Studies degrees.

- Only the first four semester hours of exercise and sport activity (EXSA) and dance activity (DNCA) courses may be counted toward graduation. Additional activity courses taken will not be calculated in the student's grade point average. Each college, school or department will determine if activity courses satisfy degree requirements. Consult department academic advisor.
- Graduate courses (numbered 5000 and above) cannot be used to fulfill undergraduate degree requirements except in programs approved by the Undergraduate Assembly.
- To qualify for a second bachelor's degree, a student must complete all the degree requirements as stated in the catalog for that degree and must complete no fewer than 30 semester hours beyond those of the bachelor's degree program requiring the greater number of hours. The additional hours must be taken in residence at UT Arlington.

The Office of the Registrar conducts automated degree audits for each undergraduate candidate for graduation to ensure that no less than 25 percent of degree requirements were completed in residence at UT Arlington.

UT Arlington's credit-earned-in-residence regulations allow colleges and departments to impose additional residence requirements, but no college or department can override the minimum residency requirement [1].

To qualify for a second bachelor's degree, a student must complete all the degree requirements as stated in the catalog for that degree and must complete no fewer than 30 semester hours beyond those of the bachelor's degree program requiring the greater number of hours. The additional hours must be taken in residence at UT Arlington.

Transfer credit is generally awarded for academic course credit earned from regionally accredited institutions or from institutions that are candidates for regional accreditation if the course credit was earned during the candidacy period. At the undergraduate level, no more than 30 of the semester hours required for any degree may be completed by correspondence and/or extension, but may include online course work or other coursework approved by the Dean of the academic department. This includes coursework from non-regionally-accredited institutions and Workforce Education courses.

Two-Year Transfer Programs

The course offerings of the University are sufficient in the following fields for a student to complete the first two years of study toward a baccalaureate degree. The student must transfer to another institution to complete their studies. Information about the programs may be obtained from the Allied Health Coordinator in Life Sciences.

Two-Year Transfer Programs

- Gerontology
- Dietetics
- Occupational Therapy
- Pharmacy
- Dental Hygiene
- Rehabilitation Science
- Prosthetics and Orthotics

Professions

Health Professions

Medicine and Dentistry

In general, medical and dental school admission committees do not state a preference about an undergraduate major field, leaving the student free to choose a degree program suited to individual abilities and interests. Therefore, the student may choose any major, after conferring with an advisor, if the minimum requirements stated by the professional schools are met.

Admission Requirements for The University of Texas Medical and Dental Schools

English

6 semester hours of college English.

Biology

14 semester hours (12 semester hours of lecture & 2 semester hours of formal lab) of Biological Sciences.

Mathematics

Statistics (MATH 1308) is required. Some school may accept Calculus in place of Statistics, however you will need to confirm with the Health Professions Advisor.

Physics

8 semester hours, as required for college science majors, including the corresponding laboratory experience are required.

Chemistry

8 semester hours of General Chemistry AND 8 semester hours of Organic Chemistry.

Testing

The Medical College Admission Test (New MCAT) or Dental Aptitude Test (DAT) as required.

It is strongly recommended that students taking the 2015 MCAT complete Biochemistry I, Intro to Psychology, and Intro to Sociology. These courses will be covered on the new MCAT.

These requirements are representative of admission requirements for most other American medical and dental schools.

Health Professions Counseling and Advising

The Health Professions Counseling and Advising Center, located in Room 206, Life Science Building, provides counseling for students interested in medicine, dentistry, optometry, pharmacy and veterinary medicine. All pre-professional students should contact the office upon entering the University. The services provided include new student orientation, academic advising, career counseling and assistance in applying to professional school. In addition, numerous career materials including catalogs, applications and testing information are available in Room 206, Life Science Building. The health professions advisor coordinates the Health Professions Advisory Committee's evaluation recommended for each pre-medical and pre-dental student before applying to professional school. Students applying to professional schools should contact the health professions advisor at least one year prior to applying.

The Health Professions Advisory Committee, which is responsible for recommending students for medical and dental schools, bases evaluations on three factors: a student's academic record, resume, and personal qualities. The ideal applicant will demonstrate strength in all three areas. The committee may decline to recommend students who have not completed at least a portion of his/her pre-medical or pre-dental sciences at The University of Texas at Arlington, or may be unable to recommend students because their personal qualities are not known. Therefore, it is important that a student actively participate in health profession programs involving medical schools and the pre-health related student organizations. Also, students should interact with the faculty and pre-medical advisor for at least one year prior to medical school application so the advisors will have an opportunity to become familiar with the students' individual background.

The Legal Profession

Students are free to choose the degree program that best suits their interests and abilities; law schools do not require any particular major, degree plan, or courses. Students at UTA who are considering law school may take one of two routes, either: (1) selecting any major and minor, or (2) pursuing a major or minor that is specified as pre-law. Students wishing to focus on law-related courses at the undergraduate level should consider the pre-law degree plans in political science, criminal justice, philosophy, and history. Students who do not follow a pre-law degree track should choose any major and consult the advisor in the major department and/or in the University Advising Center. They also should confer with an advisor in the UTA Pre-Law Center with regard to recommended additional courses, depending on their degree plans. Law schools look favorably on students with diverse academic interests. UTA graduates not only in the liberal arts and business but also in math, biology, and engineering, for example, have been successful in law school and beyond.

30 Hours to Major Requirement

30 Hours to Undergraduate Major Policy.

1. Each student enrolled in a bachelor's degree program at UT Arlington shall file a degree plan no later than the end of the second regular semester immediately following the semester in which the student earned a cumulative total of 30 or more semester credit hours for coursework successfully completed by the student, including transfer courses, international baccalaureate courses, dual credit courses, and any other course for which the institution the student attends has awarded the student college course credit, including course credit awarded by examination.

2. A student transferring to UT Arlington who begins their first semester with 30 or more semester credit hours of course credit for courses shall file a degree plan no later than the end of the student's second regular semester (fall or spring term). A student whose first term is summer will have through the end of his/her fall term to file the degree plan. Students who are unable to be admitted to a major of their choosing must see an academic advisor in the University Advising Center for special permission to enroll.

3. At each registration for a semester, a student who is required to have filed a degree plan before that semester shall verify that:

(1) the student has filed a degree plan; and

(2) the courses for which the student is registering are consistent with that degree plan.

4. If a student does not timely file a degree plan as required, will be notified that the degree plan is required by law under Senate Bill 25 and require the student to consult with an academic advisor for that purpose during the semester in which the student receives the notice. The student may not obtain an official transcript from UT Arlington until they have filed a degree plan.

Reverse Articulation Requirement

Legislation passed as part of House Bill 3025 established a reverse articulation program for the awarding of an Associate degree. Students who transferred from, or previously attended, a lower-division institution of higher education, earned at least 30 semester credit hours for coursework at the lower-division institution, and have completed 90 semester credit hours while enrolled at a general academic institution, will be contacted by their general academic institution to provide permission to send the lower-division institution the student's transcript. The lower-division institution will evaluate the transcript to see if the student is eligible to receive an Associate's degree.

For additional information regarding the UT Arlington's administration of the Texas timely completion policy, please visit http://web.uta.edu/aao/recordsandregistration/content/student_services/timely_completion.aspx.

Graduate

Each graduate student must complete degree requirements in accordance with the catalog in effect at the time the student entered the graduate program in which the degree will be awarded or, at the student's option, the catalog of any subsequent year in which the student was in residence.

Please note that changes in University regulations and policies become effective for all enrolled students in the year for which the catalog is in effect, regardless of the year of initial enrollment. Thus, students may choose to satisfy degree requirements specified in an earlier catalog, but all must observe University regulations and follow graduation procedures prescribed in the catalog in effect in the intended semester of graduation.

Enrollment Requirements

All students must be enrolled in their graduate program in any term in which they are completing graduate degree requirements including taking the final master's exam, conducting research, or defending a thesis or dissertation. Enrollment in courses outside the major field will not satisfy enrollment requirements. Enrolled students who do not complete all requirements by the beginning of the next long semester must enroll to complete remaining degree requirements.

Students who are completing their final semester of study must be enrolled and receive an acceptable grade in the appropriate internship, project, thesis research or dissertation research course in order to graduate.

Funded Students

Funded students are normally expected to be enrolled as full time students while holding an assistantship or associateship. However, master's or doctoral students who need fewer hours to complete their degrees may petition for a waiver of full time enrollment as described in the Assistantship/ Associateship Policy (p. 89) section of this catalog.

Credit Toward Degrees and Certificates

Only courses completed with a grade of A, B, C, or P can satisfy graduate degree or certificate requirements. However, courses in which grades of D or F are earned will affect a student's grade-point average. A student must have a B (3.000) grade-point average in courses included in their degree plan and a B (3.000) average in all work undertaken as a graduate student to have credits applied toward a graduate degree or certificate.

Credit for Repeated Courses

A student may repeat a course only if that course is specifically designated in this catalog as one that can be repeated for credit. A student who fails to receive credit (earns a grade of D or F) may repeat the course in order to obtain credit, in which case the grades for both attempts will count in computing the student's overall grade-point average. No student will be allowed to repeat a course in order to change a passing grade of C or higher.

Course Credit Applied to More Than One Degree

No course that has been applied to any degree, at any graduate or undergraduate institution, may be applied to any other degree, either directly or by substitution except in approved dual degree or approved fast track programs. The amount of shared credit between degrees in dual degree programs is limited and varies with the total number of hours needed to complete both degrees. Similarly, the amount of credit that can be shared in fast track programs is also limited. Details may be found in descriptions provided by participating programs elsewhere in this catalog.

Credit for Advanced Undergraduate Coursework

Up to nine hours of advanced undergraduate credit from UT Arlington or another institution may be applied to a master's degree program if the hours have not been used to earn a previous degree and have the approval of the appropriate Graduate Studies Committee and the Academic Dean. Approved fast track programs may allow dual credit. Credit hours from undergraduate coursework may not be used to satisfy doctoral degree requirements.

Earning Graduate Course Credit as a UT Arlington Undergraduate Student

Courses taken in undergraduate status may be applied to a master's program but may not be used to satisfy requirements of a doctoral program.

Some departments do not permit students to enroll in graduate courses unless they have been admitted to a graduate program. Others allow students enrolled as undergraduates to take a limited amount of graduate coursework under the conditions described below.

All undergraduate students must consult with the appropriate graduate advisor before attempting to register for graduate courses.

Advanced UT Arlington Undergraduates (Current Seniors)

An undergraduate student at the University of Texas at Arlington may not use graduate courses (numbered 5000 and above) to fulfill undergraduate degree requirements except as part of an approved fast track program. However, an undergraduate needing no more than 12 hours in one term (six semester hours in one summer session) to complete all the requirements for a bachelor's degree may register for graduate courses and apply them toward a master's degree at UT Arlington under the following conditions:

1. In no case may a student previously dismissed from or denied admission to a graduate program enroll in graduate courses or reserve courses for graduate credit.

2. All work for undergraduate credit must be completed during that term in which the student initially enrolls in graduate courses.
3. Total registration for all work may not exceed 15 semester hours in a term (or 12 semester hours in the summer sessions).
4. The student must submit to the graduate advisor a "Reservation of Courses for Graduate Credit by Undergraduate Students" form (available from graduate advisors). The reservation must be approved by the graduate advisor and the Academic Dean. The Office of the Registrar must certify that the reserved credit will not be applied to the student's undergraduate degree requirements.
5. The student must have at least a 3.000 undergraduate GPA to be eligible to enroll in a graduate course and to reserve it for graduate degree credit.
6. Courses taken at UT Arlington and reserved for graduate credit may be applied to a master's degree program only if a grade of A, B, C, or P was earned.
7. Credit is officially accepted for application to a graduate program when a student is unconditionally admitted to UT Arlington.
8. A maximum of 12 semester hours of graduate level courses may be reserved.

Students Holding Bachelor or Higher Degrees Enrolled as Degreed Undergraduates

Students who have completed their undergraduate studies and have been awarded their bachelor's degree may enroll as degreed undergraduates in graduate-level course work and receive graduate credit at UT Arlington under the following conditions:

1. Courses taken at UT Arlington and reserved for graduate credit may be applied to a master's degree program only if a grade of A, B, C, or P was earned.
2. No more than 12 semester hours of credit earned while a degreed undergraduate may be applied for credit toward a master's degree. Students must file a request, approved by the graduate advisor, the Committee on Graduate Studies, and the Academic Dean to apply such credits toward a graduate degree.
3. All courses that are applied to a master's degree must have been completed no more than five years before enrollment in a graduate program at UT Arlington. If the student has completed more than 12 semester hours of graduate courses in undergraduate status, only graduate courses completed within five years of enrollment in a graduate program at UT Arlington will become part of the graduate record and considered in computing the student's grade-point average.
4. A student may elect to apply all graduate courses completed in the last five years toward their degree or to apply none of this work. Selective application of courses is not permitted. If any courses are applied for credit toward a master's degree, all courses completed within the last five years will become part of the graduate record.

Credit for courses taken as a non-degree seeking graduate student

Up to 12 graduate level (5000 and above) semester credit hours earned as a special non-degree seeking student may be applied to a graduate degree program, subject to graduate grading practices (p. 96). Review and approval of the appropriate Committee on Graduate Studies and the approval of Graduate Admissions are required. All grades in courses taken as a special non-degree seeking student and graduate certificate status will be considered in computing a student's graduate grade-point average.

Graduate Credit for Extension Classes

Work done in extension classes may be applied toward an advanced degree under the same conditions that apply to transfer work, except that credit for extension work is limited to six credit hours.

Courses That Do Not Provide Graduate Credit

- Personal Improvement Courses: Personal improvement individual or group music or art lessons and exercise and sports activities courses can not be used for the following: 1) to satisfy graduate degree requirements; 2) meet enrollment requirements; 3) in computation of graduate grade-point averages or determination of academic probation or academic good standing; 4) in calculation of grade-point averages for the purpose of admission to a Graduate Program or for certification for graduation from a Graduate Program.
- Audited Classes: University credit is not granted for audited classes and audited classes will not satisfy enrollment requirements.
- Correspondence Courses: Correspondence courses are not accepted for graduate credit.
- Credit by Examination: Credit by examination may not be used for graduate credit and no such credit, graduate or undergraduate may appear on graduate student transcripts.

Transfer Credit and Course Waivers

Transfer Credit Applied to Master's Degrees

Equivalent coursework completed at other institutions of recognized standing may be transferred to a master's degree program after evaluation and approval. Transferred courses do not appear on the UT Arlington Official Transcript and grades earned in transferred courses are not included in calculating a student's UT Arlington graduate grade-point average.

No more than nine hours of transfer credit will be granted except in the professional master's programs that require more than 36 hours of coursework. In such programs, the number of transfer hours is limited to 25 percent of the total program hours. This rule does not invalidate agreements that are stated elsewhere in this catalog. Transfer credit will be accepted only for organized courses in which the student received a letter grade of B or higher and an official transcript showing the course(s) and grade(s) is required.

Courses from other universities taken after a student has been admitted into a master's program at UT Arlington must be approved in advance by the appropriate graduate advisor and Committee on Graduate Studies. All work submitted for transfer credit must have been completed no more than six years before completion of a graduate program at UT Arlington. A list of approved credit must be sent to the Office of Admissions to be posted to the student's university record.

Waiving Courses Required for Doctoral Degrees

Graduate-level coursework completed in the student's major area of doctoral study at institutions of recognized standing that grant doctoral degrees in those subject areas may serve to establish the student's competency in equivalent UT Arlington courses. Competency demonstrated by successful completion of equivalent courses may provide a basis for waiving some UT Arlington course requirements and the credit hours associated with those courses.

Waivers must be recommended by the student's graduate advisor and current supervising professor and their recommendation must be approved by both the Committee on Graduate Studies of the student's major area. Only courses in which the student has earned a B (3.0) or better (or a P if the UTA course is also graded P/F) will be considered for purposes of a waiver. In no case will final semester Dissertation course (6x99 or 7399) requirements be waived. An approved list of waived courses must be sent to the Office of the Registrar to be posted to the student's university record.

Transfer Credit Applied to Graduate Certificates

Equivalent coursework completed at other institutions of recognized standing may be transferred to a certificate program after evaluation and approval. Transferred courses do not appear on the UT Arlington Official Transcript and grades earned in transferred courses are not included in calculating a student's UT Arlington graduate grade-point average.

The number of transfer units is limited to 50% of the total units required for the certificate, except in certificate programs that exceed 15 units, in which case 12 of those units must be taken in residence. This rule does not invalidate written agreements stated elsewhere in this catalog. Transfer credit will be accepted only for organized courses in which the student received a letter grade of B or higher and an official transcript showing the course(s) and grade(s) is required.

Courses from other universities taken after a student has been admitted into a master's program at UT Arlington must be approved in advance by the appropriate graduate advisor and Committee on Graduate Studies. All work submitted for transfer credit must have been completed no more than six years before completion of a graduate program at UT Arlington. A list of approved credit must be sent to the Office of the Registrar to be posted to the student's university record.

Departmental, Program and College Program Manuals for Students

Many departments and programs issue program manuals, procedures and policy manuals, graduate student handbooks, and other informational publications for students and faculty in graduate programs. These publications may provide detailed and useful information; however, they are not statements of official policy of the University of Texas at Arlington nor of the University of Texas System. In all matters the *Rules and Regulations* of the Board of Regents of The University of Texas System, the *Handbook of Operating Procedures* of the University of Texas at Arlington and the University of Texas at Arlington Catalog shall supersede departmental, program or college publications.

Master's Degree Requirements

Degree requirements and academic performance standards given in this section are the minimum required. Satisfying these general requirements and standards, however, does not imply that all degree and program requirements have been met. Many programs set special course requirements and may require higher grade-point averages or other academic standards than those given in this section. Such program requirements and standards are included in individual program descriptions in this catalog and in departmental and college program manuals or policy statements. These special requirements shall not be considered in conflict with this catalog and shall have the same force as this catalog.

Degree Plans and Required Hours

Three degree plans (thesis, thesis substitute and non-thesis) may lead to the master's degree. While some programs offer all three options, other do not and students should go to the information in this Catalog on each program to learn what choices are available. All degree plans require at least 30 semester hours of study. Some require more.

The **thesis degree plan** requires a minimum of 30 hours which include at least 6 hours of thesis course credit and at least 24 hours of other prescribed and elective course work. Student are expected to conduct research for their theses and defend the final version of their thesis while enrolled in theses courses. Students receiving advice and assistance from a faculty member in the preparation of a thesis must register for the appropriate thesis research course even if they are not on campus. Once the student is enrolled in the thesis course, continuous enrollment is required. The student must be enrolled in an appropriate thesis course during the term in which the thesis is defended and the final Master's Examination is unconditionally passed. The degree candidate must defend the thesis in a final oral examination open to the public.

The **thesis substitute degree plan** requires successful completion of required and elective coursework which generally consist of lectures and seminars. However, this degree plan also includes a project, research or internship course which may involve internship experiences, reports or projects prepared in certain graduate seminar, conference or research courses or preparation of a design thesis in Architecture.

The **non-thesis degree plan** does not require a thesis or a thesis substitute activity. Students complete their degree by simply finishing a number of required and elective courses.

Time Limit

Programs for the master's degree must be completed within six years (time in military service excluded) from initial registration in a graduate degree program. Students who exceed the published time limits for completing the graduate degree but wish to graduate, must petition the Academic Dean for an exception to the time limit policy.

Residence

All degree seeking graduate students must meet residency goals reflecting scholarly engagement and immersion in research, scholarship, creative work and professional development in his or her degree program. Residency requirements can be met through one of three mechanisms:

- The equivalent of two terms of full-time enrollment: Students completing residency via enrollment should understand that the goals of residency are focused effort in activities related to their degree.
- Program-specific alternative residency plan: Academic degree programs may have alternative methods by which enrolled students achieve residency goals. These alternatives, if any, are described in an academic program's description of its degree requirements. Such plans must have prior approval by the Graduate School Dean.
- Individual alternative residency plan: Proposals for alternative residency from individual students can be submitted for approval by the Graduate School Dean.

Foreign Language Requirement

A reading knowledge of at least one foreign language (classical or modern) is required by some departments or programs for master's degree candidates. Specific language requirements, if any, are given in the individual departmental and program degree descriptions.

Supervising Committees

The Academic Dean will appoint for each master's student a supervising committee upon recommendation by the graduate advisor and the appropriate Committee on Graduate Studies. The supervising committee conducts the final thesis examination for thesis degree plan candidates and determines scope, content and form of the final master's comprehensive examination for thesis substitute and non-thesis degree plan candidates. The committee will normally consist of at least three members of the graduate faculty and will be responsible for the design of the student's program. One qualified external person who is not a member of the graduate faculty may serve as a voting member of a supervising committee if nominated by the appropriate Committee on Graduate Studies and approved by the Graduate Dean. A student may request that more than one external members participate on the supervising committee. However only one of these may vote. Non-voting members must be in addition to the three voting members and must be approved by the Graduate Dean.

Final Master's Examination

A final program examination is required for all master's degree candidates. The final master's examination can result in: 1) an unconditional pass with a recommendation to the Academic Dean that the candidate be certified to receive the earned degree; 2) a conditional pass with the requirement that additional conditions be met, which may include further work on the thesis or thesis substitute, additional coursework with a minimum specified grade-point average, or both (in all cases, the final master's examination must be repeated within a specified period); 3) failure, with permission to be re-examined after a specified period; or 4) failure, with recommendation to the Academic Dean that the candidate be dismissed from the program. The Final Examination Report must be filed with the Office of the Registrar's regardless of the outcome. Most programs limit to two the number of repeats of the final master's examination.

For **thesis degree plan** candidates, the examination will be an oral defense of the thesis. The examination will be conducted by all members of the student's supervising committee but will be open to all members of the faculty and the public. The thesis examining committee must have copies of the thesis at least two weeks prior to the thesis defense. Thesis degree plan candidates must submit a copy of the unconditionally passed thesis to the Library following the procedures for electronic submission.

For **thesis substitute** or **non-thesis degree plan** candidates, the final examination will be a comprehensive examination that is written, oral or both. The scope, content and form of the examination(s) is to be determined and administered by all members of the student's supervising committee. Some programs require successful completion of a specified course in the final term of study to satisfy this requirement.

Master's Thesis

All master's students in the thesis option must be aware of requirements, components and deadlines associated with the thesis, final defense, and submission of the thesis to the Library. The thesis must be accepted by the Library by published deadlines in order to graduate from UT Arlington.

Enrollment Requirement

All students are required to enroll in a total of at least 6 thesis hours prior to graduation. Additionally, thesis students must be enrolled in a thesis course in which the grade of P can be assigned in the term in which the thesis is defended. Social work students will enroll in SOCW 6393 to conduct thesis research and SOCW 6398 in the term in which the thesis is defended.

Thesis Defense

The thesis defense will be a public oral examination open to all members of the faculty. Questioning of the candidate will be directed by the student's thesis supervising committee. All members of the student's committee must be present at the defense.

Although the defense is concerned primarily with the thesis research and its interpretation, the examining committee may explore the student's knowledge of areas relevant to the core of the thesis problem. The thesis defense may result in a decision that the candidate has 1) passed unconditionally; 2) passed conditionally with remedial work specified by the committee; 3) failed, with permission to be re-examined after a specified period; or 4) failed and dismissed from the program. The thesis must be approved unanimously by the student's thesis supervising committee and by the Academic Dean. Regardless of the outcome of the defense, the results must be submitted on the Final Examination report to the Office of the Registrar.

Thesis Manuscript Format, Final Submission and Archiving

Students must submit an acceptably formatted thesis manuscript to the UTA Library before the master's degree can be conferred. Details regarding thesis formats can be found on the UT Arlington Library website (<http://library.uta.edu/>).

The format of all thesis manuscripts must be reviewed and approved by the student's supervising committee. When the final committee-approved copy of the thesis is submitted to the Library via the University's electronic submission process, it will be archived as submitted. Therefore, care must be taken by the student, supervising professor and thesis committee that the final document meets appropriate academic and professional standards. Students submitting the final copy of their thesis must also complete and submit the Intellectual Property Statement form. Forms related to permissions to use work contributed by others in the thesis will be required if the reported research was conducted jointly with other people or when content included in the thesis is the intellectual property of another person and requires permission before it can be used in the manuscript. The final thesis is University property and a student may make no private agreements with employers, funding sources, or others that restrict or infringe upon University rights. Thesis copyrights, where applicable, are held by the student author. The thesis will be archived by the Library and be available to interested members of the public. Under some circumstances (see <https://library.uta.edu/etd> (<https://library.uta.edu/etd/>)) a student may request to delay publication of the thesis for a limited period of time. Dissertation-related fees are explained in the Tuition and Fees section of the Catalog.

Dual Degrees

Students may pursue dual degree programs other than those specifically defined in the catalog with prior approval of the appropriate Committees on Graduate Studies and the Academic Dean.

Students in any dual degree program must be admitted to each participating program. Unless otherwise stated under the dual degrees programs specified elsewhere in this catalog, the number of hours that may be used jointly will be determined by the total number of hours required by both degree programs if completed separately. For purposes of dual degree programs, the total number of semester hours required for both degrees if completed separately is defined as the number of semester hours required for a student to complete all advanced degree requirements (excluding deficiency, leveling and prerequisite courses) for both degrees.

1. Six semester hours may be used jointly when the total number of hours required for both degrees is 60;
2. Six to 12 semester hours may be used jointly when the total number of hours required for both degrees is between 60 and 72 hours;
3. Six to 18 semester hours may be used jointly when the total number of hours required for both degrees exceeds 72 hours.

Admission to and enrollment in the programs for a dual degree must be concurrent. Students must be admitted to the second program before completing more than 24 semester hours in the first program, exclusive of leveling, deficiency or foundation courses, and must complete the second degree within three academic years following completion of the first.

All grades earned in dual degree status are used for purposes of determining academic good standing, academic probation and graduate requirements.

Students must be in good standing in both programs to continue in a dual degree program. Students who are dismissed from either program are no longer considered to be in a dual degree program. These students may enroll in and use courses for credit toward the degree program in which they are in good standing only. Students may not take courses in the program from which they have been dismissed and may not use such courses for dual degree credit.

Dual degree programs are available at the master's level only. Not all graduate programs participate in dual degrees.

Doctoral Degree Requirements

The Doctor of Philosophy (Ph.D.) is the highest degree offered by The University of Texas at Arlington. The degree is awarded only for academic work of distinction through which the student demonstrates superior scholarship and capacity for original work. Requirements for the doctoral degree listed below are the minimum required. Meeting all of these requirements does not result automatically in the awarding of the doctoral degree. All departments and programs have additional requirements for a high level of scholarly achievement that must be met by successful doctoral candidates. In all doctoral

programs, the basic requirements are that a student 1) attain mastery of a field of knowledge as determined by the appropriate Committee on Graduate Studies and demonstrated in a general examination; and 2) present evidence of a capacity to complete a significant program of original research by preparation of a dissertation.

To be admitted to a doctoral program, an applicant must have completed a master's degree or at least 30 semester credit hours of graduate coursework. Students who do not meet these requirements but who intend to complete a doctoral degree should apply as a "BS/BA to PhD" or "Doctoral Bound" student if the program offers such options.

Doctoral Degree Plans and Required Hours

The doctoral degree cannot be earned solely by passing certain courses and accumulating a specified number of credit hours; however, a department or program may require a core group of courses for all of its doctoral students. Courses are generally concentrated in the student's major field, but some are normally taken in one or more complementary areas. In interdepartmental programs, the major work may be divided among two or more primary fields.

The University imposes no specific semester-hour requirements for the doctoral degree except for hours that are required to meet residency requirements.

Time Limit

All requirements for the doctoral degree must be completed within four years after the student unconditionally passes the comprehensive exam. Students who exceed the published time limits for completing the graduate degree but wish to graduate, must petition the Academic Dean for an exception to the time limit policy.

Residence

All degree seeking graduate students must meet residency goals reflecting scholarly engagement and immersion in research, scholarship, creative work and professional development in his or her degree program. Residency requirements can be met through one of three mechanisms:

- The equivalent of two terms of full-time enrollment: Students completing residency via enrollment should understand that the goals of residency are focused effort in activities related to their degree.
- Program-specific alternative residency plan: Academic degree programs may have alternative methods by which enrolled students achieve residency goals. These alternatives, if any, are described in an academic program's description of its degree requirements. Such plans must have prior approval by the Dean of the Graduate School.
- Individual alternative residency plan: Proposals for alternative residency from individual students can be submitted for approval by the Dean of the Graduate School.

Foreign Language Requirement

Prior to scheduling the doctoral comprehensive examination, the University requires evidence that the student has a reading knowledge of one foreign language applicable to the student's field of study or has attained proficiency in a research-tool area such as computer sciences or experimental statistics. The foreign language requirement may be met by 1) successfully passing an examination prepared by an appointee of the Academic Dean; 2) making an acceptable score on the Educational Testing Service Graduate School Foreign Language Test; or 3) earning a grade of B or higher in French, German or Russian 4331 and 4332, or equivalents. The foreign language substitute research tool requirement may be met by a method determined by the appropriate Committee on Graduate Studies and approved by the Academic Dean. Other suitable substitutes may be approved by the Committee on Graduate Studies and Academic Dean.

Diagnostic Evaluation

During the student's first year of doctoral program work the student must demonstrate potential to successfully complete a degree program. The method of assessing the student's potential will be determined by the appropriate Committee on Graduate Studies and may be in the form of a written or oral examination, personal interviews with faculty members, successful completion of certain courses in the first semester of residence, or by any combination of these methods. Results of the diagnostic evaluation may be 1) approval to continue in the doctoral program; 2) approval to continue with specified remedial work; 3) failure, but with permission for assessment through a second diagnostic evaluation after a specified period; or 4) failure and termination in the program. The student must be enrolled in the graduate program in the term in which he/she completes the diagnostic evaluation.

The results of the diagnostic evaluation must be filed in the Office of the Registrar no later than after completion of 18 semester hours of coursework while enrolled in a doctoral program at UT Arlington.

After the student successfully completes the diagnostic evaluation, the Academic Dean will approve an examining committee. Members for the committee are recommended by the graduate advisor and appropriate Committee on Graduate Studies. The committee will consist of no fewer than 3 voting members, at least two of whom must be from the student's major area. Committees in interdisciplinary programs must include at least four voting members with two members coming from each discipline. Individual programs may require the committee to have more members and students must conform to such requirements. One qualified external person who is not a member of the graduate faculty may serve as a voting member of a supervising committee if nominated by the appropriate Committee on Graduate Studies and approved by the Graduate Dean. A committee may have

more than one external member but only one may have voting privileges. Students should consult with their program's graduate advisor to make sure their committees have sufficient membership to meet program requirements.

The committee is responsible for design and direction of the student's program.

Comprehensive Examination

Students are eligible to take the comprehensive examination after giving evidence to their doctoral committee of adequate academic achievement by having completed all or most coursework requirements for a degree. The comprehensive examination usually marks the end of formal coursework and the beginning of concentrated work on dissertation research and preparation. The student must be enrolled in the term in which he/she takes the comprehensive examination.

The comprehensive examination may be written, oral, or both. Its scope, content, and form are determined by the student's examining committee with approval of the appropriate Committee on Graduate Studies.

In some departments and programs comprehensive examinations are given semiannually so students should consult their graduate advisor in that program for appropriate regulations and procedures.

The comprehensive examination may result in 1) unconditional pass and recommendation to proceed to the next phase of the program; 2) approval to remain in the program, but required to meet certain specified additional criteria; 3) failure, but with permission to retake the examination after a period specified by the examining committee; or 4) failure and dismissal from the program.

Dissertation

The dissertation represents the culmination of the student's academic efforts and so is expected to demonstrate original and independent research activity and be a significant contribution to knowledge.

All doctoral students must be aware of requirements and deadlines associated with the dissertation, final defense, and submission of the final copy of the dissertation.

Enrollment Requirements

1. Registration in an independent study, research, or similar course implies an expected level of effort on the part of the student that is at least equivalent to that of an organized course of the same credit value.
2. Doctoral students will not be required to register for more than nine credit hours during any term with these exceptions:
 - a. Doctoral students who are enrolled in nine credit hours of organized courses and who are also doing research related to their dissertation may be required to register for up to three hours of research for a total of 12 credit hours.
 - b. Doctoral students supported as a graduate research or teaching assistants may be required to register for 12 credit hours (no more than nine credit hours to be in organized courses), as determined by the students' graduate program.
3. Doctoral students who are required to register solely to satisfy the continuous enrollment requirement may register 3 credit hours during each term.
4. Doctoral students may not register for more than 12 semester hours in a term unless such registration is approved by the student's graduate advisor.
5. A doctoral student working on a dissertation should be enrolled in an appropriate 6X99 or 7399 dissertation course. Once the student is enrolled in a dissertation course, continuous enrollment is expected. A student receiving advice and assistance from a faculty member in the preparation of a dissertation must register in the course even if the student is not on campus. Doctoral students must enroll in the appropriate 6699, 6999 or 7399 Dissertation Completion course the semester in which the dissertation is defended. Students typically enroll in these courses defend and apply for graduation in the same term. The Dissertation Completion course (7399) may only be taken once and cannot be repeated.

Dissertation Committee

After the student has passed the comprehensive examination, the doctoral supervising committee may be altered or expanded to accommodate the dissertation research needs of the student. The supervising committee is responsible for providing feedback regarding the student's dissertation, attending the defense, and determining the results of the student's defense. The committee will consist of no fewer than 3 voting members. Individual programs may require the committee to have more members and students must conform to such requirements. One qualified external person who is not a member of the graduate faculty may serve as a voting member of a supervising committee if nominated by the appropriate Committee on Graduate Studies and approved by the Graduate Studies Office. All voting and non-voting external members of the committee must be approved by the Graduate Dean. Students should consult with their program's graduate advisor to make sure their committees have sufficient membership to meet program requirements.

Dissertation Defense

Doctoral students must be enrolled in the appropriate Dissertation course in the term in which he/she defends the dissertation (see Enrollment Requirements above).

The dissertation defense will be a public oral examination open to all members (faculty, students and invited guests) of the University community. Questioning of the candidate will be directed by the student's dissertation supervising committee. All members of the student's committee must be present at the defense.

Although the defense is concerned primarily with the dissertation research and its interpretation, the examining committee may explore the student's knowledge of areas relevant to the core of the dissertation problem. The dissertation defense may result in a decision that the candidate has 1) passed unconditionally; 2) passed conditionally with remedial work specified by the committee; 3) failed, with permission to be re-examined after a specified period; or 4) failed and dismissed from the program. The dissertation must be approved unanimously by the student's dissertation supervising committee. Regardless of the outcome of the defense, the results of the defense must be submitted to the Office of the Registrar.

Dissertation Manuscript Format, Final Submission and Archiving

Students pursuing a doctoral degree must submit an acceptably formatted manuscript to the UTA Library before the degree can be conferred. Details regarding dissertation formats can be found on the UT Arlington Library website (<http://library.uta.edu/>).

The format of all dissertation manuscripts must be reviewed and approved by the student's supervising committee. When the final committee-approved copy of the dissertation is submitted to the Library via the University's electronic submission process, it will be archived as submitted. Therefore, care must be taken by the student, supervising professor and the other committee that the final document meets appropriate academic and professional standards. Students submitting a final copy of their dissertation must also complete and submit the Intellectual Property Statement form and the Survey of Earned Doctorates. Forms related to permissions to use work contributed by others in the dissertation will be required if the reported research was conducted jointly with others or when content included in the dissertation is the intellectual property of another person and requires permission before it can be used in the manuscript. The final dissertation is University property and a student may make no private agreements with employers, funding sources, or others that restrict or infringe upon University rights. Dissertation copyrights, where applicable, are held by the student author. The Dissertation will be archived by the Library and be available to interested members of the public. Under some circumstances (see <https://library.uta.edu/etd> (<https://library.uta.edu/etd/>)) a student may request to delay publication of the dissertation for a limited period of time. Dissertation-related fees are explained in the Tuition and Fees section of the Catalog.

Credit Toward Certificates

Only courses completed with a grade of A, B, C, or P can satisfy graduate certificate requirements. However, courses in which grades of D or F are earned will affect a student's grade-point average. A student must have a B (3.000) grade-point average in courses included in their degree plan and a B (3.000) average in all work undertaken as a graduate student to have credits applied toward a graduate certificate.

Grade Point Average

All grades in courses taken as a special non-degree seeking student and graduate certificate status will be considered in computing a student's graduate grade point average.

Transfer Credit Applied to Graduate Certificates

Equivalent coursework completed at other institutions of recognized standing may be transferred to a master's certificate program after evaluation and approval. Transferred courses do not appear on the UT Arlington Official Transcript and grades earned in transferred courses are not included in calculating a student's UT Arlington graduate grade point average.

The number of transfer units is limited to 50% of the total units required for the certificate, except in certificate programs that exceed 15 units, in which case 12 of those units must be taken in residence. This rule does not invalidate written agreements stated elsewhere in this catalog. Transfer credit will be accepted only for organized courses in which the student received a letter grade of B or higher and an official transcript showing the course(s) and grade(s) is required.

Courses from other universities taken after a student has been admitted into a master's program at UT Arlington must be approved in advance by the appropriate graduate advisor and Committee on Graduate Studies. All work submitted for transfer credit must have been completed no more than six years before completion of a graduate program at UT Arlington. A list of approved credit must be sent to the Office of the Registrar to be posted to the student's university record.

Registration

To attend The University of Texas at Arlington any given term, a student must register and pay fees. All registration at UT Arlington may be done online in MyMav (<http://www.uta.edu/mymav/>). The current term's Registration Timetable (http://www.uta.edu/aao/recordsandregistration/content/student_services/registration_timetable.aspx) gives the exact dates and times for registration. General requirements are below.

Scheduled courses and syllabi can be found on the Schedule of Classes in MyMav (https://sis-portal-prod.uta.edu/psp/AEPPRD/EMPLOYEE/EMPL/h/?tab=PAPP_GUEST). Faculty profiles of regular instructors can be found on the UTA website at <http://www.uta.edu/profiles/>. (<http://www.uta.edu/profiles/>)

Undergraduate Student Registration Requirements (p. 72)

Graduate Student Registration Requirements (p. 75)

Advising Prior to Registration

Students new to UT Arlington, many continuing students and readmitted former students must be advised by their major department academic advisor prior to registration each term. Undeclared students should meet with their academic advisor in the University Advising Center. Students can check to see if they need to be advised by checking their Student Center using MyMav (<http://www.uta.edu/mymav/>), the computerized, high-security student records system used by UT Arlington. If advising is required, a service indicator (enrollment hold) will appear on the student's record. The service indicator must be released by the academic advisor before the student can register.

Typically, the advising period for the Spring term opens in October, and for the Summer and Fall terms in March. Meeting with an academic advisor is strongly recommended even if the student is exempted from advising.

Registrant Responsibilities

- The student must know and abide by all University policies and deadlines.
- UT Arlington's **Student Responsibility Statement** includes specific information on registrant responsibilities.
- Students must drop courses prior to the first class day for a given term to avoid financial responsibility.
- A student's registration is not automatically cancelled for non-attendance. A student should either pay tuition and fees in full by the designated deadline or take the appropriate steps to withdraw.
- Students must apply for financial aid using the Free Application for Federal Student Aid (FAFSA).

Tuition and Fee Refund Appeals

If you experienced extraordinary events during a semester that caused you to be academically unsuccessful during that term, you may be eligible for a one-time tuition refund appeal.

Effective September 22, 2014, appeal requests must be made within **90 days of the end of the semester** which you are appealing and must include appropriate supporting documentation.

Appeals older than 90 days or those submitted without supporting documentation will not be reviewed.

There are significant academic and financial consequences that may result when a tuition refund appeal is granted. If you have financial aid for the semester you are appealing, **you will have to return the financial aid received in full** if you are approved.

Extraordinary events include serious illness of the student or an immediate family member, death of an immediate family member, military deployment that was not previously scheduled or other similar unforeseen event.

The University will approve a refund appeal for one semester only during your entire academic career at UT Arlington. This includes all voluntary and involuntary separations. In particular, if the event is related to a medical condition, then it is your responsibility to make an informed decision, which may require consultation with a physician, prior to enrolling in future coursework since an appeal is granted on a one-time basis for a given medical condition.

While you will not be granted a second tuition and fee refund, you may have the opportunity to withdraw from coursework with a grade of W or Q in future semesters, assuming you meet all appropriate deadlines and regulations related to withdrawal.

Decisions by the appeals committee are final.

Financial Aid Impact

- There are significant academic and financial consequences that may result when a tuition refund appeal is granted. If you have financial aid for the semester you are appealing, **you will have to return the financial aid received in full** if you are approved.

Supporting Documentation

Appropriate supporting documentation includes but is not limited to:

- **Medical** - A dated and signed letter from the physician explaining your illness on letter head, medical bills or other pertinent medical documentation must be provided.
- **Death in the family** - A death certificate or an obituary from the newspaper must be provided. Pamphlets from the funeral will not be accepted. The death must be from your immediate family.
- **Deployment** - Deployment papers for Active Duty must be provided. They must state Active Duty, not training.
- **University Error:** A memo on UT Arlington letter head from the appropriate administrator at chair level or higher stating the situation and identifying University error must be provided.

If documentation is not in English, it will not be accepted. If you are providing copies, it must be translated.

Additional Information

- If you are appealing for medical reasons and you have been granted a refund for a prior semester on the basis of the documentation provided, then your request will not be considered for a second semester. Medical refunds are given on a one time basis.
- Appealing fees (departmental, library, etc.) is out of the appeal committee's purview and your request will not be reviewed.
- Charges for all other university services such as housing, meal plans, and parking are not included in this appeal. You should contact the appropriate university office for questions regarding these charges.
- If you are appealing due to work-related issues or failure to receive expected funding such as loans, Veterans Affairs funding, sponsorships, etc., your request will not be considered.
- Appealing grades received is out of the appeal committee's purview. Please speak with the appropriate department or refer to the Undergraduate Catalog regarding grade appeals or grievances.
- Tuition refund appeals are for all courses taken within a term, not for individual courses. If you are appealing one class only, you should contact your academic department.
- Classes must be dropped/withdrawn prior to submission of the appeal request.

Terms and Sessions

There are three terms and seven regularly scheduled sessions in the academic calendar year at UT Arlington. The three terms are Fall, Spring and Summer.

A session called Dynamic Dated Session is associated with all three terms. This session has classes scheduled outside of the normally scheduled time periods and is used for special programs known as Academic Partnership programs. Only students associated with these programs can enroll in the Dynamic Dated Sessions.

Fall Term

The Fall term has six sessions. The regular 16 week session typically begins the fourth week in August and ends the second week in December. There are also two 8 week sessions and three 5 week sessions. Final grades are posted at the end of each session. Academic standing is posted in the third week of December.

Commencement exercises for the Fall term are typically held the second week of December, following the conclusion of the term.

Spring Term

The Spring term has seven sessions. The first session is Intersession Winter (ISW). It begins the week after the Fall term ends and concludes the week before the start of the Spring term regular session. Final grades are posted the following week; however, academic standing is not run until the end of the Spring term.

The Spring term regular 16 week session typically begins the Tuesday after the Martin Luther King Memorial Holiday and ends the second week in May.

There are also two 8 week sessions and three 5 week sessions. Final grades are posted at the end of each session. Academic standing is posted in the third week of May.

Commencement exercises for the Spring term sessions are typically held the second week of May, following the conclusion of the Spring regular session.

Summer Term

The Summer term has seven sessions. The first session is Intersession Summer (ISS). It typically begins the week after the Spring regular session concludes and ends the Friday before the Memorial Day Holiday weekend.

The second session of the Summer term is the Summer 14-Week Session (14W). It begins currently with the Intersession Summer and concludes the second week of August.

The third session of the Summer term is the First 5-Week Session (5W1). It typically begins the first week of June and generally ends the first week of July.

The fourth session of the Summer term is the Summer 11-Week Session (11W). It begins concurrently with the First 5-Week Session and typically ends the second week of August.

The fifth session of the Summer term is the First 7-Week Session (7W1). It begins concurrently with the First 5-Week Session and typically ends the last week of June.

The sixth session of the Summer term is the Second 7-Week Session (7W2). It typically begins immediately after the Fourth of July holiday and ends currently with the Summer 11-Week Session.

The seventh session of the Summer term is the Second 5-Week Session (5W2). It typically begins the week after the Fourth of July and ends concurrently with the Summer 11-Week Session in the second week of August.

Final grades are posted following each of the sessions. Academic standing for grades earned in all summer sessions is run in the third week of August.

Commencement exercises for the Summer term are typically held the second week of August, following the conclusion of the Summer sessions.

Enrollment Requirements

A student's enrollment status is determined by the number of credit hours for which the student is enrolled in residence in a semester.

The way credits are counted in summer terms and the depiction of summer term enrollment requirements shown in the table require some explanation. In the summer, the credits taken in the Summer Intersession, the two 5-week, the two 7-week, and the one 11-week terms are added together to determine a student's summer enrollment status. The table shows how many summer credits in total have to accumulate across these terms to meet criteria for less than, half-time, half-time and full-time. For example, if a graduate student accumulates 3 credits in each of the two 5 week terms he or she will have been enrolled in 6 credits in the summer and will be considered a Full-Time student throughout the summer.

Immigration policy requires international students be enrolled full-time during the Fall and Spring terms. They are not required to enroll in Summer or intersession semesters unless it is their first term of enrollment (more information regarding international student enrollment requirements can be found at www.uta.edu/oie/ (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Foie%2F&data=02%7C01%7Ccekydd%40uta.edu%7C2abd5fbbfaeb4038c07608d7f0340a1a%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C637241978610207453&sdata=cgCjV3lpxCbqXcvaW8JZy1PzM3QH%2B0BNzs24j21atU%3D&reserved=0>)). Graduate teaching or research assistants must meet minimum enrollment in each semester in which he or she holds a graduate assistantship. Assistantship enrollment requirements are described elsewhere in the Assistantship/Associateship Policy section (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fcatalog.uta.edu%2Facademicregulations%2Ffinancialaid%2F&data=02%7C01%7Ccekydd%40uta.edu%7C2abd5fbbfaeb4038c07608d7f0340a1a%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C637241978610212443&sdata=xsYL5eWZrST%2BmoAc6BKIAZOWXeAOmmcVsSyjVPSGmq4%3D&reserved=0>) of this catalog.

The amount of financial aid a student may receive in any given semester is based on the number of credits he or she takes. To receive financial aid, students must be enrolled at least half-time. The following table shows how credit hours related to full, half and less than half-time enrollment.

Undergraduate¹

Credit Hours Required for Half-Time or Full-Time Status	Less Than Half-Time	Half-Time	Full-Time
Long Semester (fall or spring)	5 or less	6	12
A 5-Week Session	5 or less	6	N/A
A 7-Week Session	5 or less	6	N/A
11-Week Session	5 or less	6	12
Intersession winter or summer ³	3	N/A	N/A

Graduate²

Credit Hours Required for Half-Time or Full-Time Status	Less Than Half-Time	Half-Time	Full-Time
Long Semester (fall or spring) other than Graduate Nursing	4 or less	5	9
Long Semester (fall or spring) Graduate Nursing	2	3	6
A 5-Week Session	2	3	6 ³
A 7-Week Session	2	3	6 ³
11-Week Session	2	3	6 ³
Intersession winter or summer ³	3	N/A	N/A

- ¹ For undergraduate students, 12 semester credit hours equal full-time status for any term and can be achieved by adding the total hours for each session within a term.
- ² For graduate students, 9 semester credit hours equal full-time status for any long term (Fall and Spring) However, 6 semester credit hours equals full-time status during the Summer and can be achieved by adding the total hours for each session within a term. For graduate nursing students, 6 semester credit hours is full time enrollment.
- ³ For all students, Winter intersession hours are combined with the Spring session, and Summer intersession hours are combined with the total hours taken in the summer 5-week I, 5-week II, 7-week I, 7-week II, and 11-week sessions.

Class Meeting Times

On-campus class meeting times are typically scheduled Monday through Friday, 8 a.m. to 10 p.m. Class meeting times can vary; consult the Schedule of Classes (https://sis-portal-prod.uta.edu/psp/AEPPRD/EMPLOYEE/PSFT_ACS/c/COMMUNITY_ACCESS.CLASS_SEARCH.GBL?psInkid=UTA_PS_CLASS_SCHEDULE_LINK&PORTALPARAM_PTCNAV=UTA_PS_CLASS_SCHEDULE&EOPP.SCNode=EMPL&EOPP.SCPortal=EMPLOYEE%20and%20Classes&EOPP.SCPTcname=&FolderPath=PORTAL_ROOT_OBJECT.PORTAL_BASE_DATA.CO_NAVIGATION_COLLECTIONS.ADMN_CATALOGS_AND) for specific days and times.

Course Descriptions & Syllabi

Course information, including the course syllabus when available, can be found online at Instructor and Course Syllabus Information (<http://www.uta.edu/uta/academics/courses/syllabus.php>).

Enrollment

To attend UT Arlington in any given term, a student must accept financial responsibility for any enrollment transactions, register and pay tuition and fees. Registration at UT Arlington is done online using MyMav (<http://www.uta.edu/mymav/>). The current term's Registration Timetable gives the exact dates and times for registration. The Schedule of Classes (<https://tinyurl.com/k5ow2ds/>) is updated for the Spring term in mid-October, and in mid-March for the Summer and Fall terms. Students log in to MyMav (<http://www.uta.edu/mymav/>) to register.

For payment of tuition and fees information, refer to Tuition, Fees, and Charges (p. 82) section of this catalog for registration billing and payment.

Students who are no longer eligible for enrollment at the start of the term will have their registration canceled and their tuition and fees refunded.

Late Registration

Late registration is held each term for students who are unable to register during the regular registration period. Late registration at UT Arlington is done online using MyMav (<http://www.uta.edu/mymav/>). Late registration fees are assessed for enrollment transactions made during the late registration period.

Scheduling Changes

Students can elect to make changes to their course schedules on MyMav (<http://www.uta.edu/mymav/>).

- **Adding Classes:** Students can add classes through self-service in MyMav or in person in the major academic department (or the University Advising Center for undeclared students) from the beginning of the registration period through the late registration period. A student will not be permitted to add a course for credit or make a section change after the last day of late registration.
- **Dropping Classes:** Students can drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. Students dropping their last class on or after the first day of classes must meet with the academic advisor in the department of their major to make the last class drop (withdrawal). After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. In a long (fall or spring) term, this point is through the tenth week of classes.
- No grade or withdrawal is posted if a student drops a course before 5:00 pm Central Standard Time on the Census Date of that term.
- For additional information on withdrawing from classes, see the Withdrawals section on the Undergraduate and Graduate tabs.

- Although unusual, a section may be cancelled due to low enrollment or staffing considerations. The department that cancels the class should notify any students already enrolled and assist with alternate arrangements. At the beginning of the term, students should always check for changes regarding class meeting times or classroom locations.

Bacterial Meningitis Documentation Requirement

As of January 1, 2012, Texas college students new to the institution, including transfer students, and students returning to UT Arlington after an absence of at least one fall or spring term who are under 22 years old must submit documentation of immunization against bacterial meningitis. Documentation includes a copy of the immunization record or a certificate signed by a health practitioner. Under the law, students must have received the vaccine *within the past five years and no less than 10 days before the start of the first session* of enrollment at UT Arlington. Limited exemptions are specified in the state law (<http://www.theccb.state.tx.us/?objectid=A641CD0D-E56A-A36A-1BCB39FF80781178>), including opting out for reasons of conscience. Students who fail to meet this requirement will be dropped from courses.

Details for submitting proof of vaccination are emailed to students' UT Arlington email address, as well as available at <http://www.uta.edu/records/services/meningitis-requirement.php>.

Students planning to move into campus housing (<http://www.uta.edu/housing/applications/meningitis.php>) must comply with the meningitis vaccination requirements at least 10 days from a housing contract offer or 10 days before move in, whichever is earliest. Students will not be allowed to move in to campus housing without submitting timely proof that they have complied with the meningitis vaccination law.

For additional information regarding UT Arlington's administration of the Texas meningitis vaccination law, please visit www.uta.edu/meningitis (<http://www.uta.edu/meningitis/>) or THECB Meningitis (<http://www.theccb.state.tx.us/?objectid=A641CD0D-E56A-A36A-1BCB39FF80781178>). The legal codes supporting this requirement include *Texas Education Code*, Section 51.9191; *Texas Education Code*, Section 51.9192; and 19 (<http://www.theccb.state.tx.us/?objectid=1ADC277D-C40D-C407-6BA224DBC72CE4E1>) *Texas Administrative Code* 21.610 et seq.

Ineligibility to Register

Students who are no longer eligible for enrollment at the start of the term will have their registration canceled and their tuition and fees refunded. Additionally, violation of several academic policies can result in a student's inability to register without permission or action.

Undergraduate Registration

Eligibility to Enroll

An undergraduate student must maintain a minimum cumulative grade point average (GPA) at UT Arlington to remain academically eligible to register for the subsequent term or session. The minimum average required varies with the total number of college credit hours attempted at UT Arlington and is shown in the Table of Academic Standards, in the Grades and Grading Policies section of the Catalog.

Texas Success Initiative (TSI)

Undergraduate students who have not fulfilled testing or exemption requirements of the Texas Success Initiative (TSI) will be barred from registering in MyMav. See requirements listed at Texas Success Initiative. Some students may be exempt from the TSI. For a list of exemptions, go to Texas Success Initiative Exemptions (<http://www.uta.edu/universitycollege/prospective/TSI/TSI-exemptions/>).

Before students can take the TSI Assessment, they must complete a Pre-Assessment Activity in order to prepare for the exam, as a State of Texas requirement. To take UT Arlington's Pre-Assessment Activity go to www.uta.edu/universitycollege/TSI-Pre-Assessment (<http://www.uta.edu/universitycollege/TSI-Pre-Assessment/>). Additional information on TSI testing is available through the Testing Services office.

For additional information regarding TSI status, students can contact the University Advising Center at 817-272-3140 or uac.uta.edu (<http://www.uta.edu/uac/>) or email questions to tsi@uta.edu.

Maximum Course Load

Without permission from the appropriate academic dean, an undergraduate student may not register in a fall or spring term for more than 19 hours at UT Arlington or concurrently at UT Arlington and another institution. Likewise, a student may not register in summer term for more than 14 hours, with no more than 7 hours in any 5- or 7-week session. Any student who violates this regulation may be required to drop hours to comply with the maximum-hour rule or may be denied transfer credit for those hours in excess taken at another institution. A student may register for a maximum of three hours during the Winter Intersession and Summer Intersession terms. See the table indicating Full-Time and Part-Time Enrollment (<http://catalog.uta.edu/academicregulations/registration/>) for the combinations of coursework for which undergraduate and graduate students may enroll to stay within the maximum loads in combined summer sessions and in long terms.

Schedule Changes (Adds, Drops and Swaps)

Adds, drops and swaps (adding and dropping a class concurrently) may be made through late registration by an undergraduate either in MyMav (<http://www.uta.edu/mymav/>) or in person by contacting their major academic department (or the University Advising Center for undeclared or freshman

students). Drops may continue in person until a point in time two-thirds of the way through session or term. Students dropping their last class on or after the first day of classes must meet with the academic advisor in the department of their major to make the last class drop (withdrawal).

- A student may not add a course after the end of the late registration period.
- No grade is posted if a student drops a course before 5:00 p.m. on the Census Date of that term.
- Students who enrolled in a Texas public institution of higher education as a first-time freshman in fall 2007 or later are permitted to drop no more than six courses during their entire undergraduate career. This limit includes all transfer work taken at a Texas institution of higher education and to second baccalaureate degrees. This statute was enacted by the State of Texas in spring 2007 (Texas Education Code 51.907, and Texas Administrative Code §4.10). Any course that a student drops is counted toward the six-course limit if: "(1) the student was able to drop the course without receiving a grade or incurring an academic penalty; (2) the student's transcript indicates or will indicate that the student was enrolled in the course; and (3) the student is not dropping the course in order to withdraw from the institution." A UT Arlington student affected by this statute who has attended or plans to attend another institution of higher education should become familiar with that institution's policies on dropping courses. This statute applies across all Texas public institutions, but procedures for implementation may vary between institutions. Students affected by this policy may request an exemption to the policy by submitting a "Petition for Exemption to 6-Course Drop Policy" form. Students who enroll in coursework at more than one institution of higher education may not exceed the six dropped course limit based on all undergraduate enrollment in Texas public colleges and universities.
- A student may drop a course with a grade of "W" until the two-thirds point of the term, session, or course offering period. Students dropping their last class on or after the first day of classes must meet with the academic advisor in the department of their major to make the last class drop (withdrawal).
- A student may drop a course after the two-thirds point of the term, session, or course offering period (Last Drop Date) only with the approval of the dean of his/her college or school.

Exceptions to this policy may be entertained because of extraordinary non-academic circumstances. Under such circumstances, approval must be received from the instructor of the course, the department chair of the student's major, and the dean. Additional information (http://wwwb.uta.edu/aao/recordsandregistration/content/student_services/add_drop_procedures.aspx#exceptionForm).

Students wanting to drop all courses for which they are enrolled must withdraw from the University for that term. Students dropping their last class on or after the first day of classes must meet with the academic advisor in the department of their major to make the last class drop. Students should follow the procedure in the Withdrawal section below.

Withdrawals

A student may withdraw from all courses for the current session/term from the first class day until a point two-thirds of the way through the session or term by contacting their major academic department (or the University Advising Center for undeclared students) for appropriate advisement and removal from the coursework. A student who elects to withdraw on the first day of classes or thereafter will incur financial responsibility to the University as regulated by Student Financial Services.

A student may withdraw from the University with grades of "W" until the two-thirds point in the term. A student may be removed from a course after that point only upon approval of the academic dean in the student's college or school.

Students who have enrolled in a Texas public institution of higher education as a first-time freshman in fall 2007 or later are permitted to drop no more than six courses during their entire undergraduate career. When an undergraduate student withdraws from all courses during the term, the withdrawals will not count toward the student's six-drop limit.

Withdrawal as a Result of Military Service

Students who withdraw from the University to perform active military service (not including Texas National Guard training exercises) will not have to reapply for admission, but will be readmitted upon a request made to the Office of the Registrar within one year of being released from active military service. Students who withdraw as a result of military service may choose to receive a full refund of tuition and fees, an incomplete (if eligible) or final grade at institution discretion. Typically, a final grade is awarded when the student has satisfactorily completed a substantial amount of coursework and has demonstrated sufficient mastery of the course material. (Texas Education Code, Section 54.006.)

Six Course Drop Limit

Students who have enrolled in a Texas public institution of higher education as a first-time freshman in fall 2007 or later are permitted to drop no more than six courses during their entire undergraduate career. This limit includes all transfer work taken at a Texas institution of higher education and to second baccalaureate degrees. This statute was enacted by the State of Texas in spring 2007 (Texas Education Code 51.907). Any course that a student drops after Census Day is counted toward the six-course limit if "(1) the student was able to drop the course without receiving a grade or incurring an academic penalty; (2) the student's transcript indicates or will indicate that the student was enrolled in the course; and (3) the student is not dropping the course in order to withdraw from the institution."

If an undergraduate student withdraws from all courses during the term, the withdrawals will not count toward the student's six-drop limit.

The limit on dropped courses is subject to the following conditions:

- Students dropping a course for academic reasons will receive a "W." Students withdrawing from the university or who received an approved non-academic exception will receive a course notation of Q on the transcript. Courses denoted with Q do not count toward the 6-course drop limit.
- Dropped developmental courses do not count toward the limit.
- Dropped dual credit courses earned prior to a student graduating from high school do not count toward the limit.
- If an undergraduate student withdraws from all courses during the term, the withdrawals will not count toward the student's 6-drop limit. During the course of the same term, if some courses are dropped prior to final full withdrawal, all courses will be converted to 'withdrawn' status, regardless of the timing. (Example: Student A is enrolled in four courses and drops two and completes two. The two courses will be counted against the 6-drop limit. Student B is enrolled in four courses and drops two courses following Census Date. These two drops are counted against the 6-drop limit. Prior to the last drop date, Student B withdraws from school (drops final two courses). The final two courses are coded as "withdrawn" and do not count against the 6-drop limit. The two courses previously counted as "dropped" are reclassified as "withdrawn" and the student's drop limit is readjusted). The University of Texas at Arlington 2013-2014 Undergraduate Catalog
- This drop policy overrides the limit of 15 hours W previously in place at UT Arlington (<http://www.uta.edu/catalog/2006/fall/index.html>, 2006 Undergraduate Catalog, see Schedule Changes, Item C). Students who entered UT Arlington between Fall 2006 and Summer 2007 and were subject to the 15-hour W policy will no longer be held to the limits of that institutional policy.
- Students should be aware that dropping a course or courses may result in reducing them to part-time status which can affect financial aid, scholarships, and insurance coverage.

Change of Major Program of Study

Undergraduate students who wish to change their major program of study must consult with the proposed major department to process the program change.

An academic unit may require students to change their major program of study if the students do not meet the academic standards or the professional conduct standards of the unit. For information concerning specific standards in a program of study, students should contact the office of the appropriate academic dean's office

Auditing

Final arrangements to audit an undergraduate course may be made during the late registration period only, although the permission process can begin prior. The required form, obtained from the Office of the Registrar, must be completed and taken to the instructor for approval. This form can be accepted and processed by the Office of the Registrar only during the late registration period only, and approval is based in part on space availability. After obtaining the instructor's approval and approval from the Office of the Registrar, the applicant pays a fee at Student Accounts of \$20 per course if enrolled for course work at UT Arlington or \$100 per course if not enrolled for course work in residence at UT Arlington. Persons 65 years of age or older may audit courses without paying an audit fee.

The auditor has the privilege of hearing and observing only; no University credit is granted for auditing. An academic department or the Office of the Registrar may place restrictions on the privilege of auditing or may deny permission to audit certain courses. Activity classes, labs, etc., are generally not auditable.

Students auditing a course are required to comply with Texas state legislation that mandates those who have not been continuously enrolled at UT Arlington must have received the bacterial meningitis vaccine (<http://www.uta.edu/records/services/meningitis-requirement.php>) within the past five years.

Cooperative Programs Between University of Texas System Components

A student concurrently enrolling at two or more University of Texas System components may register and pay tuition and fees for all courses through the student's home institution. Detailed procedures may be obtained from the registrar or records office of the student's home institution. At UT Arlington, this is the Office of the Registrar. The concurrent enrollment agreement and waiver of specified fees applies only to students following the concurrent enrollment procedures specified by the home institution.

The charges for the following will be assessed and collected at the home institution for the other institution(s):

- Tuition at an appropriate rate
- Applicable laboratory fees and special course charges
- General Use Fee at the appropriate rate
- Any other fees that are required at the host institution that are not charged at the home institution

Student services at the second institution will be made available to concurrently enrolled students paying the appropriate student service fees at the second institution.

Some institutions have a reciprocal agreement for honoring parking permits. Details may be obtained from the police departments on each campus.

Concurrently enrolled students should report any problems concerning registration, payment of fees or other matters related to concurrent enrollment procedures to the registrar or records office of the home institution.

Concurrent students wishing to add or drop courses must do so in compliance with the host institution's policy. On or before the host institution's Census Date, schedule changes may be done through the home institution's records office. After the Census Date, drops must be done at the host institution.

All paperwork must be turned in two weeks prior to the host institution's first class day.

For more information, refer to the webpage <http://www.uta.edu/records/courses/policies/concurrent-enrollment.php>.

Students Receiving Financial Aid

To qualify for most forms of financial aid administered through the Office of Financial Aid, students must enroll in and complete a certain number of credit hours each term to meet the Satisfactory Academic Progress requirements to receive future financial aid. Details are available on the Financial Aid website (<http://www.uta.edu/aao/fao/>).

Other Public Institutions of Higher Education

When students register at more than one public institution of higher education in Texas, they shall pay the full tuition charges to the first institution at which they are registered. A student who is first registered at another institution must present a copy of the fee receipt from that institution to Student Accounts when registering at UT Arlington. Any reduction in tuition per the following guidelines will be refunded to the student approximately one month after the beginning of the term.

- If the minimum tuition at the first institution is the same as or greater than the UT Arlington minimum, the amount charged for tuition will be the UT Arlington hourly rate.
- If the minimum tuition at the first institution is lower than the UT Arlington minimum, the amount charged for tuition will include the difference in the minimum charges. In no case will the amount charged be less than the UT Arlington hourly rate.
- All other applicable fees will be charged.

Graduate Registration

Eligibility to Enroll

A graduate student must maintain a minimum cumulative grade point average (GPA) of at least 3.0 at UT Arlington to remain academically eligible to register for the subsequent term or session.

Full-Time Enrollment and Assistantship Enrollment Requirements

Full-time enrollment at UT Arlington in Fall and Spring Terms is 9 SCH and a total of 6 SCH (total) in Summer Terms. Doctoral students who have completed their Comprehensive Examinations and who will devote most or all of their efforts to completing their dissertations must enroll in at least 6 SCH per term (Fall, Spring or Summer) to be considered full-time students.

Doctoral students In their final semester meet the enrollment requirement for holding an assistantship by enrolling in 7399, 6699 or 6999. However, international students must obtain permission to enroll only in 7399 from the Office for International Education (OIE).

Non-thesis master's students in their final semester of study with only three to six hours of organized coursework needed to graduate, may hold an assistantship if they enroll in just the number of hours they require to complete their degree. Master's thesis students who have completed all organized course work are permitted to hold an assistantship if they enroll in 5698. Master's thesis students in their final semester may enroll in 5398 and hold an assistantship if that will complete the thesis credit hour requirement required by their degree plan and departmental policies permit it.

International students must obtain written permission from the Office for International Education for less than full-time enrollment. Hiring departments must have a copy of this permission in order to offer an assistantship to students who are not enrolled full-time.

Departments may set higher enrollment requirements for students.

Students must be enrolled in at least 6 SCH to be eligible for aid offered through the Office of Financial Aid. It should be noted that some loan and scholarship programs require full-time enrollment each term and will not fund part-time students. Some may require part-time enrolled students to begin to repay loans. Students who receive financial aid should check with Office of Financial Aid before enrolling in 6 or fewer hours.

Continuous Enrollment Policy

Graduate students must enroll in at least one credit hour of work related to their degree each long semester (Fall and Spring) in order to remain classified as an enrolled student. Some programs may specify a higher minimum enrollment requirement in their Handbook for Graduate Students or other published documents. Enrollment in Summer Sessions is not required, and students who do not enroll in summer will not be considered in violation of the continuous enrollment policy. However, students are required to register for appropriate courses in every term in which they expect to receive assistance, use the facilities of the university, take diagnostic or comprehensive examinations or defend theses or dissertations. The minimum

enrollment requirements for holding graduate assistantships or fellowships or the requirements of the enrollment requirements of other programs, offices and agencies such as the Veterans Administration, U.S. Citizenship and Immigration Services, and federal financial aid and certain loan programs, must be met. It is the student's responsibility to determine the enrollment requirements of such entities. Students who have completed all degree requirements or who will complete degree requirements must submit an application for graduation by the deadline for graduation for the next available graduation date. They must also pay the appropriate graduation fees. Enrolled students who do not complete all requirements by the beginning of the next long semester must enroll to complete remaining requirements.

Maximum Course Load:

The maximum course load for full-time graduate students is 15 semester hours in a regular term and 12 hours in the summer term. Registration in excess of these limits in exceptional circumstances must be approved by the student's graduate advisor.

Schedule Changes (Adds, Drops and Swaps)

Graduate students who wish to change a schedule by either dropping or adding a course must first consult with their graduate advisor. Regulations pertaining to adding or dropping courses are described below. A student's registration is not automatically cancelled for non-attendance. A student should either pay fees in full by the designated deadline or take the appropriate steps to withdraw. To avoid financial responsibility to the University, this cancellation of enrollment must be completed as soon as possible, but no later than the day before the first official University class day. Prompt notification also helps to free up class space for other students who are interested in the same classes.

A student wishing to drop all classes will be considered to have withdrawn from the University and must reapply for admission in order to resume studies unless granted a leave of absence. Adds and drops may be made through late registration either on the Web at MyMav or in person through the student's academic department. Drops may occur until a point in time two-thirds of the way through the term. The last day to drop a course is listed in the Academic Calendar (<http://www.uta.edu/uta/acadcal/>).

1. A student may not add a course after the end of the late registration period.
2. No grade is posted if a student drops a course before 5:00 p.m. on the Census Date of that term.
3. A student dropping a graduate course after the Census Date but on or before the last drop date may, with the agreement of the instructor, receive a grade of W but only if passing the course with a C or better average. A grade of W will not be given if the student does not have at least a C average. In such instances, the student will receive a grade of F if he or she withdraws from the class.
4. Students dropping their last class on or after the first day of classes must meet with their graduate advisor to make the last class drop (withdraw). A student desiring to drop all courses in which he or she is enrolled is reminded that such action constitutes withdrawal (resignation) from the University unless an approved leave of absence has been obtained.
5. In most cases, a student may not drop a graduate course or withdraw (resign) from the University after the two-thirds point of the course offering period (Last Drop Date). Under extreme circumstances, the academic dean of the student's college or school may consider a petition to withdraw (resign) from the University after the Last Drop Date. Students should use the Petition to Withdraw for this purpose. See the section titled Withdrawal (Resignation) From the University for additional information concerning withdrawal.

Withdrawals

A student who wishes to withdraw (resign) voluntarily from the University may do so by withdrawing from **all** graduate and undergraduate classes prior to the last day to drop date, a point of time corresponding to two-thirds of the duration of the term. The last day to drop a course is listed in the Academic Calendar (<http://www.uta.edu/uta/acadcal/>). After this deadline has passed, a graduate student or undergraduate student enrolled in a graduate course is not permitted to withdraw or to selectively drop courses. In exceptional cases, however, a graduate student may request to withdraw after the deadline by obtaining a Petition to Withdraw form (<http://grad.pci.uta.edu/faculty/resources/advisors/current/#withdraw>) and submitting it to the Dean of the college or school in which they are enrolled. If the petition is not approved, the student remains responsible for all coursework requirements. Therefore, students should not discontinue class attendance or course assignments unless they have been notified in writing that their academic dean has approved the Petition to Withdraw.

Withdrawal as a Result of Military Service

Students who withdraw as a result of military service may choose to receive a full refund of tuition and fees, an incomplete (if eligible) or final grade at institution discretion. Typically, a final grade is awarded when the student has satisfactorily completed a substantial amount of coursework and has demonstrated sufficient mastery of the course material (see Texas Education Code, Section 54.006).

Leave of Absence Policy

A graduate student may apply for a Leave of Absence in order to respond to exceptional circumstances that will prevent him or her from meeting the continuous enrollment requirement. A Leave of Absence will be granted only for good cause, such as health-related issues, major financial or employment issues, significant family concerns such as pregnancy, childbirth, child care or elder care, or other major personal circumstances that interfere with a student's ability to undertake graduate study. Leaves may only be granted for up to two long semesters (spring or fall semesters). The student must have been enrolled in the previous long semester and be in Good Standing (at least a 3.0 cumulative gpa) in order to utilize the Leave of Absence Policy. Students returning from leave as scheduled will be automatically readmitted and will not be required to submit an application or pay an admission fee. Students who do not return at the end of their approved Leave of Absence must reapply for admission by the published application

deadlines, pay all relevant evaluation fees, and are not assured of readmission to the University. Students may not submit another Leave of Absence request to extend the leave beyond two long semesters. The student must return to continue his or her studies or reapply for admission. During the time of the leave of absence, the student may not use University facilities or resources, receive an assistantship or fellowship, continue academic work with faculty, take a diagnostic or comprehensive examination, or defend a thesis or a dissertation. Time taken on an approved Leave of Absence will not count against degree completion time limits.

An approved Leave of Absence does not exempt students from the enrollment requirements of other programs, offices, and agencies such as the Veterans Administration, US Customs and Immigration Services, and federal financial aid and certain loan programs. It is the student's responsibility to determine what effect a Leave of Absence will have on his or her status with such entities. For example, International students approved for a Leave of Absence must inform the Office of International Education so that requirements of the US Customs and Immigration Services can be addressed.

A student requesting leave should complete the Leave of Absence Request form and obtain the approval of his or her graduate advisor who will forward the request to the Office of the Registrar for final review and approval. This form is available online (<http://www.uta.edu/records/graduate/leave-of-absence-loa.php>). Requests must be made no later than Census day of the semester that the student is requesting leave. Leave of Absence will not be granted retroactively for a semester after the Census day has passed. Students who miss this deadline must withdraw from the University and apply for readmission when they wish to return to their studies.

Change of Graduate Major, Program or Degree Level

Students wishing to change graduate major, program or degree level (master's or doctoral classification) from that in which they are enrolled currently, or in which they were enrolled during their most recent term at UT Arlington, must initiate the change by completing the Request for Change of Graduate Program or Degree Level form. The Request For Change of Graduate Program or Degree Level form can be found online (<http://grad.pci.uta.edu/students/forms/>). Students intending to change majors should consult the graduate advisor of the new program regarding program admission and degree requirements before completing this form. Similarly, students wishing to change degree level should submit the request after discussing the matter with the appropriate graduate advisor.

Students wishing to change from one program to a dual degree program must complete the Request for Change of Graduate Program or Degree Level form and mark the box stating Request to Change to Dual Degree Program (master's level only).

Students wishing to change from a dual degree program to single degree program must complete the Request For Change of Graduate Program or Degree Level form and mark the box stating Request to Change to New Graduate Program.

Students wishing to change from Doctoral to Masters degree level for conferral of the masters degree must complete the Request for Change of Graduate Program or Degree Level form and mark the box stating Request to change from PhD to Masters Status (for conferral of the master's degree). Students will remain in masters status until award of the masters degree. Upon award of the masters degree, students will be automatically changed back to doctoral status.

The Dean of the college or school will make the final decision regarding the request(s) for change.

Auditing Courses

Final arrangements to audit an undergraduate course may be made during the late registration period only, although the permission process can begin prior to it. The required form, obtained from the Office of the Registrar, must be completed and taken to the instructor for approval. This form will only be accepted and processed by the Office of the Registrar during the late registration period and approval is based in part on space availability. After obtaining the instructor's approval and approval from the Office of the Registrar, the applicant will be obliged to pay an audit fee at Bursar Services of \$20 per course if enrolled for course work at UT Arlington or \$100 per course if not enrolled for course work in residence at UT Arlington. Persons 65 years of age or older may audit courses without paying an audit fee.

The auditor has the privilege of hearing and observing only; no University credit is granted for auditing. An academic department or the Office of the Registrar may place restrictions on the privilege of auditing and may deny permission to audit certain courses. Activity classes, labs, etc., are generally not auditable.

Students auditing a course are required to comply with Texas state legislation that mandates those who have not been continuously enrolled at UT Arlington must have received the bacterial meningitis vaccine (http://www.uta.edu/aaosandregistration/content/student_services/ meningitis_requirement.aspx) within the past five years.

Audited courses do not meet enrollment requirements applying to graduate students.

Cooperative Programs Between University of Texas System Components

A student concurrently enrolling at two or more University of Texas System components may register and pay tuition and fees for all courses through the student's home institution. Detailed procedures may be obtained from the registrar or records office of the student's home institution. At UT Arlington, this is the Office of the Registrar. The concurrent enrollment agreement and waiver of specified fees applies only to students following the concurrent enrollment procedures specified by the home institution.

The charges for the following will be assessed and collected at the home institution for the other institution(s):

- Tuition at an appropriate rate
- Applicable laboratory fees and special course charges
- General Use Fee at the appropriate rate
- Any other fees that are required at the host institution that are not charged at the home institution

Student services at the second institution will be made available to concurrently enrolled students paying the appropriate student service fees at the second institution.

Some institutions have a reciprocal agreement for honoring parking permits. Details may be obtained from the police departments on each campus.

Concurrently enrolled students should report any problems concerning registration, payment of fees or other matters related to concurrent enrollment procedures to the registrar or records office of the home institution.

Concurrent students wishing to add or drop courses must do so in compliance with the host institution's policy. On or before the host institution's Census Date, schedule changes may be done through the home institution's records office. After the Census Date, drops must be done at the host institution.

All paperwork must be turned in two weeks prior to the host institution's first class day.

For more information, refer to the webpage <http://www.uta.edu/records/courses/policies/concurrent-enrollment.php>.

Students Receiving Financial Aid

Funded Student Enrollment Requirements

Students are normally expected to be enrolled as full time students while holding a funded assistantship or associateship. Master's students who must enroll in a six-hour Thesis course or doctoral students who must enroll in a six or nine-hour Dissertation Course or three-hour Dissertation Completion Course because they have not received a passing grade in one of these courses must enroll in one of them and receive a grade of P in their final semester. However, master's students who need fewer hours to complete their degrees may petition for a waiver of full time enrollment as described in the Assistantship/Associateship Policy section (p. 89) of this catalog.

Teaching and Research Assistants

Students receiving graduate teaching or research assistantships must meet enrollment requirements during the term in which they are supported. Assistants should complete no more than 12 semester hours and no fewer than 9 semester hours per term. They may register for no fewer than 6 semester hours during the summer sessions. See the section titled Graduate Assistantship/Associateship Policy (p. 89) for exceptions to these rules and other requirements that Assistants and Associates must meet.

Students Receiving Financial Aid

To qualify for most forms of financial aid administered through the Office of Financial Aid, students must enroll in and complete a certain number of credit hours each term to meet the Satisfactory Academic Progress requirements to receive future financial aid. The Satisfactory Academic Progress policy may be found at www.uta.edu/fao (<http://www.uta.edu/fao/>). Students enrolling in 9 or more credit hours at Census Date must complete at least 6 of these hours whereas students enrolling in 6-8 credits hours at Census Date must complete 4 hours to qualify for financial aid. Students enrolling in 5 hours must complete 3 hours. If a student does not complete the required minimum number of hours, they will lose eligibility for aid in the next academic year of enrollment. Students enrolling in fewer than 5 hours at Census do not meet the enrollment requirements for financial aid. Contact the Office of Financial Aid for additional information and guidance on enrollment and eligibility requirements.

Doctoral Student 99-hr Rule

The "99 hour rule" refers to the implementation of Senate Bill 961, passed by the Seventy-fifth Legislature. Under this policy, graduate students at UT Arlington who are Texas residents and nonresidents who normally would be entitled to pay resident tuition by virtue of residency, work appointments or fellowships who have attempted more than 99 doctoral hours may be subject to the payment of nonresident tuition. This rule does not apply to students enrolled before August 1999. A student who has completed more than 99 hours of doctoral level study at UT Arlington will not be obligated to pay non-resident tuition unless they have also completed a total of 14 long semesters of master's and/or doctoral study. Programmatic or individual exceptions for students exceeding the 99-hour and 14 long semester limit may be considered.

International Students

International students must be enrolled for a minimum of 9 semester hours during each regular semester (Fall and Spring). International students should refer to the International Student section of this catalog for additional registration information.

Course Designation System

Courses at UT Arlington are designated by a combination of letters and numbers. The letters indicate the department, or the area within a department, that offers the course. The numbers furnish information such as level, credit and hours of theory or practice. A complete list of course abbreviations is outlined below.

Examples demonstrating UT Arlington's Course Designation System:

Undergraduate example: CHEM 1301 (3-0) 3 hours credit

- "CHEM" indicates that the course is offered by the Chemistry Department.
- The first digit (1 in the example above) denotes the level of the course: 1 and 2 indicate lower division (freshman and sophomore) courses; 3 and 4 indicate upper division (junior and senior) courses; and 5 and 6 indicate graduate courses.
- The second digit (3) denotes the semester hour credit the student is attempting to earn by taking the course.
- The third and fourth digits (0 and 1) distinguish the individual course. Course numbers 90 through 99 indicate individual or small group instruction.
- The first figure in parentheses (3) indicates the clock hours per week in the long (spring and fall) terms devoted to theory or lecture. Theory includes recitations and lectures.
- The second figure in parentheses (0) indicates the clock hours per week in the long (spring and fall) terms devoted to practice. Practice includes work done in the laboratory, shop, drawing room or field.
- The final figure is the credit value of the course. The unit of credit is the "semester credit hour," which involves one hour of theory and/or from two to four hours of practice per week for a 16-week term.

Graduate example: GEOL 5313 (2-3) 3 hours credit

1. "GEOL" indicates that the course is offered by the Geology Department
2. The first digit (5) in the above example denotes the level of the course. Graduate courses are designated 5 or 6.
3. The second digit (3) denotes the semester hour credit the student is attempting to earn by taking the course.
4. The third and fourth digits (1 and 3) distinguish the individual course.
5. The first figure in parentheses (2) indicates the clock hours per week in the long (spring and fall) terms devoted to theory or lecture. Theory includes recitations and lectures.
6. The second figure in parentheses (3) indicates the clock hours per week in the long (spring and fall) terms devoted to practice. Practice includes work done in the laboratory, shop, drawing room or field.

List of Course Abbreviations (p. 1373)

Accelerated Online Programs

REGISTRATION INFORMATION

Students must be in an accelerated online program major to take the approved courses listed on the program web pages.

If you are not an accelerated online program student registered in an accelerated program (Dynamic Dated session) course you will be dropped from the unauthorized course. You will be notified via your UTA MyMav email after you have been dropped.

If you are an accelerated online program student registered in a non-accelerated program (Regular session) course you will be dropped from the unauthorized course. You will be notified via your UTA MyMav email after you have been dropped.

If a student did not pass a class for the currently enrolled term and would like to retake the same class within the same term at a later start date, this cannot be done through student self-service in MyMav unless the course is setup to allow for this exception. Students' academic advisor would have to perform the enrollment request on the students' behalf. For this exception to be approved, final grades for the original class must be officially posted in MyMav prior to the late registration deadline for the requested class start date. If grades are not posted in MyMav before the late registration deadline for the next start date, students will need to request a registration exception for the next available start date with open registration. If the next available start date is in the next term, students can enroll themselves through student self-service in MyMav.

REGISTRATION AND DROP/WITHDRAW REQUESTS

Please contact your major academic advisor via your MyMav email if you have any questions regarding registration or dropping/withdrawing from a course(s). Any requests received after 4 PM CT, weekends or holidays will be processed effectively on the following business day. Backdating to the previous business day is not allowed. If a request to register or drop a course(s) is received by your major advisor after 4 PM CT prior to the late registration deadline or last day to drop deadline, your request may not be reviewed or processed.

To drop a course before the first day of class

- It is the student's responsibility to drop a course before the first day of class.
- If a student has decided to drop a course before the first day of class it is advised that they attempt to drop the course before 4 pm (CT) on the Friday before the course starts. This is so that they can contact their academic advisor if they have any difficulties dropping the course.
- If a student waits until after 4 pm (CT) prior to the first day of class and has difficulties dropping the course then they cannot contact their academic advisor before the first day of class. Since it is the student's responsibility to drop they will be subject to the refund policy when their advisor drops them from the course on Monday.
- For directions on how to drop a course please click here (http://uta.qa.academicpartnerships.com/documents/How_to_Drop_a_Course.pdf).

To drop a course on or after the first day of class

- Fill out the drop form for the Accelerated Online Nursing students: Click here (<http://academicpartnerships.uta.edu/documents/Drop-Request-Form.pdf>). (Students in the Accelerated Online Education and Master of Public Administration Programs, please contact your advisors via email).
- Save the form and email it to your academic advisor
- To locate your Accelerated Online Nursing academic advisor's contact information click here (<http://www.uta.edu/conhi/students/advising/>).
- Drops can only be requested through email. Do not call! If you call you will be instructed to email in your request using your MyMav email only (personal email will not be accepted). This is because dropping is a serious matter and we need documentation that (a) you understand the consequences of dropping and (b) are sure you want to drop the course.
- After the registration deadline, once a drop request has been submitted and/or processed, students are not eligible to be added back to the course in which they requested to be dropped from. All drops are final.
- Drop requests **must** be submitted by **4:00 PM CT** in order for a drop to be processed the **same day**. If a drop request is submitted after 4:00 PM CT, on weekends or holidays, it will be processed the next business day. Students who submit a drop request after 4:00 PM CT will be subject to the next business day's refund and drop deadline policies. If a request to drop a course is received after 4:00 PM CT on the last day to drop, your request may not be reviewed or processed.

LATE REGISTRATION

Starting Fall 2017, the accelerated online programs have new registration deadlines. See Important Dates Information below for the registration deadlines for each start date session.

There is a late registration deadline that begins at 12:00 AM CT on the specified dates listed below for each start date session. Students will register thru their MyMav Student Service Center (self-service) until the late registration deadline ends at 11:59 PM CT on the specified dates listed below. If you need clarification on this policy or need to discuss what options you may have for future registration, please contact your major academic advisor.

Any requests received after 4 PM CT on the late registration deadline, weekends or holidays will be considered received as of the following business day. Backdating to the previous business day is not allowed. If a late registration request is received by your major advisor after 4 PM CT on the 1st day of class (the start date) your request may not be reviewed or processed.

REINSTATEMENT INFORMATION FOR NON-PAYMENT DROPS

Students in the accelerated online program that are dropped for non-payment on the 1st day of class, can re-register themselves using their MyMav Student Service Center (self-service) if there are seats still available in the course. The non-payment reinstatement deadline is 11:59 PM CT on the 1st day of class (the start date). Payment is due by 11:59 PM CT the same day. If a student is dropped for non-payment a second time, reinstatement will not be allowed.

Any requests received after 4 PM CT on the non-payment reinstatement deadline, weekends or holidays will be considered as received as of the following business day. Backdating to the previous business day is not allowed. If a reinstatement request is received by your major advisor after 4 PM CT on the 1st day of class (the start date) your request may not be reviewed or processed.

REINSTATEMENT APPEALS FOR NON-PAYMENT DROPS

As of May 24, 2010, reinstatement appeals for nonpayment of tuition drops for accelerated online program students will not be allowed. Due to the length of the accelerated online courses and the time it takes for reinstatement appeals to be processed; it is not advantageous to students, faculty or the administration to allow reinstatements. If you are dropped for non-payment, you will need to register for the next start date that the course is available. If you need clarification on this policy or want to discuss what options you may have for future registration, please contact your major academic advisor.

CHANGE OF MAJORS

Students that enrolled/dropped within the current term can change their majors (to or from) an accelerated online program once the current term has ended and prior to enrolling in a course for the following term. If you never enrolled in the current term and you would like to change your major, you can do so at any time. Please contact an academic advisor in the major you would like to change into if you have any questions.

ACADEMIC STANDING INFORMATION

Academic standing for accelerated online program students is official once the last grades for a term (last grades in the sessions, see charts below for dates) have been posted. If you are on academic dismissal once grades have been posted, you will be dropped from any course(s) for the current term and future term(s) that are not in progress. Please contact your academic advisor within your major with any questions.

Tuition & Fees

Overview

Tuition and fees are subject to change by legislative or regental action and become effective on the date enacted. The Texas Legislature does not set the specific amount for any particular student fee. The student fees are authorized by state statute; however, the specific fee amounts and the determination to increase fees are made by the university administration and The University of Texas System Board of Regents. (General Appropriations Act 2010-2011, Article IX, §6.16). Visit www.uta.edu/fees (<http://www.uta.edu/fees/>) for current tuition, fees, and charges.

To comply with Senate Bill 1304, passed by the 81st Texas Legislature the University of Texas at Arlington is required to report to each student the amount of tuition paid by the student that must be set aside to provide financial assistance to qualified students. UT Arlington will notify students by email of the set aside amount.

Undergraduate students who enrolled under the fall 1999 or subsequent catalogs may be required to pay non-Texas resident tuition rates when they exceed 45 hours more than is required for completion of the degree program for which the student is enrolled.

The "99 hour rule" refers to the implementation of Senate Bill 961, passed by the 75th Legislature. It is the rule that students admitted during the fall semester of 1999 and thereafter who complete more than 99-hours of *doctoral* level study may be required to pay out-of-state tuition for every subsequent semester. UT Arlington does not automatically change tuition rates when a doctoral student passes the 99-hour mark. The policy of the University is as follows: Doctoral students who enrolled under the Summer 1999 or subsequent catalogs may be charged non-resident tuition under the following conditions: A doctoral student may pay non-Texas resident tuition beginning the first long semester in which a) the student has been enrolled previously as a graduate student for 14 or more long semesters, AND b) the student has accumulated more than 99 semester credit hours of doctoral study at UT Arlington. Students exceeding both limits will not be eligible for assistantships supported by state funds. Individual exceptions for students exceeding these criteria who are nearing degree completion are considered.

Resident undergraduate students who enroll in a course that is substantively identical to a course for which he/she has previously completed may be required to pay a higher tuition rate, not to exceed the rate charged to non-resident undergraduate students.

Failure to pay tuition, fees, and charges by the term/session payment due date constitutes voluntary withdrawal from the term/session.

Description of Tuition, Fees, and Charges

Tuition, fees, and charges are assessed to students based on session credit hours (SCH), a set charge per term and/or session, or for specific services. They are required of all students, charged to everyone taking specific courses or anyone receiving specific services, or charged only for voluntary products or services.

A Guaranteed Tuition Plan is offered to undergraduate students, including undergraduate students that transfer to UT Arlington per Section 54.017 of the Texas Education Code. The Guaranteed Tuition Plan offers a fixed tuition price plan under which the institution agrees not to increase tuition charges per semester credit hour for a participating student for at least the first 12 consecutive semesters that occur after the date of the student's initial enrollment at any public or private institution of higher education, regardless of whether the student enrolls at any institution in those semesters, and subject to any restrictions or qualifications adopted by the governing board. For additional information on the Guaranteed Tuition Plan, please refer to our website at Guaranteed Tuition Plan (<https://www.uta.edu/business-affairs/sfs/description/Fall.php>).

For more information and specific rates please refer to our website at <https://www.uta.edu/business-affairs/sfs/description/> (<https://www.uta.edu/business-affairs/sfs/description/>).

Exemptions and Waivers

State law provides for several exemptions or waivers of tuition, fees, and charges. Students qualified for a reduced rate in any of the following categories must have that eligibility certified prior to the due date of the session/term. For a complete description and eligibility requirements, please go to <https://www.uta.edu/business-affairs/sfs/tuition-waivers-and-exemptions/index.php> (<https://www.uta.edu/business-affairs/sfs/tuition-waivers-and-exemptions/>). This web site will also provide department contact information and a list of tuition, fees, and charges that are exempt or waived. Additional information may be found in the Texas Education Code.

Tuition Rebate for Baccalaureate Graduates

Texas residents enrolling for the first time in a Texas public institution of higher education may be eligible for a tuition rebate up to \$1,000 when the baccalaureate degree is completed (Texas Education Code, Section 54.0065). The student must have attempted all course work at a Texas public college or university and have been entitled to pay resident tuition at all times while pursuing the degree. The requested rebate must be for course work related to a first baccalaureate degree received from a Texas public university. No more than three hours may be attempted in excess of the minimum number of semester hours required for the degree under the catalog which the student is graduating. (Hours attempted include transfer credits, credit earned exclusively by examination, courses dropped after the official census date, for-credit developmental courses, optional internship and cooperative education courses, and those repeated exclusively by examination.)

An application form and any other requirements pertaining to the tuition rebate may be obtained from the Graduation section of the Office of the Registrar. Interested students should apply for the rebate when filing for graduation prior to registration for the final semester. To be eligible, a student must apply for the rebate before degrees are awarded for that semester.

This rebate is not part of the UT Arlington Guaranteed Tuition Plan, but you may qualify for it, in addition to qualifying for the Guaranteed Tuition Plan, and earn rebates from both programs if you meet eligibility requirements.

Payment of Tuition, Fees, and Charges

Please go to www.uta.edu/fees (<http://www.uta.edu/fees/>) for information on due dates, deadlines, refunds and penalties. Students will be given notice of the amount of his/her tuition charges that were required to be set aside to provide financial assistance for students enrolled at the institution (Texas Education Code, Section 56.014).

Refunds of Registration Charges (Withdrawals and Drops)

Please go to www.uta.edu/fees (<http://www.uta.edu/fees/>) and select Fees and Charges and then Refunds for Registration Charges for information about a specific term/session.

Payment Options

Please go to www.uta.edu/fees (<http://www.uta.edu/fees/>) and select Fees and Charges and then Payment Information in the Paying Your Bills section for deadlines and payment options for a specific session.

- **Installment Payment Option:** Several Installment Payment Options may be available to students. To view available Installment Plans, please visit our Web site, Tuition Payment Plans (<https://www.uta.edu/business-affairs/sfs/installment-payment-plan.php>). (Installments are not available to Accelerated Online students.)

Note: The following quotation from Texas Education Code 54.007 applies to installment payments due: **"A student who fails to make full payment of tuition and fees, including any incidental fees, by the due date may be prohibited from registering for classes until full payment is made. A student who fails to make payment prior to the end of the semester may be denied credit for the work done that semester."**

- **Financial Aid:** Please read the Financial Aid section of this catalog or visit www.uta.edu/fao (<http://www.uta.edu/fao/>) for information.
- **Enrollment Loans:** Loans are offered only if funds are available and the borrower meets underwriting requirements. Loans are available online via TouchNet or at the Office of Student Accounts, Room 130, University Administration Building. Please visit our Web site, Tuition Payment Plans (<https://www.uta.edu/business-affairs/sfs/installment-payment-plan.php>), for specified dates and requirements. Enrollment loans are not available to Accelerated Online students or students enrolled in the Finish@UT program.

Questions may be directed to the Office of Student Accounts, 817-272-2172 or by email at studentaccounts@uta.edu. Detailed student account information may not be released to anyone other than the student without the student's written permission in the Office of Student Accounts.

Payment Methods and Locations

The University accepts cash, checks, traveler's checks, money orders, wires, and the following credit cards: MasterCard, Visa, Discover, Diner's Club, and American Express. Any form of payment that is returned unpaid can result in enrollment withdrawal and additional penalties.

- **Online:** Pay by credit card at Make a Payment (<https://www.uta.edu/business-affairs/sfs/make-payment.php>).
- **In Person:** Payments can be made in person at Student Accounts, Room 130, University Administration Building.
- **Mail:** Please include your 10-digit student ID number and do not mail cash or traveler's checks. Check or money order payments can be mailed to:

UT Arlington Office of Student Accounts

P.O. Box 19649

Arlington, TX 76019-0649

- **Traveler's Check:** Traveler's checks must be signed in the presence of a cashier and should be presented in person at the Student Accounts window during their regular business hours.
- **International Wires:**

UT Arlington has partnered with Flywire (formerly peerTransfer) to streamline the international payment process. Flywire allows you to pay securely from any country and any bank, typically in your home currency. By making your payment with Flywire, you can:

- Track your payment from start to finish
- Save on bank fees and exchange rates
- Contact their multilingual customer support team with any questions, day or night.

To get started, please visit <https://www.flywire.com/school/uta> (<https://www.flywire.com/school/uta/>). For additional questions about making your international payment with flywire, please visit www.flywire.com/help (<http://www.flywire.com/help/>).

Please note, Bank to Bank wires are not accepted.

- **Kiosks:** Payments can be made at kiosks across campus using credit cards, debit cards, and checking or savings accounts.

Concurrent Enrollment

Cooperative Programs Between University of Texas System Components

A student concurrently enrolling at two or more University of Texas System components and participating in a joint cooperative program may register and pay tuition, fees, and charges for all courses through the student's home institution. The concurrent enrollment agreement and waiver of specified fees and charges applies only to students following the concurrent enrollment procedures specified by the registrar of the home institution. Detailed procedures may be obtained from the registrar of the student's home institution. UT Arlington students will find additional information by going to www.uta.edu/fees (<http://www.uta.edu/uta/tuition.php>) and selecting Concurrent Enrollment. The concurrent enrollment agreement and waiver of specified fees and charges applies only to students following the concurrent enrollment procedures specified by the registrar of the home institution. Applicable tuition, fees and charges will be assessed and collected at the home institution for the other institution(s). The charges for the following will be assessed and collected at the home institution for the other institution(s):

- Tuition and Mandatory Fees at an appropriate rate
- Applicable laboratory fees and special course charges
- Enhanced Designated Tuition
- Any other fees and charges that are required at the host institution that are not charged at the home institution

Student services at the second institution will be made available to concurrently enrolled students paying the appropriate student service fees at the second institution. Some institutions have a reciprocal agreement for honoring parking permits. Details may be obtained from the police departments on each campus. Concurrently enrolled students should report any problems concerning registration, payment of tuition, fees, and charges or other matters related to concurrent enrollment procedures to the registrar of the home institution.

Concurrent students wishing to add or drop courses must do so in compliance with the host institution's policy. On or before the host institution's Census Date, adds or drops may be done through the home institution's registrar. After the Census Date, drops must be done at the host institution.

Sponsored Students/ Texas Tomorrow Fund Participants

It is the student's responsibility to contact the Office of Student Accounts, Room 130, University Administration Building, 817-272-2172, each session prior to the payment deadline date to confirm that an authorization has been received and is sufficient to secure the current session registration.

Average Cost and Financial Aid Opportunities

Annually, the Office of Financial Aid, Scholarships, and Veteran's Affairs estimates the average expenses for a full-time student for two semesters at UT Arlington, which includes the estimated cost of books, transportation, living expenses plus tuition and fees. Current information may be found at www.uta.edu/fao (<http://www.uta.edu/fao/>). Navigate to the Average Cost option under the Financial Aid menu for detailed information. (Texas Education Code, Section 61.0777).

Academic Common Market

The Academic Common Market is an interstate agreement for sharing academic programs through an exchange of students across state lines. Fifteen southern states take part in the Academic Common Market. Texas, Florida and North Carolina participate at the graduate level only. Selected out-of-state programs that are not offered in a student's home state can be accessed through the Academic Common Market at in-state tuition rates.

For information on the graduate programs at The University of Texas at Arlington that are available through the Academic Common Market and the states that have access to those programs, contact the Office of Financial Aid or the Academic Common Market coordinator in the home state.

Further information on the Academic Common Market may be obtained from the Texas State Coordinator for the Academic Common Market: Texas Higher Education Coordinating Board, P.O. Box 12788, Austin, Texas, 78711. Phone: 512-427-6525. E-mail: ACMrequests@thecb.state.tx.us.

State Law - Excessive Hours

Texas Education Code §54.014 specifies that resident undergraduate students who initially enrolled as an undergraduate student in an institution of higher education fall semester 1999 and later may be subject to a higher tuition rate for attempting excessive hours at any Texas public institution of higher education while classified as a resident student for tuition purposes.

- Undergraduate students who enrolled initially in the fall 1999 semester or subsequent semesters cannot exceed more than 45 hours of the number of hours required for completion of the degree plan in which they are enrolled. Any hours beyond 45 are considered excessive and may result in additional tuition charges.

- Undergraduate students who enrolled initially in the fall 2006 semester or subsequent semesters cannot exceed more than 30 hours of the number of hours required for completion of the degree plan in which they are enrolled. Any hours beyond 30 are considered excessive and may result in additional tuition charges.

The purpose of these policies is to encourage students to complete their degree programs in an efficient, timely manner.

For additional information regarding the UT Arlington's administration of the Texas excessive hours policy, please visit <http://www.uta.edu/records/courses/policies/excessive-hours.php>.

3-Peat Courses

As outlined in Texas Education Code §54.014 of the *Texas Education Code*, an institution may charge a resident undergraduate student a higher rate when enrolling in a course that the student has previously completed. An undergraduate student who registers for a course three or more times may be charged up to the non-resident tuition rate.

Important Tax Information

As an eligible education institution, UT Arlington is required to file a 1098-T Tuition Statement to report enrollment and other identifying information for each U.S. resident student who was billed for any qualified tuition and related expenses (<http://www.irs.gov/instructions/i1098et/ar02.html>) during the tax year, as defined by the IRS. Universities are *not* required to file a 1098-T for students who are Nonresident aliens for U.S. income tax purposes. As a result, Nonresident Alien Students may not receive a 1098-T.

1098-T Tuition Statement

Students meeting the following criteria will be eligible to receive a 1098-T Tuition Statement:

1. Incurred charges for qualified tuition and related expenses AND
2. Have a valid SSN or TIN (Taxpayer Identification Number) in MyMav (<http://www.uta.edu/mymav/>) AND
3. Have a valid Mailing, Home, or Campus address in MyMav (<http://www.uta.edu/mymav/>) (Please log on to your MyMav (<http://www.uta.edu/mymav/>) Student Service Center and verify your SSN/TIN and address information.)

In addition, UT Arlington will file the 1098-T forms with the IRS.

Box 2 (<http://www.irs.gov/pub/irs-pdf/f1098t.pdf>) on the 1098-T shows the total amounts *BILLED* for qualified tuition and related expenses less any related reductions in charges for the tax year (total amount "BILLED," not payments received). If Box 7 on the 1098-T form is checked, the amount in Box 2 includes amounts for an academic period beginning January -- March. See *Publication 970* for guidance on how to report these amounts.

When and Where the 1098-T Forms Will Be Available

Your 1098-T Tuition Statement will be available online in MyMav Self Service and may also be postmarked to your designated mailing address by January 31st. If a valid mailing address is not designated in MyMav, it will be mailed to your valid home or campus address. Please take a moment to verify that your addresses are accurate and make any necessary changes in your MyMav (<http://www.uta.edu/mymav/>) Self Service Student Center. It is also extremely important that the University has your name as it appears on your social security card.

Other Fees

INTERNATIONAL STUDENT HEALTH INSURANCE

International students are required to purchase The University of Texas at Arlington Student Health Insurance Plan while enrolled at the University. In order to be approved for a waiver, your alternate health coverage must meet or exceed the requirements as set in the System regulation and be PPACA compliant. **Waivers must be submitted and approved each semester to have the insurance charge removed from student accounts.**

• Criteria to submit a waiver request, must meet one of the following:

- Sponsored Plan (US Government, Foreign Government, Embassy)
 - Must guarantee payment of all health care expenses in writing
 - Must be ACA compliant
- UT Employee Group Health Plan
- US Employer Plan
- US Individual Plan

• If you meet one of the above criteria, then your alternate health insurance coverage must meet the following minimum requirements:

- Unlimited maximum on benefits
- No Pre-existing condition limitation

- \$500 or less deductible per condition
- Must be Patient Protections and the Affordable Care Act (PPACA) compliant.
- Must meet mandatory coverage period for your academic period as outlined on the website.

MAV EXPRESS CARD FEATURES AND CHARGES

The Mav Express Card is used for accessing controlled facilities, checking books from the Library, gaining admission to various University activities such as athletic events and for other situations where personal identification is required.

A student may choose to deposit money on the Mav Express Card. This debit feature is called Mav Money. Students may use Mav Money at Dining Services, Office of Student Accounts, University Center, University Bookstore, and many other locations on and off campus. Deposits may be made and account activity reviewed online.

The Mav Express Card is a permanent card. As a student registers for a semester, the card is automatically validated. It is not necessary to obtain an additional Mav Express Card unless the student loses or destroys the card. Fees associated with the Mav Express Card (ID Card Replacement Fee) can be found at Description of Tuition and Fees: www.uta.edu/fees (<http://www.uta.edu/fees/>).

For additional information, visit www.uta.edu/mavexpress (<http://www.uta.edu/mavexpress/>) or call 817-272-2645.

PARKING PERMIT CHARGE

All students who drive a vehicle on campus need a permit to enter or park legally on campus (Texas Education Code, Section 51.207 (<http://www.statutes.legis.state.tx.us/Docs/ED/htm/ED.51.htm#51207>)). Please order your permit online through the registration screen from your student service center on the web. All permits are ordered by selecting *obtain a permit* link on the Parking and Transportation Services webpage www.uta.edu/pats. Once the permit is ordered and the appropriate vehicle information entered, the permit becomes valid. Student and resident permits expire August 31 of the current academic year.

Per Texas Transportation Code, Section 681.008 (<http://www.statutes.legis.state.tx.us/Docs/TN/htm/TN.681.htm>), Vehicles displaying a disabled veteran license plate are allowed to park in any person with disability parking space without displaying a University of Texas at Arlington parking permit. This exemption does not apply to parking in non-ADA designated spaces

Beginning **November 1** of the academic year, permit refunds will be prorated by the month, and no refunds will be made after the close of business on the Spring Census date as indicated in the current University Academic Calendar. All outstanding parking fines with Parking and Transportation Services must be paid in full prior to refund issuance. Proper identification must be provided in order to receive a refund.

Students are responsible for picking up a copy or visiting the web site for the Rules and Regulations booklet that contains campus parking policies. For additional parking information, pricing information, or hours of extended service during registration, call 817-272-3907 or visit the web site www.uta.edu/parking (<http://www.uta.edu/parking/>).

GRADUATION CHARGES

A graduation charge must be paid by each baccalaureate degree candidate when application is made for graduation. If graduation is delayed past the stated semester, the student must reapply for graduation and repay the graduation charge. An additional charge to cover the cost of cap and gown is assessed to each candidate who plans to attend any graduation ceremony.

COST OF BOOKS

Cost of books depends upon the courses selected. Generally, books for technical subjects are somewhat higher than those for other academic subjects. In certain technical, scientific and fine arts fields, there are extra expenses for equipment and supplies.

The University Bookstore has both new and used textbooks available. The bookstore will purchase used textbooks which are in good condition at any time during the year provided such textbooks continue to be used by the academic departments and if needed by the bookstore. "A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer." (Texas Education Code, Section 51.9705; 19 TAC 4.215 et seq.)

Information about required and recommended course textbooks, including titles, authors, other publisher information and price, can be found at the UT Arlington Bookstore's website, accessible via <http://www.uta.edu/bookstore> (<http://www.uta.edu/bookstore/>). Further information about required course materials is available by reviewing individual course syllabuses at UT Arlington's Instructor and Course Syllabus Information (<http://www.uta.edu/ra/real/courses.php>) website.

TRANSCRIPTS

The Registrar's Office will mail an official copy of an academic transcript at the written request of a student upon receipt of payment of \$10.00 for each copy requested. When working conditions permit, the office will provide one-day transcript service if requested. An official transcript will not be issued unless all financial obligations to the University have been satisfied.

HOUSING AND FOOD EXPENSES

Information about University housing may be found in the Student Housing section of this catalog. Information about campus food service may be found in the University Center section of this catalog.

Refunds

DROPPING COURSE(S) BUT CONTINUING ENROLLMENT

Students who drop a course/s while remaining enrolled in the session are refunded in full for drops completed by the published session census date. However, because of the approved tuition rates, not every drop will result in a credit to your account. The student is financially responsible for the full cost of the course/s dropped after the published session census date. (Texas Education Code, Section 54.006). Please refer to Refund of Registration Charges for additional information.

TOTAL WITHDRAWAL FROM SCHOOL

A student who officially withdraws from a session (drops all hours of a specific session) will receive a refund according to the schedule below.

1. A student who withdraws prior to the first official university class day will receive a 100 percent refund.
2. Students who withdraw as a result of military service may choose to receive a full refund of tuition and fees, an incomplete (if eligible) or final grade at institution discretion. (Texas Education Code, Section 54.006.)
3. If the foregoing condition is not met, then the refund shall be as shown below. Class days noted are official university class days. They are not the individual student's class meeting days.

FALL REGULAR, SPRING REGULAR, SUMMER 14 -WEEK AND SUMMER 11-WEEK SESSIONS

During class days 1 through 5—80%

During class days 6 through 10—70%

During class days 11 through 15—50%

During class days 16 through 20—25%

After 20th class day—no refund

FALL 1ST 8-WEEK AND 2ND 8-WEEK, SPRING 1ST 8-WEEK AND 2ND 8-WEEK SESSIONS

During class days 1 through 3—80%

During class days 4 through 6—50%

After sixth class day—no refund

FALL 1ST 5-WEEK, 2ND 5-WEEK AND 3RD 5-WEEK; SPRING 1ST 5-WEEK, 2ND 5-WEEK AND 3RD 5-WEEK; INTERSESSION; SUMMER I 5-WEEK AND SUMMER II 5-WEEK SESSIONS

On first class day—80%

On second class day—50%

After second class day—no refund

Applicable dates and deadlines are available at www.uta.edu/fees (<http://www.uta.edu/fees/>). Select Refunds of Registration Charges (Withdrawals and Drops).

4. Parking refunds must be applied for separately at the Parking Office, 1225 W. Mitchell.

RETURN OF TITLE IV AND OTHER AID FUNDS

If a student receiving financial assistance withdraws (resigns) from all courses at the University of Texas at Arlington, then UT Arlington and/or the student may be required to return all or some of the federal, state, and/or institutional funds awarded to the student. These funds would be returned to the grant, scholarship, or loan fund from which the assistance was received.

The federal Return of Title IV Funds policy requires that a portion of federal aid be returned if the student withdraws on or before completing 60% of the semester for which student received federal aid. Students receiving all grades of F or a combination of all Fs and Ws are subject to the Return of Title IV Funds Calculation. Federal financial aid includes the Federal Pell Grant, Federal Academic Competitiveness Grant (ACG), Federal SMART Grant,

Federal Supplemental Educational Opportunity Grant (FSEOG), LEAP Grant (formerly SSIG), Federal Perkins Loan, Federal Stafford Loan (subsidized and unsubsidized), and the Federal Parent Loan for Undergraduate Students (PLUS).

Depending on the types and amounts of aid received, UT Arlington may be required to return a certain portion of funds, and the student may be required to repay a portion of the funds. If the student owes a repayment of grant funds as a result of the calculation, he/she cannot receive future federal financial aid funds at any school until repayment has been made. Any federal loan amount owed by the student is to be repaid under the terms of the promissory note (see example below). The student may owe an outstanding balance to UT Arlington once we return funds required through the federal Return of Title IV Funds calculation. Complete details of the policy can be found at www.uta.edu/fao (<http://www.uta.edu/fao/>), click Financial Aid on the top menu under policies, then Return of Funds Policy. Contact the Office of Financial Aid for additional information.

DISBURSEMENT OF REFUNDS

For your convenience, direct deposit of your refund is available. Information about direct deposit is published at www.uta.edu/fees (<http://www.uta.edu/fees/>), select Direct Deposit.

Inquiries concerning refunds should be directed to Student Accounts, Room 130, University Administration Building, 817-272-2172, or by email at studentaccounts@uta.edu.

Current detailed information is available at www.uta.edu/fees (<http://www.uta.edu/fees/>). Select Refunds of Registration Charges (Withdrawals and Drops)

Residency Regulations

Resident classifications are determined in accordance with Title 19, Part 1, Chapter 21, Subchapter B of the Texas Administrative Code and the rules of the Texas Higher Education Coordinating Board for determining residence status. Except as specifically provided by law, an individual classified as a nonresident student must pay tuition, fees, and charges required of nonresident students. Students may access these rules at the Texas Administrative Code web site (<http://www.sos.state.tx.us/tac/>).

To be considered a Texas Resident a person must establish a domicile in Texas not later than one year before the census date of the academic term in which the person is enrolled in an institution of higher education, and maintain that domicile continuously for the year preceding the census date. Generally, a person enrolling in an institution of higher education prior to having established a domicile in Texas for 12 consecutive months immediately preceding the census date will be classified as a nonresident student.

Additionally, a person is eligible to be classified as a Texas Resident if the person: maintained a domicile in Texas for at least 36 months prior to graduation from a Texas high school or receipt of the equivalent to a Texas high school diploma, graduated from a Texas high school or received the equivalent of a Texas high school diploma, and maintained a residence in Texas for the 12 months preceding the census date at an institution of higher education. The domicile of a dependent's parents is presumed to be the domicile of the dependent unless the dependent meets all the requirements of this paragraph.

If while attending an institution of higher education a person classified as a nonresident meets the requirements to domicile in Texas, the nonresident student may reclassify as a Texas Resident if business and personal facts or actions are unequivocally indicative of a fixed intention to domicile permanently in Texas. A nonresident classification is presumed to be correct as long as the residence of the individual in Texas is primarily for the purpose of attending an educational institution. Students wishing to reclassify will need to complete a set of the Core Residency Questions and turn them into the Undergraduate Admissions Office with supporting documentation.

Generally, a student attending The University of Texas at Arlington who is not classified as a Texas Resident will be charged nonresident tuition. Certain nonresident students, however, are entitled to pay tuition and other fees at the Texas Resident rate. For example, military personnel assigned to duty in Texas, and their spouses and dependent children, are entitled to pay the same tuition as a Texas resident if certain documentation is provided. Similarly, students who hold a competitive academic scholarship of \$1,000 per year or more awarded through The University of Texas at Arlington are entitled to pay resident fees and charges. Other exceptions to the requirement that nonresident students pay nonresident tuition, fees, and charges are included in the Texas Higher Education Coordinating Board rules for determining residence status. (<http://www.thecb.state.tx.us/reports/pdf/0183.pdf>)

The responsibility of registering under and maintaining the proper residence classification rests on the student. If there is any question concerning the student's classification at the time of registration, or any time thereafter, it is the student's obligation to consult with the Residency Determination Official in the undergraduate school and have the student's classification officially determined. All requests for reclassification should be submitted to the undergraduate school at least 30 days prior to the census date of the term in question. Residency appeals are made to the Residency Appeals Committee. Decisions of the committee are final.

Financial Aid

Many sources of student financial aid exist at The University of Texas at Arlington. Any interested student should apply for assistance each year, as eligibility and funding availability can vary from one year to the next. Financial aid is generally limited to U.S. citizens or permanent residents. A minimum of half-time enrollment (as defined in the Registration (p. 68) section of the catalog) with the intent of obtaining a degree or certificate and the maintenance of satisfactory academic progress are required to participate in most aid programs. Students subject to selective service registration will be required to file a statement that the student has registered or is exempt from selective service registration to be eligible for financial aid.

Unless otherwise noted in this section of the Catalog, financial aid is available through the Office of Financial Aid in Room 252, University Administration Building, 817-272-3561. Information is also available on the financial aid Web site: www.uta.edu/fao (<http://www.uta.edu/fao/>).

Students subject to selective service registration will be required to file a statement that the student has registered or is exempt from selective service registration to be eligible to apply for state or federal financial aid including tuition waivers and exemptions provided through legislative action by the State of Texas.

Federal and State Programs

The University participates in most of the federal student financial aid programs offered through the U.S. Department of Education. In addition, several state and institutional programs are available for students with exceptional financial need. Among the programs in which the University participates are Federal Pell Grants, Federal Work-Study, Federal Supplemental Educational Opportunity Grants, Federal TEACH Grants, Federal Perkins Loan, Federal Direct Stafford Loan, Federal Direct PLUS, Texas Public Education Grants and TEXAS Grants. Award amounts are subject to funding levels set by the appropriate federal or state legislature. Information regarding eligibility and application procedures for these programs is available from the Office of Financial Aid. The Texas Education Coordinating Board administers various tuition assistance programs including programs for teachers and vocational nursing students.

Aid applicants may check the status of their financial aid applications on the Web through their MyMav (<http://www.uta.edu/mymav/>) accounts. A list of missing documents may be found in the To Do List in the Student Center. Award information can be viewed on the same page.

Students wishing to participate in the federal and state need-based student financial aid programs should complete a Free Application for Federal Student Aid (FAFSA) as early as possible prior to their actual enrollment at the University. The awarding process requires 2 – 3 weeks for completion once all required documents are received and is governed by the availability of funds. The FAFSA can be obtained online at <http://www.fafsa.ed.gov>. The school code for UT Arlington is 003656.

With the exception of post-baccalaureate students seeking certification in the following areas: early childhood - grade 6, middle level, secondary and all level, non-degree seeking students in stand-alone certificate programs awarded by UT Arlington are not eligible to receive need-based financial aid.

Grant Assistance for International Students

A limited number of TPEG grants are available to international students. Please contact the Financial Aid Office to complete an International TPEG form during the month of June. This funding is limited to international students paying the non-resident tuition rate.

Loan Programs

The Federal Perkins Loan, Federal Stafford Loan (subsidized and unsubsidized), and College Access Loan (CAL) are the primary sources of long-term loans available at UT Arlington. These programs include deferred repayment provisions that permit students to repay the loan after termination of at least half-time studies at the University. Interest will not accrue on the loans while the borrowers are enrolled on at least a half-time basis. Information regarding loan amounts and terms can be obtained from the Financial Aid Office.

Federal PLUS (Parent Loan for Undergraduate Students) loans are available to parents to finance their dependents' educational costs. Information and an application are available at www.StudentLoans.gov (<http://www.studentloans.gov/>). Students whose parents wish to borrow through the Federal PLUS must complete the FAFSA and have the results sent to UT Arlington prior to loan certification. Grad PLUS loans are available to graduate students. This loan also requires completion of the FAFSA although the loan is not based on financial need.

Federal Work-Study Program

A student who needs a job to help pay for college expenses may be eligible for employment through the Federal Work-Study Program. Eligibility is based on financial need as determined by the FAFSA. Most participants are employed in positions with various University departments, but limited off-campus jobs with certain approved agencies are also available. You may view available on-campus student employment positions at SNAP Job (<https://www.myinterfase.com/utahr/student/>) by the Office of Human Resources and off-campus employment positions at Handshake (<https://www.uta.edu/careers/employers/handshake/>) provided by the Career Center.

Financial Counseling

The Financial Aid Office provides financial aid counseling for any and all students regardless of whether they qualify for other types of financial assistance. Students may also wish to contact the Student Money Management Center at 817 272-2353 for assistance with developing a personal budget or other money management tools.

Out-of-State Student Assistance

Several states offer aid to their students attending schools in other states. Amounts and requirements for this assistance vary greatly. Further information can be obtained from the home-state aid agency.

Veterans' Assistance

Contact the Registrar's Office for information concerning eligibility for and payment of VA benefits and other matters for veterans attending or planning to attend UT Arlington.

Fellowships and Scholarships

252 University Administration Building | Box 19199 | 817.272.2197 | <http://www.uta.edu/fao> (<http://www.uta.edu/aao/fao/>)

The University of Texas at Arlington provides a variety of scholarship programs for students who have demonstrated exceptional academic achievement. UT Arlington also offers a number of endowed scholarships that are administered by a school, department or program. Graduate scholarships are awarded on the basis of scholastic excellence and adequate preparation for graduate study in the student's chosen field, as shown by the student's academic record. Scholarship eligibility criteria include admission into a degree program, enrollment in coursework leading to the degree, reasonable progress in the degree program, good academic standing, GPA, and in some cases, test scores, references and personal statements. Test scores are not used as the sole criterion for awarding scholarships or the primary criterion for denying scholarship to applicants. There are additional specific qualifications for scholarships in various areas of study. Students are encouraged to contact their school dean or department/program office to obtain information about eligibility criteria and scholarships awarded in the student's area of study.

In addition to the specific qualifications required for various competitive scholarships awarded by the University, the committee responsible for selection of a given scholarship may consider such factors as leadership, community involvement and financial need. State law and the Rules and Regulations of the Board of Regents of The University of Texas System require that any scholarship and/or fellowship be approved by the appropriate scholarship, loans and awards committee (graduate or undergraduate). Scholarship funds have been contributed by individual donors, UT Arlington alumni, corporations, government agencies and other entities to recognize and reward academic excellence.

TOP 10% SCHOLARSHIP

Per *Texas Education Code*, Section 51.933, students who graduated in the top 10% of their graduating class may be eligible for a scholarship provided by the Texas Higher Education Coordinating Board. For eligibility and application information visit College for All Texans (<http://www.collegefortexans.com/apps/financialaid/tofa2.cfm?ID=385>) website.

ASSISTANTSHIPS

Standard research and teaching assistantships available in most departments can be held only by students admitted unconditionally or on probation to Graduate School. Recipients of the Enhanced GTA and the STEM Fellowship can be admitted unconditionally only. Students admitted provisionally or students who are on academic probation are not eligible for assistantships. Prospective graduate students should contact the appropriate department chairperson for further information. To be continued on a research or teaching assistantship, a student must be in good standing and have performed assigned duties satisfactorily in the preceding semesters as determined by the respective department. Consult the catalog section on General Graduate School Regulations and Information for regulations regarding registration and responsibility of graduate assistants.

Before being appointed to an assistantship at UT Arlington, a student whose native language is not English must demonstrate English proficiency. The preferred method to demonstrate English proficiency is to submit an acceptable score of at least 23 on the TOEFL speaking subtest, or a score of at least 7 on the speaking section of the IELTS, or take and pass the UTA Developmental English course. The TOEFL or IELTS score should be sent directly to UT Arlington by ETS or IELTS. Score reports submitted directly by the student or those marked "Student Copy" or "Applicant's Copy" are not considered official and will not be accepted by the University. The English proficiency requirement will be waived for non-native speakers of English who possess a bachelor's degree from an accredited U.S. institution. The TOEFL and IELTS are administered at test centers around the world.

GRADUATE ASSISTANTSHIP/ASSOCIATESHIP POLICY

Graduate teaching and research assistantships and associateships are funded through state appropriations and federal, state, local and private grants for at least three principal reasons. First, employment of graduate students in teaching and in research positions during their graduate education encourages and supports their participation in these two major functions of a university and thereby strengthens the quality of the students' educational experience. Second, assistantships and associateships provide direct financial support to outstanding students who are essential to the development of quality graduate programs. Third, graduate students provide valuable and necessary services to the University in their roles as teaching and research assistants and associates. It must be kept in mind, however, that graduate assistants and associates are first and foremost students. As such, their most important task is to complete their degree requirements in a timely fashion; this is the primary expectation of the University as well.

The University of Texas at Arlington supports the "Resolution Regarding Graduate Scholars, Fellows, Trainees, and Assistants" of The Council of Graduate Schools in the United States. A copy of the resolution and list of signatory institutions can be viewed at www.cgsnet.org/portals/0/pdf/CGSResolutionMarch2009.pdf. To assure the appointment of the most highly qualified students available and to best realize the principal objectives for which graduate assistants are employed, The University of Texas at Arlington has adopted the following policies and regulations, all provisions of which apply to both graduate assistantships and graduate associateships.

Admission Status

A student must be admitted to a degree program to be eligible to hold a graduate assistantship. Students admitted as Provisional students may not be considered for an assistantship until all provisional requirements have been resolved. New students, admitted with probationary conditions, may be considered for an assistantship, subject to the requirement that they earn and maintain a 3.0 grade-point average while enrolled as a graduate student, conform to admission conditions specified by the admitting department or the University and meet assistantship enrollment requirements. See Admissions (p. 25) for more information.

English Proficiency

Before being appointed to a teaching assistantship at UT Arlington, a student whose native language is not English must demonstrate English proficiency. The preferred method to demonstrate proficiency is to submit an acceptable score of at least 23 on the Speaking Section of the TOEFL, or a score of at least 7 on the Speaking Section of the IELTS, or take and pass the UTA Developmental English course. The TOEFL and IELTS scores should be sent directly to UT Arlington by ETS or IELTS. Score reports submitted directly by the student or those marked "Student Copy" or "Applicant's Copy" are not considered official and will not be accepted by the University. The English proficiency requirement will be waived for non-native speakers of English who possess a bachelor's degree from an accredited U.S. institution. See Graduate Admissions (p. 26) for more information.

Developmental English Program

Students who do not achieve scores on the TOEFL or IELTS high enough to satisfy the English proficiency requirements for graduate teaching assistants must enroll in the Developmental English Program and be certified for English proficiency before becoming eligible to hold a teaching assistantship. This 10-week program, offered by the UT Arlington English Language Institute, emphasizes oral presentation skills and accent reduction. Registration is in 402 Hammond Hall, and the charge for course is payable at the time of registration. Contact the English Language Institute at 817.272.2730 for details, including the current class schedule and charges.

Continuation or Renewal of Appointment

Although a student may be appointed initially to a graduate assistantship for a full academic year, continuation of the appointment beyond the first semester is subject to the following conditions:

1. To continue or renew an appointment, the student must be in good standing in the University. A student on academic probation is not in good standing, and therefore, will automatically lose his or her assistantship. However, Graduate Advisors, with the written endorsement of their department's or program's Graduate Studies Committee, may petition the Academic Dean to allow a one-time exception, granting one additional semester of assistantship support in the next semester of enrollment if they judge the student is capable of raising his or her GPA to the required minimum by the end of that semester and believe that the student is making satisfactory progress in all other aspects of their studies. If granted, the student will be considered to be in good academic standing for one semester for purposes of continuing their assistantship. This broadened definition of academic good standing for a student with a GPA below 3.00 applies only in cases where a program wishes to continue or renew a student's teaching or research assistantship during the semester of enrollment following the one in which his or her GPA dropped below 3.00. Programs may not request this exception on behalf of students who will hold any other type of employment.

A student granted one semester of good academic standing for purposes of continuing their assistantship must improve his or her UT Arlington graduate grade-point average to 3.00 and return to good academic standing as normally defined in the next semester of enrollment in order to qualify for assistantship support in subsequent semesters. Requests to extend this form of good standing beyond one semester will not be approved. Further, students who have previously received a one-semester extension of academic good standing for purposes of continuing their assistantship will not be eligible for this exception again.

2. The student must be making satisfactory progress toward an advanced degree.
3. The student must have performed assigned assistantship duties satisfactorily in the preceding semester(s) as determined by the department in which the assistantship is held.

A department may limit the number of semesters during which a graduate student may hold an assistantship.

Resident Tuition Rates

Graduate teaching and research assistants employed at least 20 hours per week in positions related to their degree programs are entitled to Texas resident tuition rates. Eligibility for the resident rate must be certified prior to registration otherwise, full tuition will be assessed. Non-resident students receiving appointments after a term's published Census date will not be eligible for resident tuition rates in that term.

Non-resident or international students holding less than full assistantships (full meaning 20 hours employment per week) are not eligible for Texas resident rates.

Course Load

Full Assistantships

Graduate assistants holding full assistantships (20 hours of employment per week) may register for and must complete no fewer than nine semester hours and no fewer than six semester hours during the three summer semesters.

The nine hour minimum registration limit may be reduced to six semester hours for thesis and dissertation students who 1) have completed all required coursework 2) are registered for thesis or dissertation research only. In such cases, master's students should enroll in 5698 and doctoral students who have passed their Comprehensive Examinations should enroll in 6699 course. International students meeting these requirements must obtain written permission from the Office of International Education to enroll in fewer than nine hours and present it to the appointing department. Students defending their theses typically must enroll in a six-hour thesis course. Doctoral students who have completed or will complete a total of at least nine hours of dissertation research in 6399, 6699, 6999 and/or 7399 courses prior to graduation may meet minimum registration requirements in the term they intend to defend their dissertations and graduate by enrolling in 7399. However, if a student does not graduate after enrolling in 7399, he or she must enroll in 6699 or 6999 until graduation. The 7399 course may not be repeated. Students may not petition for a course load reduction below these requirements.

Non-thesis master's students with only three to six hours of organized coursework left to complete a program in his or her final semester are permitted to hold an assistantship while enrolled in the three to six hour course. International students in these instances must obtain written permission from the OIE for less than nine hours of enrollment and present it to the appointing department.

Partial Assistantships

Graduate Teaching Assistants or Graduate Research Assistants who have a 25% (10 hours of employment per week) or less appointment must be enrolled for at least six hours during a long semester and three hours during the summer. This enrollment requirement covers both organized courses and dissertation and thesis hours. However, all graduate students, whether funded or unfunded, must follow UT Arlington policy concerning required enrollment in the final semester.

Assignment of Duties

Graduate assistants are under the direction of the department chair with regard to assistantship responsibilities and assignments.

ADDITIONAL EMPLOYMENT WHILE AN ASSISTANT OR ASSOCIATE

All Students

In accepting a graduate assistantship/associateship, students agree to devote their efforts to graduate studies and assistantship/associateship responsibilities. In some circumstances, however, additional employment may be justified. Immigration policies severely restrict the amount that an international student may work.

U.S. Citizen Students

Full-time (20-hour) graduate assistants wishing to hold additional assistantships/associateships or accept additional on or off-campus positions must obtain the approval of their Graduate Advisor. Approval will only be given if the additional work will not impact the student's academic progress negatively or exceed employment limits allowed by law.

International Students

During the fall and spring semesters, international students may work on campus only 20 hours per week unless authorized for additional employment through Curricular Practical Training (CPT). During vacation and the summer, international students may work more than 20 hours per week on-campus without additional authorization. At anytime during the year, employment with an off-campus employer must be authorized by either BCIS or by the International Office in the case of CPT. The Office of International Education must grant approval prior to taking on additional employment if that employment is to be authorized by CPT. Students holding a UT Arlington assistantship wishing to work off-campus in addition to the assistantship, must 1) meet and maintain the enrollment requirements for holding an assistantship 2) meet the immigration requirements for CPT 3) work only part-time (20 hours or less) off-campus 4) be employed in off-campus work that is clearly connected to his or her assistantship. If these requirements are not met, a student will be obliged to give up either the assistantship or the off-campus employment.

Satisfactory Academic Progress

Federal regulations require that the University of Texas at Arlington establish policies to monitor the academic progress of students who apply for and/or receive financial aid. To retain eligibility, undergraduate recipients must show satisfactory progress toward a degree based on the following requirements. There are two areas specifically addressed in these requirements. The first is cumulative grade point average (qualitative standard) and the other is a comparison of the number of credit hours annually and a review of the maximum number of hours attempted (quantitative standard). The cumulative grade point average required to meet this portion of the SAP standards mirrors the grade point average required to remain in good academic standing at the University. Information regarding the calculation of the quantitative standard as well as the notification and appeal process may be found on the Financial Aid website (<http://www.uta.edu/fao/>). Click on the Satisfactory Academic Progress tab.

Grades and Grading Policies

Grades that may be assigned in courses at the University of Texas at Arlington (Valid Grades) for undergraduate courses consist of A, B, C, D, F, I, P, R, Q, W, Z. Grades assigned in graduate courses are limited to A, B, C, D, F, P, I, R, W. Instructors only assign grades listed on the MyMav grade roster for a given course. Students uncertain about the grading policy in a course should consult their instructor at the beginning of the term for information. Valid grades for independent study, conference, seminar, and readings courses vary widely among departments; therefore, a statement on valid grades and special grading policies, if any, is given at the beginning of the course descriptions for each program in this catalog.

Computation of the Grade Point Average

Computation of the Grade Point Average: The cumulative University grade point average for an undergraduate student is calculated on the basis of all work undertaken at UT Arlington, including credit by examination, correspondence and extension, for which a letter grade is given, unless the course is repeated under the Grade Replacement Policy or Grade Forgiveness Policy, or removed from the calculation under the Grade Exclusion Policy or Grade Forgiveness Policy. Courses in which the symbol I, P, Q, W or Z is recorded are excluded in calculating the grade point average. These grades appear on the student's official transcript.

Grades earned at any institution other than UT Arlington are not used in calculating the University grade point average, but semester hours of transfer credit accepted by UT Arlington are added to hours taken at the University to determine the total college hours undertaken.

The following grades are used at UT Arlington:

Grade	Description	Grade Points Per Semester Hour
A	Excellent	4
B	Good	3
C	Fair	2
D	Passing, Below Average	1
F	Failure	0
I	Incomplete	0
W	Withdrawn	0
Q	Withdrawn - No Penalty (does not count toward Six-Course Drop Policy)	0
P	Pass	0
R	Research	0
Z	No Credit	0

Undergraduate Grading Policies

- **D's:** Although a grade of D may be sufficient for an undergraduate to earn credit in a course, a cumulative University grade point average of at least 2.00 is necessary for satisfactory progress toward a degree.
- **I's:** A grade of I (Incomplete) may be assigned for a course if, in the opinion of the instructor, there are extenuating circumstances which prevent the student from completing the required work within the term of enrollment for the course. The Incomplete must be removed by the end of the final examination period of the following term, excluding the summer sessions, for the student to receive credit for the course. If the Incomplete is not removed during the allotted time period, it will convert automatically to an F. As long as the grade is carried as an I, it will not be used in the calculation of the student's grade point average. A student should not re-enroll in a course for which an I is the grade of record. Students in Canvas courses that receive an incomplete grade automatically retain their enrollment in the Bb course and section in which they received the incomplete until the incomplete is resolved.
- **Grades that do not count toward GPA:** A course for which the symbol I, P, Q, W or Z is given does not count as hours undertaken for the purpose of calculating the grade point average, and no grade points are earned. A course taken and passed on the pass/fail basis counts as hours undertaken, but no grade points are earned.
- **Pass/Fail Program (Engineering, Liberal Arts, Science, Nursing):** Students who are majors in the colleges of Engineering, Liberal Arts, Science, or Nursing may take courses on a pass/fail basis subject to differing rules established by these academic units. This policy is intended to offer students an opportunity to take courses that will broaden their education with less immediate emphasis on the need to achieve grade points. However, an F received in a pass/fail course (except developmental courses) will be evaluated the same as an F received on a regular basis, adversely affecting the grade point average. Students must inform the instructor of their intention to take a course on a pass/fail basis by the Census Date of the term. Complete details and requirements of each college are available in the offices of the academic deans and in the departmental offices of the colleges.
- **Developmental Course Grades:** Students assigned to developmental courses, as a result of TSI status will be graded on a pass/fail basis. This policy is intended to offer students an opportunity to take courses that will broaden their education with less immediate emphasis on the need to

achieve grade points. Therefore, an F received in a preparatory or developmental course will be not evaluated the same as an F received in a credit-bearing course and will not be factored into the student's GPA.

Effect of Grades in Repeated Courses

A student may repeat any course except as limited by individual colleges and schools, provided the student's grade earned in an earlier term is below C. Courses transferred for credit to UT Arlington from another college or university may not be repeated for credit. A student may not repeat a course for additional hours toward a degree unless the catalog description specifically states that the course may be repeated for credit.

Courses originally taken or repeated at another college will not affect a student's grade point average at UT Arlington. If a student earned a grade of less than C in a course taken at UT Arlington, the student may take that course or its equivalent at another college or university for transfer to UT Arlington only with the prior written approval of the student's major department chair or academic dean.

Grade Exclusion Policy

The grade exclusion policy may be utilized by students subject to the policy except as otherwise noted. Grade Exclusion is available to students whose initial enrollment at UT Arlington was Fall 2006 through Summer 2013. Upon receiving a D or F in a course, a student may file a request with the Office of the Registrar for grade exclusion. All Grade Exclusion requests submitted during the term must be submitted by the last day to drop a course in that term to be processed during that term. Students have to be enrolled on Census Date for their Grade Exclusion petition to be processed in that term. See the academic calendar (<http://www.uta.edu/uta/acadcal.php>) for Census Date and Last Drop Date information. Students who had already completed a grade replacement for one or more courses at UT Arlington are not eligible to utilize the grade exclusion policy. The following conditions apply:

- Students seeking grade exclusion must receive counseling from the following as appropriate: Academic Advisor to determine effect on completion of degree requirements and probation requirements, Financial Aid Office if receiving a scholarship or financial aid administered by that office, Athletic Department if a student athlete, International Office if an international student
- Grade exclusion requests must be made using a grade exclusion form available from the Office of the Registrar. The request must be approved by the academic dean from the student's major College/School.
- The course grade will be removed from the academic GPA; although the grade received will remain on the student's transcript.
- This policy will apply to a maximum of three courses at UT Arlington and will not apply to courses taken on a pass/fail basis. Of the three courses, only one course may be at the 3000/4000 level.
- This policy is not applicable to graduate students.
- Individual colleges and schools may limit this policy.
- Students may not apply this policy to grades of D or F which result from disciplinary action.
- Students who are dismissed from the University for academic reasons cannot use a grade exclusion until their dismissal period is completed.
- Excluded grades will be included in the calculation of GPA for determining graduation with Latin Honors.
- Excluded hours will count toward the 30 hour/45 hour policy for Tuition for Excessive Undergraduate Hours.
- Tuition and fee refunds, rebates or other financial consideration will not be given for courses for which grade exclusion is granted.
- Once a course has been excluded, a student may not later have the exclusion removed.
- Excluded courses cannot be used to satisfy degree requirements.
- Students must be enrolled at UT Arlington on Census Day of the term that the grade exclusion, if approved, is processed.

Grade Forgiveness Policy

Grade Forgiveness is available to incoming freshman and transfer students whose initial enrollment at UT Arlington was Fall 2013 or thereafter. For students who entered UT Arlington before the Fall 2013 and who have not utilized the Grade Replacement policy, the Grade Exclusion policy remains in effect. Students enrolled in their second baccalaureate or a graduate program are not eligible for Grade Forgiveness.

Upon receiving a grade of D or F in a 1000 or 2000 course at UT Arlington, students subject to the Grade Forgiveness policy may elect to have the grade forgiven. Students subject to this policy must contact their academic advisor, who files the Grade Forgiveness petition on their behalf. All Grade Forgiveness requests submitted during the term must be submitted by the last day to drop a course to be processed that term. Students have to be enrolled on Census Date for their Grade Forgiveness petition in that term to be processed during that term. See the academic calendar (<http://www.uta.edu/uta/acadcal.php>) for Census Date and Last Drop Date information. A student is limited to a total of two Grade Forgiveness opportunities under the following conditions:

- **Grade Omission:** A student may elect the **grade omission option** for one of the two Grade Forgiveness opportunities if the student is changing their major and the course is not required for the new major. In addition, a student electing grade omission may not re-enter that major. Grade omission may only be applied to one course. If electing to use grade omission, the student is not required to retake the course.
- **Grade Substitution:** A student may elect the **grade substitution option** for one or both of the Grade Forgiveness opportunities. In this case, the course(s) must be retaken, even if it is not required for the student's current major. This policy may be used to forgive a grade earned the first time a course is taken and the course must be retaken at UT Arlington. A grade substitution petition should be filed after the grade for the second attempt is known.

- Students must file their petition to substitute or omit the grade earned in a course with the aid of their academic advisor. Students must be enrolled at UT Arlington on Census Day of the term that the Grade Forgiveness, if approved, is processed.
- Students MAY apply for Grade Forgiveness for any term (after final grade posting of the previous term but before the Last Drop Day of the current term) before the final semester PRIOR to graduation. Students may not apply for Grade Forgiveness AFTER graduation.
- Courses transferred for credit to UT Arlington from another college or university may *not* be forgiven under this policy.
- For courses in which the topic may change from term to term, this policy may only be used if the topic for the repeated course is the same as the initial course topic.
- Grade Substitution is not eligible for courses that are no longer offered.
- This policy does not apply to courses taken on a pass/fail basis.
- Individual colleges and schools may limit this policy.
- Students may not apply this policy to grades of D or F which resulted from disciplinary action.
- Students seeking Grade Forgiveness must receive counseling from the following as appropriate: Academic Advisor, to determine the effect on completion of degree requirements and probation requirements; Financial Aid Office, if receiving a scholarship or financial aid administered by that office; Athletic Department, if a student athlete; and International Office, if an international student.
- The grade(s) for the forgiven course(s) will be removed from the grade point average, although the grade(s) received will remain on the student's transcript.
- A course that has been "grade omitted" or "grade substituted" may not be used to satisfy degree requirements.
- Once Grade Forgiveness has been applied to a course, the student may not have the action reversed.
- Students who are dismissed from the University for academic reasons cannot use Grade Forgiveness until they have completed their dismissal period.
- Forgiven grades will be included in the calculation of the grade point average for determining graduation with Latin Honors.
- The credit hours earned in courses where the grade is forgiven will count toward the 30 hour/45 hour policy for Tuition for Excessive Undergraduate Hours.
- Tuition and fee refunds, rebates or other financial consideration will not be given for courses for which Grade Forgiveness is granted.
- A student may not use credit by exam to receive credit for a course once a student has received a grade for that course even if it has been omitted.
- Students must be enrolled at UT Arlington on Census Day of the term that the forgiven grade, if approved, is processed.

Progress Reports

Freshman Progress Reports: Freshmen will receive early progress report grades in or by the fourth week of the fall and spring terms.

Midterm Progress Reports: Freshmen, first term transfers, athletes, undergraduates with a cumulative GPA of 2.25 or lower, and undeclared or freshman students will receive an interim grade report in or by the ninth week of the fall and spring terms.

These progress report grades are not recorded on the student's official record. They are for information purposes only and are intended to benefit the student as an early alert. The grade reported at the end of a term is the official and permanent evaluation of a student's performance in a given course.

Notifications are sent to students' UTA email boxes when progress reports are available, and students are urged to frequently review their progress report grades in MyMav (<http://www.uta.edu/mymav/>) during the grade collection period. For the purpose of progress reports, a grade of I indicates that no grade data was available at the time. Students are encouraged to consult their instructor for progress report grade data if an I is reported or if no grade is reported.

Final Grades

Final grades are available in MyMav (<http://www.uta.edu/mymav/>). Grades are posted at the end of each regular, summer, and intersession session, and academic standing is posted at the end of each term. The grade reported at the end of a term is the official and permanent evaluation of a student's performance in a given course. Official transcripts are available through the Office of the Registrar for those students who need official verification for tuition reimbursement and other reasons. Students with transcript holds will not be able to access their official transcript.

Final Examinations

Final examinations are scheduled at the end of each session or term and identified in the University's academic calendar (<http://www.uta.edu/uta/acadcal.php>). All forms of examinations (quizzes, take-home exams, etc.) are prohibited on scheduled class or reading days during the calendar week prior to the week final examinations begin, or after final exams week. All form of examinations must be completed by the end of exam week. Specific exceptions for certain courses may be given by obtaining approval from the appropriate academic unit head and academic dean. Students shall be informed of any such exceptions prior to the end of the fourth week of classes, as published in the University General Catalog (<https://www.uta.edu/records/calendars/final-exams.php>).

Final Review Week

A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field

trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabi. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week.

Official Transcripts

Official transcripts are available through the Office of the Registrar. Students with transcript holds will not be able to access their official transcript.

Grievance Procedures Related to Grades

In attempting to resolve any student grievances regarding grades, it is the student's obligation first to make a serious effort to resolve the matter with the individual with whom the grievance originated. Individual course instructors retain primary responsibility for assigning grades. The instructor's judgment is final unless compelling evidence shows preferential treatment or procedural irregularities. If students wish to appeal, their request must be submitted in writing—on an appeal form available in departmental or program offices—to the department chair or program director. The student has one calendar year from the date the grade is assigned to initiate the grievance. The normal academic channels are department chair or program director and then academic dean. However, before considering a grievance, the department chair or program director will refer the issue to a departmental or program committee of faculty. If the student does not find the committee's decision acceptable, the student may appeal to the academic dean. The decision of the dean is final. Information specific to the procedures to be followed in each academic unit is available in the office of the academic dean.

The dean of the college or school in which a student is enrolled, or the Executive Director of University College if the student has not declared a major, has jurisdiction over the student's program of study, degree requirements and all other academic matters including grievances. However, students taking a course in a college or school other than the one in which they are primarily registered are subject to the dean of the college or school in which the course is offered concerning the course and academic grievances regarding the course.

Information regarding grievances for matters other than grades is available in the Student Rights (p. 112) section of the catalog.

Freshman Honor Roll

First-time, first-year freshman students with less than 30 credit hours with excellent grades will be recognized by being listed on the Freshman Distinction roll. The Freshman Distinction roll will include those students who have both:

- Less than 30 semester credit hours earned in residence at UT Arlington with a GPA of not less than 3.5, and
- 12 semester credit hours earned in the current term, not including pass/fail work, with a GPA for the semester of not less than 3.5

In addition to this official recognition, the Division of Student Success will be recognizing new students with a 3.0 and 3.49 grade point average, as well as those in the Freshman Distinction roll and All A's (4.0 GPA), with special recognition from the Associate Vice Provost for Student Success.

Dean's List

Students with excellent grades will be recognized by being listed on the Dean's List. Dean's List is awarded by each college to students in that college's majors. The Dean's List will include those students who have both:

- 30 semester credit hours earned in residence with a GPA of not less than 3.5 (set by College/School dean), and
- 12 semester credit hours earned in the current term, not including pass/fail work, with a GPA for the semester of not less than 3.5 (set by College/School dean).

Graduate Grading Policies

Grade of I

The grade of I designates the grade of incomplete. A graduate student unable to complete all assigned work in a class in the term in which it was taken may, at the discretion of the instructor, receive an I grade. *This grade is not given automatically* when a student does not complete all assigned work. It is the responsibility of the student to make arrangements with the instructor to secure a grade of I before the term ends. The grade of I will remain as part of the student's academic record until the work is completed and a final grade awarded. To change a grade of I to another grade, the instructor must submit a change of grade form. A grade of I does not carry credit value. This grade is not awarded in research, internship, thesis or dissertation courses. Students in Blackboard courses that receive an incomplete grade automatically retain their enrollment in the Bb course and section in which they received the incomplete until the incomplete is resolved.

Grade of R

The grade of R designates the grade of research in progress and is given only in research, internship, thesis or dissertation courses. A graduate student unable to complete assignments in one of these courses may, at the discretion of the instructor, receive an R grade. The R grade is a permanent grade and does not carry credit value. To receive academic credit in an R-graded course, a student *must re-register for and successfully complete the course* earning a valid passing grade for the course. Grading policy in some courses may change during the period covered by this catalog. Grading policy for each course each term is included in the course syllabus. Students should verify the grading policy with the instructor at the beginning of each term.

Grade of W

A grade of W may be assigned if a student chooses to withdraw from a class after Census date but prior to the last date to drop posted in the University's Academic Calendar. However, the grade of W is not automatically awarded. Graduate students must consult with their graduate advisor about their reasons for withdrawal before withdrawing from a class. Further, the student must secure the permission of the class instructor to withdraw and the instructor shall determine whether the student will be granted a W or will receive the grade which they have earned or are projected to earn in the course. The grade decision is based on the instructor's judgement. The instructor will inform the student of the grade decision before finalizing the request. Students who have withdrawn from a course must re-enroll in it to receive credit.

Grade of Z

The grade of Z designates the grade of clinical in progress and is given only in clinical courses. A graduate student unable to complete assignments in one of these courses may, at the discretion of the instructor, receive an Z grade. The Z grade is a permanent grade and does not carry credit value. To receive academic credit in an Z-graded course, a student *must re-register for and successfully complete the course* earning a valid passing grade for the course. Grading policy in some courses may change during the period covered by this catalog. Grading policy for each course each term is included in the course syllabus. Students should verify the grading policy with the instructor at the beginning of each term.

Research or Internship Course Grades

The only grades awarded in most research or internship courses are P (pass), R (research in progress), F (fail) or W (withdrawn).

Thesis (5398) Grades

Only R (research in progress), F (fail) or W (withdrawn) are awarded in this course.

Thesis (5698) Grades

Grades of P (pass) R (research in progress) F (fail) or W (withdrawn) are awarded in this course. The grade of P can only be awarded when the thesis defense is passed unconditionally and the final version of the thesis is accepted by the supervising committee. R, F or W grades are assigned otherwise.

Dissertation (6399) Grades

Only R (research in progress), F (fail) or W (withdrawn) are awarded in this course.

Dissertation (6699, 6999 and 7399) Grades

The grades P (pass), (R) research in progress, F (fail) and W (withdrawn) may be awarded in these courses. The grade of P can be awarded when the dissertation defense is passed unconditionally and the final version of the dissertation is accepted by the supervising committee. R, F, or W grades are assigned otherwise.

Effect of Grades in Repeated Courses

A student may repeat any course except as limited by individual colleges and schools, provided the student's grade earned in an earlier term is below C. Courses transferred for credit to UT Arlington from another college or university may not be repeated for credit. A student may not repeat a course for additional hours toward a degree unless the catalog description specifically states that the course may be repeated for credit.

Courses originally taken or repeated at another university will not affect a student's grade point average at UT Arlington. If a student earned a grade of less than C in a course taken at UT Arlington, the student may take that course or its equivalent at another university for transfer to UT Arlington only with the prior written approval of the student's major department chair or academic dean.

Final Grades

Final grades are available in MyMav (<http://www.uta.edu/mymav/>). Grades are posted at the end of each regular, summer, and intersession session, and academic standing is posted at the end of each term. The grade reported at the end of a term is the official and permanent evaluation of a student's performance in a given course. Official transcripts are available through the Office of the Registrar for those students who need official verification for tuition reimbursement and other reasons. Students with transcript holds will not be able to access their official transcript.

Final Examinations

Final examinations are scheduled at the end of each session or term and identified in the University's academic calendar (<http://www.uta.edu/uta/acadcal.php>). All forms of examinations (quizzes, take-home exams, etc.) are prohibited on scheduled class or reading days during the calendar week prior to the week final examinations begin, or after final exams week. All form of examinations must be completed by the end of exam week. Specific exceptions for certain courses may be given by obtaining approval from the appropriate academic unit head and academic dean. Students shall be informed of any such exceptions prior to the end of the fourth week of classes, as published in the University General Catalog (<http://catalog.arizona.edu/>).

Final Review Week

A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabi. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week.

Official Transcripts

Official transcripts are available through the Office of the Registrar. Students with transcript holds will not be able to access their official transcript.

Grievance Procedures Related to Grades

In attempting to resolve any student grievances regarding grades, it is the student's obligation first to make a serious effort to resolve the matter with the individual with whom the grievance originated. Individual course instructors retain primary responsibility for assigning grades. The instructor's judgment is final unless compelling evidence shows preferential treatment or procedural irregularities. If students wish to appeal, their request must be submitted in writing—on an appeal form available in departmental or program offices—to the department chair or program director. The student has one calendar year from the date the grade is assigned to initiate the grievance. The normal academic channels are department chair or program director and then academic Dean. However, before considering a grievance, the department chair or program director will refer the issue to a departmental or program committee of faculty. If the student does not find the committee's decision acceptable, the student may appeal to the academic Dean. The decision of the Dean is final. Information specific to the procedures to be followed in each academic unit is available in the office of the academic Dean.

Information regarding grievances for matters other than grades is available in the Student Rights (p. 112) section of the catalog.

Course Credit and Degree or Certificate Requirements

Credits Counted Toward Degree or Certificate Requirements

Only courses completed with a grade of A, B, C, or P can satisfy graduate degree or certificate requirements. However, courses in which grades of D or F are earned will affect a student's grade-point average. A student must have a B (3.0) grade-point average in courses included in their degree plan and a B (3.0) average in all work undertaken as a graduate student to have credits applied toward a graduate degree or certificate.

Course Credit Applied to More Than One Degree

No course that has been applied to any degree, at any graduate or undergraduate institution, may be applied to any other degree, either directly or by substitution except in approved dual degree or approved fast track programs. The amount of shared credit between degrees in dual degree programs is limited and varies with the total number of hours needed to complete both degrees. See Dual Degree Programs in the Advanced Degrees and Requirements section of this catalog for details. Similarly, the amount of credit that can be shared in fast track programs is also limited. Details may be found in descriptions provided by participating programs elsewhere in this catalog.

Credit for Repeated Courses

A student may repeat a course only if that course is specifically designated in this catalog as one that can be repeated for credit. A student who fails to receive credit (earns a grade of D or F) may repeat the course in order to obtain credit, in which case the grades for both attempts will count in computing the student's overall grade-point average. No student will be allowed to repeat a course in order to change a passing grade of C or higher.

Credit for Advanced Undergraduate Coursework

Up to nine hours of advanced undergraduate credit from UT Arlington or another institution may be applied to a master's degree program if the hours have not been used to earn a previous degree and have the approval of the appropriate Graduate Studies Committee and the academic Dean. Approved fast track programs may allow dual credit.

Credit for Extension Classes

Work done in extension classes may be applied toward an advanced degree under the same conditions that apply to transfer work, except that credit for extension work is limited to six credit hours.

Graduate Credit Earned In Undergraduate Status

UT Arlington undergraduates may be allowed to take graduate courses and have the credits earned apply to a master's degree.

- An undergraduate student may not use graduate courses (numbered 5000 and above) to fulfill undergraduate degree requirements except as part of an approved fast track program.
- Courses taken in undergraduate status may not be applied directly to a doctoral program.

- Some departments do not permit students to enroll in graduate courses unless they have been admitted as degree seeking graduate students. Others allow students enrolled as undergraduates to take a limited amount of graduate coursework under the conditions described below.
- All undergraduate students should consult with the appropriate graduate advisor before attempting to register for graduate courses.

An undergraduate needing no more than 12 hours in one term (six semester hours in one summer session) to complete all the requirements for a bachelor's degree may register for graduate courses and apply them toward a master's degree at UT Arlington under the following conditions:

1. In no case may a student previously dismissed from their graduate program or denied admission enroll in graduate courses or reserve courses for graduate credit.
2. All work for undergraduate credit must be completed during that term or session in which the student enrolls in graduate courses.
3. Total registration for all work may not exceed 15 semester hours in a term (or 12 semester hours in the summer sessions).
4. The student must submit to the graduate advisor a "Reservation of Courses for Graduate Credit by Undergraduate Students" form (available from graduate advisors). The reservation must be approved by the graduate advisor and the academic Dean of the college in which the course is taken. The Office of the Registrar must certify that the reserved credit will not be applied to the student's undergraduate degree requirements.
5. The student must have at least a 3.0 undergraduate GPA to be eligible to enroll in a graduate course and to reserve it for graduate degree credit.
6. Courses taken at UT Arlington and reserved for graduate credit may be applied to a master's degree program only if a grade of A, B, C, or P was earned.
7. Credit is officially accepted for application to a graduate program when a student is unconditionally admitted as a graduate student..
8. A maximum of 12 semester hours of graduate level courses may be reserved.

Credit Earned in Degreed Undergraduate Status

Students who have completed their undergraduate studies and have been awarded their bachelor's degree may enroll as degreed undergraduates in graduate-level course work and receive graduate credit at UT Arlington under the following conditions:

1. Courses taken at UT Arlington and reserved for graduate credit may be applied to a master's degree program only if a grade of A, B, C, or P was earned.
2. No more than 12 semester hours of credit earned while a degreed undergraduate may be applied for credit toward a master's degree. Students must file a request, approved by the graduate advisor, the Committee on Graduate Studies, and the academic Dean to apply such credits toward a graduate degree. The form is available online (<http://grad.pci.uta.edu/students/forms/>).
3. All courses that are applied to a master's degree must have been completed no more than five years before enrollment in a graduate program at UT Arlington. If the student has completed more than 12 semester hours of graduate courses in undergraduate status, only graduate courses completed within five years of enrollment in a graduate program at UT Arlington will become part of the graduate record and considered in computing the student's grade-point average.
4. A student may elect to apply all graduate courses completed in the last five years toward their degree or to apply none of this work. Selective application of courses is not permitted. If any courses are applied for credit toward a master's degree, all courses completed within the last five years will become part of the graduate record.

Transfer Credit in Master's Programs

Equivalent coursework completed at other institutions of recognized standing may be transferred to a master's degree program after evaluation and approval. Transferred courses do not appear on the UT Arlington Official Transcript and grades earned in transferred courses are not included in calculating a student's UT Arlington graduate grade-point average.

No more than nine hours of transfer credit will be granted except in the professional master's programs that require more than 36 hours of coursework. In such programs, the number of transfer hours is limited to 25 percent of the total program hours. This rule does not invalidate written articulation agreements that have been approved by all appropriate parties, including the Dean, Provost, and/or President. Transfer credit will be accepted only for organized courses in which the student received a letter grade of B (3.0) or higher and an official transcript showing the course(s) and grade(s) is required.

Courses from other universities taken after a student has been admitted into a master's program at UT Arlington must be approved in advance by the appropriate Committee on Graduate Studies and is reviewed by the dean of the college or school in which the student's current graduate degree program is located. . All work submitted for transfer credit must have been completed no more than six years before completion of a graduate program at UT Arlington.

To request transfer credit, students must complete the Transfer of Graduate Credit form and obtain approvals from the appropriate graduate advisor and chair of the Committee on Graduate Studies and final approval from the dean of the student's college or school. The form is available online (<http://grad.pci.uta.edu/students/forms/>).

No more than nine hours of transfer credit will be granted except in the professional master's programs that require more than 36 hours of coursework. In such programs, the number of transfer hours is limited to 25 percent of the total program hours. This rule does not invalidate written agreements between graduate programs and the Graduate Office or agreements that are stated elsewhere in this catalog. Transfer credit will be accepted only for

organized courses in which the student received a letter grade of B or higher and an official transcript showing the course(s) and grade(s) is required. Grades earned in transferred courses are not included in calculating a student's UT Arlington graduate grade-point average.

Courses from other universities taken after a student has been admitted into a master's program at UT Arlington must be approved in advance by the appropriate Committee on Graduate Studies and academic Dean.. All work submitted for transfer credit must have been completed no more than six years before completion of a graduate program at UT Arlington.

To request transfer credit, students must complete the Transfer of Graduate Credit form and obtain approvals from the appropriate graduate advisor and chair of the Committee on Graduate Studies and final approval from the academic Dean. The form is available online (<http://grad.pci.uta.edu/students/forms/>).

Transfer Credit in Certificate Programs

Equivalent coursework completed at other institutions of recognized standing may be transferred to a graduate certificate program after evaluation and approval of the graduate advisor, the appropriate Committee on Graduate Studies and the Dean of the College or School in which the student is currently enrolled. The number of transfer units is limited to 50% of the total units required for the certificate, except in certificate programs that exceed 15 units, in which case 12 of those units must be taken in residence. This rule does not invalidate written agreements between graduate certificate programs and the Office of Graduate Studies or agreements that are stated elsewhere in this catalog. Transfer credit will be accepted only for organized courses in which the student received a letter grade of B or higher and an official transcript showing the course(s) and grade(s) is required.

Courses from other universities taken after a student has been admitted into a graduate certificate program at UT Arlington must be approved in advance by the graduate advisor, the appropriate Committee on Graduate Studies and the Dean of the College or School in the student's current graduate degree program is located. The form is available online (<http://grad.pci.uta.edu/students/forms/>).

Grades earned in transferred courses are not included in calculating a student's UT Arlington graduate grade-point average.

Waiver of Courses in Doctoral Programs

Graduate-level coursework completed in the student's major area of doctoral study at institutions of recognized standing that grant doctoral degrees in those subject areas may serve to establish the student's competency in equivalent UT Arlington courses. Competency demonstrated by successful completion of equivalent courses may provide a basis for waiving some UT Arlington course requirements and the credit hours associated with those courses. Waivers must be recommended by the student's graduate advisor and current supervising professor and their recommendation must be approved by both the Committee on Graduate Studies of the student's major area and the Academic Dean. Only courses in which the student has earned a B (3.0) or better (or a P if the UTA course is also graded P/F) will be considered for purposes of a waiver. In no case will final semester Dissertation course (6x99 or 7399) requirements be waived. Waived courses must be shown on the student's academic plan.

Courses That Do Not Provide Graduate Credit

Audited Classes: University credit is not granted for audited classes and audited classes will not satisfy enrollment requirements.

Personal Improvement Courses: Personal improvement individual or group music or art lessons and exercise and sports activities courses can not be used for the following: 1) to satisfy graduate degree requirements; 2) meet enrollment requirements; 3) in computation of graduate grade-point averages or determination of academic probation or academic good standing; 4) in calculation of grade-point averages for the purpose of admission to a Graduate Program or for certification for graduation from a Graduate Program.

Correspondence Courses: Correspondence courses are not accepted for graduate credit.

Credit by Examination: Credit by examination may not be used for graduate credit and no such credit, graduate or undergraduate may appear on graduate student transcripts.

Credit Used to Earn Another Degree: No course that has been applied to any degree, at any graduate or undergraduate institution, may be applied to any other degree, either directly or by substitution except in approved dual degree or approved fast track programs.

Grade Forgiveness and Grade Exclusion

Students in graduate programs including degree seeking, certificate, and non-degree seeking programs are not eligible for grade forgiveness or grade exclusion.

Academic Standing

Academic standing is determined by students meeting departmental and University standards as described in the following sections.

- Undergraduate Academic Standing
- Graduate Academic Standing

Good Academic Standing is defined differently for graduate and undergraduate students and may affect a student's ability to register for a subsequent term, ability to receive scholarships, fellowships or assistantships, and eligibility for graduation.

Classification

Students at UT Arlington are classified in accordance with the number of hours earned. Hours earned are interpreted as hours passed at UT Arlington plus hours accepted in transfer from other institutions and/or credit by examination.

- Freshman: One who has earned fewer than 30 hours.
- Sophomore: One who has earned 30 hours but fewer than 60 hours.
- Junior: One who has earned 60 hours but fewer than 90 hours.
- Senior: One who has earned 90 hours or more.
- Degreed: One who has earned a bachelor's degree or higher and is enrolled as an undergraduate.
- Masters Student: One who is enrolled in a master's degree program.
- Doctoral Student: One who is enrolled in Doctor of Philosophy (Ph.D.) degree program.

Academic standing regulations apply to all undergraduate students. Additional regulations may apply to provisionally- and conditionally-admitted students until they have met the requirements for regular admission.

Academic standing is determined when grades are reported at the end of each fall and spring term and at the end of the entire summer session. A student's cumulative grade point average may change between these grade-reporting periods (e.g., by recording a final grade in place of an incomplete, or another grade change), and the student's academic standing status may change when the grade change is processed.

Academic standing is differentiated from Satisfactory Academic Progress (p. 102), and from Scholastic Dishonesty (p. 104) which are discussed elsewhere in this catalog.

Good Standing

Academic good standing for undergraduates studying at UT Arlington is defined as a cumulative University grade point average of 2.00 or higher. A University GPA of at least 2.00 is necessary for satisfactory progress toward a degree.

Table of Academic Standards for Continuance

An undergraduate student must maintain a minimum cumulative grade point average (GPA) at UT Arlington to remain academically eligible to register for the subsequent term or session. The minimum average required varies with the total number of college credit hours attempted and is shown in the Table of Academic Standards.

TABLE OF ACADEMIC STANDARDS

Total College Hours Undertaken	UTA GPA for Academic Probation	UTA GPA for Academic Warning and Dismissal
0-29	less than 2.000	less than 1.600
30-59	less than 2.000	less than 1.800
60 or more	less than 2.000	less than 2.000

Academic Probation

See the Table of Academic Standards column "UTA GPA for Academic Probation" above. Undergraduate students on academic probation may not take more than 14 semester hours without permission of their college/school dean, or if they are an undeclared or freshman student, the Director of the University Advising Center. Academic advisors may further limit the number of hours and overall difficulty of the students' schedules, require students to take specific courses deemed necessary to their education, prevent students from taking unsuitable courses, require students to attend advising sessions, and take other actions approved by the dean of their college/school or the Director of the University Advising Center to assure the students' attention to their academic deficiencies. Students on academic probation cannot hold office in any club or organization, represent UT Arlington at any official or social event, or make any University trip without the permission of the appropriate dean or the University Advising Center.

Removal from Academic Probation

Students on academic probation who achieve a 2.000 or higher cumulative GPA at the end of a grade-reporting period during which they are registered at the University will be removed from academic probation. Removal from probation will be reflected on the student's permanent academic record.

Academic Warning

See the Table of Academic Standards column "UTA GPA for Academic Warning and Dismissal" above. Before an undergraduate student is dismissed from the University, the student is on academic warning. At the end of the warning term, the student must earn a cumulative GPA that meets or exceeds the appropriate values in the Table of Academic Standards or a term GPA of at least 2.500 to avoid dismissal. Students on academic warning may not take more than 14 semester hours without permission of their college/school dean, or if they are an undeclared or freshman student, the Director of the University Advising Center. Academic advisors may further limit the number of hours and overall difficulty of the students' schedules, require students to take specific courses deemed necessary to their education, prevent students from taking unsuitable courses, require students to attend advising sessions, and take other actions approved by the dean of their college/school or the Director of the University Advising Center to assure the students' attention to their academic deficiencies. Students on academic warning cannot hold office in any club or organization, represent UT Arlington at any official or social event, or make any University trip without the permission of the appropriate dean or the University Advising Center.

Academic Continuance

After receiving an academic warning, undergraduate students who earn a GPA of 2.500 or higher on a minimum of three semester credit hours each subsequent term are given a one-semester continuance.

Academic Dismissal

See the Table of Academic Standards column "UTA GPA for Academic Warning and Dismissal" above. Any student who registers to attend classes at UT Arlington and is ineligible to attend for academic or disciplinary reasons will be dropped automatically from the rolls of the University. Undergraduate students placed on academic dismissal for the first time are eligible to continue enrollment after not having attended UT Arlington for one regular term (fall or spring). Students placed on academic dismissal for a second or subsequent time are eligible to apply for readmission after having not attended UT Arlington for a minimum 12-month period. After this time period, students may be required to petition for reinstatement from the University College Readmission Committee administered through the University Advising Center. The appeal deadline is 10 business days prior to the start of each semester. If the petition for reinstatement is disapproved, a student may not file another petition until the following term. Appeal of a denial for reinstatement may be made to the Office of the Vice Provost for Academic Analytics and Operations within two weeks after the notice of the denial is emailed. The decision of the Office of the Vice Provost is final. After returning from a one- or a two-semester dismissal, students who fail to continuously earn a semester GPA of 2.500 or higher and/or reach appropriate Table of Standards values are dismissed for a 12-month period. Appeals for academic continuance and financial aid continuance are handled separately, and one appeal being approved does not insure that the other will, or that enrollment is guaranteed in the event the student has been dismissed. Refer to the University College website (<https://www.uta.edu/universitycollege/current/academic-planning/academic-standing/>) for additional information. Academic dismissal is reflected on the student's permanent academic record.

Students in Degree Programs

Students on academic probation, continuance or warning who have been accepted into a degree program are subject to all additional rules governing the definition and terms of admission and enrollment established by the program in which they are enrolled. Students dismissed from a degree program or leaving a degree program voluntarily may transfer to another major or pre-major with the permission of the dean of the receiving college/school, or to undeclared status or the University Studies degree program with the approval of the Executive Director of University College.

Satisfactory Academic Progress (SAP)

Federal regulations require that the University of Texas at Arlington establish policies to monitor the academic progress of students who apply for and/or receive financial aid. To retain eligibility, undergraduate recipients must show satisfactory progress toward a degree based on the following requirements. There are two areas specifically addressed in these requirements. The first is cumulative grade point average (qualitative standard) and the other is a comparison of the number of credit hours annually and a review of the maximum number of hours attempted (quantitative standard). The cumulative grade point average required to meet this portion of the SAP standards mirrors the grade point average required to remain in good academic standing at the University. Information regarding the calculation of the quantitative standard as well as the notification and appeal process may be found on the Financial Aid website (<http://www.uta.edu/fao/>). Click on the Satisfactory Academic Progress tab.

Good Standing and Satisfactory Scholastic Progress

Graduate students are considered to be in good academic standing and making satisfactory progress in a degree or certificate program if they 1) meet all admission conditions within the time required 2) have a B (3.000) or better grade point average on all coursework undertaken while enrolled as a graduate student at UT Arlington and 3) have a B (3.000) or better grade point average in courses needed to satisfy degree requirements by the end of the semester in which they intend to graduate. Departments may specify additional requirements that students must meet in order to be in good standing or to be considered to be making satisfactory progress. Students should understand and follow those requirements because failure to meet them may lead to dismissal (see Dismissal, below). Students must be in good academic standing by the end of their final semester in order to receive an advanced

degree or certificate from UT Arlington. Refer to the section **Courses That Do Not Provide Graduate Credit** for an explanation of courses that do not provide graduate credit and will not be used to determine academic standing or to satisfy degree requirements.

Academic Probation

A graduate student whose cumulative grade point average falls below a 3.000 in all graduate courses, be they graduate or undergraduate level taken while enrolled as a UT Arlington graduate student, will be placed on academic probation. The student must attain a cumulative grade point average of at least 3.000 in the next semester he or she is enrolled or be subject to dismissal. Undergraduate courses or graduate courses graded P, R, I or W or courses that do not provide graduate credit (see **Courses That Do Not Provide Graduate Credit**) cannot be used to remove the condition of academic probation.

Dismissal

Students have the initial responsibility to recognize when they are having academic difficulties and are expected to initiate steps to resolve the problem. When a student is in academic difficulty, and dependent upon the severity of the problem, the student may receive an oral warning and/or written statement of the problem and required corrective actions from his or her program. Failure to take these corrective actions can result in termination from the degree program.

Graduate courses or undergraduate graduate courses graded P, R, I or W or courses that do not provide graduate credit (see **Courses That Do Not Provide Graduate Credit**) cannot be used to remove the condition of academic probation. If a student is on academic probation and earns only grades that do not provide graduate credit, he or she will be dismissed.

A student who has been dismissed from their program for failure to remove the condition of academic probation by meeting the 3.00 grade-point average requirement may be readmitted for further graduate study in the same or different program only if a petition has been approved by the Committee on Graduate Studies and the Academic dean of the program in which readmission is sought.

A student can be dismissed from a degree program not only for failure to maintain an adequate grade point average, but also for such reasons as unsatisfactory progress toward a degree as defined by the department or program, inability to pass a comprehensive examination, failure to prepare or to defend a thesis or dissertation in a satisfactory manner or complete thesis or dissertation work in an acceptable amount of time. Termination due to inadequate academic progress is a decision made by the program's or department's graduate advisor and Graduate Studies Committee. A student's thesis/dissertation committee may recommend termination for failure to prepare a thesis/dissertation proposal, prospectus or final draft in a satisfactory manner or failure to complete work in an acceptable amount of time to the program's graduate advisor and Graduate Studies Committee. Such decisions to terminate a student must be communicated to the academic dean by the Chairman of the Graduate Studies Committee with required justification. The academic dean will review the case make the final decision. The student may continue enrollment until the dean finalizes the termination decision.

Students failing to pass a comprehensive examination or thesis/dissertation defense may be terminated upon the recommendation of the examining committee. Such decisions are indicated on the Comprehensive Examination Report or Final Defense Report which are returned to the academic dean and the Office of the Registrar. The academic dean will notify the student formally of the program's or department's decision.

Satisfactory Academic Progress (SAP)

Federal regulations require that the University of Texas at Arlington establish policies to monitor the academic progress of students who apply for and/or receive financial aid. To retain eligibility, recipients must show satisfactory progress toward a degree based on the following requirements. There are two areas specifically addressed in these requirements. The first is cumulative grade point average (qualitative standard) and the other is a comparison of the number of credit hours annually and a review of the maximum number of hours attempted (quantitative standard). The cumulative grade point average required to meet this portion of the SAP standards mirrors the grade point average required to remain in good academic standing at the University. Information regarding the calculation of the quantitative standard as well as the notification and appeal process may be found on the Financial Aid website (<http://www.uta.edu/fao/>). Click on the Satisfactory Academic Progress tab.

Student Conduct & Academic Integrity

All students are expected to obey the civil and penal statutes of the State of Texas and the United States, the Regents' Rules and Regulations of The University of Texas System, the rules and regulations of the University, and the orders or instructions issued by an administrative official of the University or The University of Texas System in the course of his/her duties and to observe standards of conduct that are compatible with the University's functions as an educational institution. Any student who engages in conduct that is prohibited by the Regents' Rules and Regulations or the rules of the University, or by federal, state, local law or regulation is subject to disciplinary action regardless of whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct. Individuals who are not currently enrolled at UT Arlington remain subject to the disciplinary process for conduct that occurred during any period of enrollment and for statements, acts, or omissions related to application for enrollment or the award of a degree.

Information about the rules of conduct and due process procedures can be found in the UT Arlington Handbook of Operations Procedures (<https://www.uta.edu/policy/hop/>).

University Honor Code

All students are expected to live by the University of Texas at Arlington's honor code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or that I contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

It is the policy of The University of Texas at Arlington to uphold and support standards of personal honesty and integrity for all students consistent with the goals of a community of scholars and students seeking knowledge and responsibility. Furthermore, it is the policy of the University to enforce these standards through fair and objective procedures governing instances of alleged dishonesty, cheating and other academic/non-academic misconduct. Students found responsible for dishonesty in their academic pursuits are subject to sanctions that may range from disciplinary probation, suspension and expulsion from the University.

Student Travel Policy

Before any student organization travels, it is beneficial to come to the Office of Student Governance and Organizations to receive information about liability and to consider using release forms that are available (Texas Education Code, Section 51.950).

However, if the trip is funded by the University (including Program Assistance Funds), is more than 25 miles from the University, and the vehicle is owned or leased by the University, or if attendance is required by a student organization, then the organization must submit the Student/Group Travel Form and the University Request for Travel Authorization at least 10 days prior to the date of travel. All forms and additional information are available in the Office of Student Governance and Organizations. For additional information, see the UT Arlington Handbook of Operating Procedures, Part II, Subchapter 6-600.

Academic Integrity

What Constitutes Scholastic Dishonesty?

Scholastic Dishonesty includes, but is not limited to, cheating, plagiarism, and collusion on an examination or an assignment being offered for credit. Each student is accountable for work submitted for credit, including group projects.

Cheating

- Copying another's test or assignment.
- Communication with another during an exam or assignment (i.e., written, oral or otherwise).
- Giving or seeking aid from another when not permitted by the instructor.
- Possessing or using unauthorized materials during the test.
- Buying, using, stealing, transporting, or soliciting a test, draft of a test, or answer key.

Plagiarism

- Using someone else's work in your assignment without appropriate acknowledgement.
- Making slight variations in the language and then failing to give credit to the source.

Collusion

- Without authorization, collaborating with another when preparing an assignment.

In accordance with the Rules and Regulations of the Board of Regents of The University of Texas System (Rule 50101 (<http://www.utsystem.edu/bor/rules/50000Series/50101.pdf>)), institutional procedures regarding allegations of scholastic dishonesty are outlined in Part Two, Chapter 2, of the UT Arlington Handbook of Operating Procedures (<https://www.uta.edu/policy/hop/>). Students found responsible for dishonesty in their academic pursuits are subject to penalties that may range from disciplinary probation to suspension or expulsion from the University.

Any student who registers to attend classes at UT Arlington and is ineligible to attend for disciplinary reasons will be dropped automatically from the rolls of the University. This information may be obtained by accessing the Office of Student Conduct website at <http://www.uta.edu/conduct> (<http://www.uta.edu/conduct/>).

Responsibility for Academic Misconduct

There are two ways in which students are held responsible for their academic behavior. First, students are responsible for their own actions. Those that violate the principles of academic integrity, scholastic honesty, or engage in activities prohibited by the Code of Student Conduct must assume responsibility for their behavior and accept the consequences. You can assume responsibility in two ways. First, if you choose to take the risk associated with scholastic dishonesty and any other violation of the Code of Student Conduct and Discipline, you must assume responsibility for your behavior and accept the consequences. In an academic community, the standards for integrity are high. Second, students who become aware of if you are aware of scholastic dishonesty and any other conduct violations on the part of others, you have the responsibility to report it to the relevant professor or the Office of Student Conduct. The decision to do so is another moral dilemma to be faced as you define who you are.

Student Conduct

Office of Student Conduct

All students are expected to obey the civil and penal statutes of the State of Texas and the United States, the Regents' Rules and Regulations of The University of Texas System, the rules and regulations of the University, and the orders or instructions issued by an administrative official of the University or The University of Texas System in the course of his/her duties and to observe standards of conduct that are compatible with the University's functions as an educational institution. Any student who engages in conduct that is prohibited by the rules of the University, or by federal, state, local law or regulation is subject to disciplinary action regardless of whether such conduct takes place on or off campus or whether civil or criminal penalties are also imposed for such conduct. Individuals who are not currently enrolled at a component institution of The University of Texas System remain subject to the disciplinary process for conduct that occurred during any period of enrollment and for statements, acts, or omissions related to application for enrollment or the award of a degree.

Information about the rules of conduct and due process procedures can be found on these Web sites:

- UT Arlington Handbook of Operations Procedures (<https://www.uta.edu/policy/hop/>)

Unauthorized Distribution of Copyrighted Material

Unauthorized distribution of copyrighted material may subject students to disciplinary action and civil and criminal penalties. Information concerning the legal consequences of such violations may be found in *Copyright Law of the United States of America and Related Laws Contained in Title 17 of the United States Code*, Circular 92 (<http://www.copyright.gov/title17/92chap5.html#504>). The University's policies on copyrighted materials (ADM 5-200 and 5-300) can be found at <http://www.uta.edu/policy/hop> (<http://www.uta.edu/policy/hop/>).

Hazing

The 74th Texas Legislature modified the law concerning hazing which became effective May 30, 1995. Under the law, individuals or organizations engaging in hazing could be subject to fines and charged with criminal offenses (Section 51.936, Texas Education Code).

A person violates the law if he or she:

- engages in hazing; or
- solicits, encourages, directs, aids or attempts to aid another engaging in hazing; or
- recklessly permits hazing to occur; or
- has firsthand knowledge of the planning of a specific hazing incident involving a student in an educational institution, or
- has firsthand knowledge that a specific hazing incident has occurred, and knowingly fails to report that knowledge in writing to the Office of Student Conduct or other appropriate official of the institution.

An organization violates the law if

- the organization condones or encourages hazing or
- if an officer or any combination of members, pledges, or
- alumni of the organization commits or assists in the commission of hazing.

Thus, according to the law, a person can commit a hazing offense not only by engaging in a hazing activity, but also by soliciting, directing, encouraging, aiding or attempting to aid another in hazing; intentionally, knowingly or recklessly allowing hazing to occur; or by failing to report first hand information that a hazing incident is planned or has occurred in writing to the Office of Student Conduct. The fact that a person consented to or acquiesced in a hazing activity is not a defense to prosecution for hazing under this law.

In an effort to encourage reporting of hazing incidents, the law grants immunity from civil or criminal liability to any person who reports a specific hazing event to the Office of Student Conduct; and immunizes that person from participation in any judicial proceeding resulting from that report. The penalty for failure to report is a fine of up to \$2,000, up to 180 days in jail, or both. Penalties for other hazing offenses vary according to the severity of the injury, which results and range from \$500 to \$10,000 in fines and up to two years confinement.

The law defines hazing as any intentional, knowing or reckless act, occurring on or off the campus of an educational institution, by one person alone or acting with others, directed against a student, that endangers the mental or physical health or safety of a student for the purpose of pledging, being initiated into, affiliating with, holding office in, or maintaining membership in any organization whose members are or include students at an educational institution. Hazing includes but is not limited to:

- Any type of physical brutality, such as whipping, beating, striking, branding, electronic shocking, placing a harmful substance on the body, or similar activity;
- Any type of physical activity, such as sleep deprivation, exposure to the elements, confinement in small space, calisthenics, or other activity that subjects the student to an unreasonable risk or harm or that adversely affects the mental or physical health or safety of the student;
- Any activity involving consumption of food, liquid, alcoholic beverage, liquor, drug, or other substance which subjects the student to an unreasonable risk of harm or which adversely affects the mental or physical health of the student;
- Any activity that intimidates or threatens the student with ostracism, that subjects the student to extreme mental stress, shame, or humiliation, or that adversely affects the mental health or dignity of the student or discourages the student from entering or remaining registered in an educational institution, or that may reasonably be expected to cause a student to leave the organization or the institution rather than submit to acts described in this subsection;
- Any activity that induces, causes, or requires the students to perform a duty or tasks, which involved a violation of the Penal Code.

The University of Texas at Arlington regards hazing as a serious issue and is committed to the removal of any such practice. The Office of Student Conduct is prepared to assist any organization with a review of its activities to ensure they do not violate the hazing law.

Sexual Harassment and Sexual Misconduct

The safety and security of all students is of the utmost importance. Instances of sexual harassment and sexual misconduct impact the entire community and disrupt the academic progress of all involved. The University of Texas at Arlington's Handbook of Operating Procedures, Procedure 14-1 states the following:

Definition of Sexual Harassment:

Sexual harassment is defined by the Equal Employment Opportunity Commission (EEOC) and the courts to be any unwelcome sexual advances, requests for sexual favors, or other verbal or physical conduct of a sexual nature, when:

- submission to such conduct is made either explicitly or implicitly a term or condition of employment (or a student's status in a course, program, or activity);
- submission to, or rejection of such conduct by an employee is used as a basis for employment decisions affecting the individual. In the case of a student, it is used as a basis for academic or decisions affecting a student; or,
- such conduct has the purpose or effect of unreasonably interfering with the individual's employment (or the student's educational experience) or creating an intimidating, hostile, or offensive academic environment.

Definition of Sexual Misconduct:

Sexual misconduct includes sexual advances, requests for sexual favors, or verbal or physical conduct of a sexual nature directed towards another individual that does not rise to the level of sexual harassment but is unprofessional and inappropriate for the workplace or classroom. Examples of behavior that could be considered sexual harassment or sexual misconduct includes, but is **not limited** to, the following:

- physical contact of a sexual nature including touching, patting, hugging, or brushing against a person's body;
- explicit or implicit propositions or offers to engage in sexual activity;
- comments of a sexual nature including sexually explicit statement, questions, jokes or anecdotes, remarks of a sexual nature about a person's clothing or body, remarks about sexual activity, speculation about sexual experience;
- exposure to sexually oriented graffiti, pictures, posters or materials;
- physical interference with or restriction to an individual's movements.

If a person believes they have been the subject of sexual harassment or sexual misconduct, it should be reported immediately to the Equal Opportunity Services Director, the University Police Department and/or the Office of Student Conduct.

The University offers various educational opportunities, campus resources and avenues for support to community members. More information can be found at the following links:

- University of Texas at Arlington's Handbook of Operating Procedures <https://www.uta.edu/policy/hop> (<https://www.uta.edu/policy/hop/>)
- Relationship, Violence and Sexual Assault Prevention <http://www.uta.edu/rvsp> (<http://www.uta.edu/rvsp/>)
- Equal Opportunity Services <http://www.uta.edu/hr/eos> (<http://www.uta.edu/hr/eos/>)
- *Safe & Sound in Maverick Country* <http://www.uta.edu/safety> (<http://www.uta.edu/safety/>)

Campus Solicitations

"Solicitation," as defined in Rule 80103, Section 3 of the Rules and Regulations of the Board of Regents of The University of Texas System, means the sale, lease, rental or offer for sale, lease or rental of any property, product, merchandise, publication or service, whether for immediate or future delivery; an oral statement or the distribution or display of printed material, merchandise or products that is designed to encourage the purchase, use or rental of any property, product, merchandise, publication or service; the oral or written appeal or request to support or join an organization other than a registered student, faculty or staff organization; the receipt of or request for any gift or contribution; or the request to support or oppose or to vote for or against a candidate, issue or proposition appearing on the ballot at any election held pursuant to state or federal law or local ordinances. All solicitations on the UT Arlington campus must conform to the Regents' Rules and Regulations, copies of which are available in the offices of the president, vice presidents, academic deans, numerous other administrative offices and the Central Library. The Regents' Rules and Regulations also may be accessed at the following Web site: www.utsystem.edu/BOR/rules.htm (<http://www.utsystem.edu/BOR/rules.htm>).

Use of Campus Facilities

The property, buildings or facilities owned or controlled by The University of Texas at Arlington are not open for assembly, speech or other activities as are the public streets, sidewalks and parks. No person, organization, group, association or corporation may use property, buildings or facilities owned or controlled by UT Arlington for any purpose other than in the course of the regular programs or activities related to the University's role and mission unless authorized by the Rules and Regulations of the Board of Regents of The University of Texas System. Any authorized use must be conducted in compliance with the provisions of the Regents' Rules and Regulations (Regents' Rules and Regulations, Rule 80101), the approved rules and regulations of UT Arlington, and applicable federal, state and local laws and regulations.

Photo Identification Cards

Students are strongly urged to retain possession of their photo identification cards at all times. Misuse of University identification is an offense, which subjects students to discipline. Students lending their photo identification cards for fraudulent purposes, as well as those making use of them, will be disciplined. The student photo identification card is the property of the University, and a student may be asked to surrender the card for appropriate reasons.

Student Responsibilities

While University faculty and staff members give students academic advice and assistance, each student is expected to take responsibility for his or her education and personal development. The student must know and abide by the academic and disciplinary policies given in this catalog, including rules governing quantity of work, the standard of work required to continue in the University, scholastic probation and dismissal, and enforced withdrawal. The student must also know and meet the requirements of his or her degree program, including the University's core education requirements; must enroll in courses appropriate to the program; must meet prerequisites and take courses in the proper sequence to ensure orderly and timely progress; and must seek advice from appropriate University representatives about degree requirements and other University policies when necessary. The student must also know and adhere to all University deadlines.

Sources of Information on Academics, Deadlines, and Rules

All students are expected to be familiar with the following sources of information. Students will not be relieved of their responsibility to know the policies, deadlines and rules of the University on the grounds that they were not told. If students have questions regarding these materials, it is the University's expectation that the student will consult his/her academic advisor for guidance and resolution.

Dean's Offices

Students are responsible to the appropriate Dean of a College or School. Undeclared and freshman students are responsible to the Director of the University Advising Center. In each college/school, the office of the assistant or associate dean serves as a central source of information about academic affairs and student services.

Academic Advising

The student is responsible for seeking academic advice, for enrolling in appropriate courses to insure progress toward a degree, for timely completion of his or her academic program, for familiarity with the appropriate catalog, and for maintaining University standards. Assistance from an academic advisor is not a substitute for the personal responsibility of the student.

Undergraduate Student Advising

Academic advisors guide students to develop educational plans that are compatible with their strengths, goals, and interests. While monitoring their progress and guiding students to academic success, advisors also help students understand their responsibilities toward academic success. Academic advisors also serve as a key resource and advocate for students regarding the interpretation of University policies and procedures and referral to campus resources that to aid student success (Menezes, 2005; National Academic Advising Association Clearinghouse).

The student should consult the advising office in his or her department or, if he or she is an undeclared or freshman student, the University Advising Center. A student who is in doubt about any University regulation should always seek clarification before proceeding.

Academic advisors may limit the number of hours and overall difficulty of the students' schedules, require students to take specific courses deemed necessary to their education, prevent students from taking unsuitable courses, require students to attend advising sessions, and otherwise restrict enrollment or take other actions approved by the dean of their college/school or the Director of the University Advising Center to assure the student's best academic interest. Failure to enroll in courses as prescribed/contracted by academic advisor without consultation and consent can lead to disciplinary actions through Student Conduct.

Undergraduate advising locations can be found at <http://www.uta.edu/universitycollege/resources/advising.php> (<https://www.uta.edu/student-success/advising/>).

Graduate Student Advising

Each graduate program has a graduate advisor. The graduate advisor represents the academic dean and the Committee on Graduate Studies in matters pertaining to advising graduate students in their academic areas. The graduate advisor's functions include clearing of students for registration, acting upon requests for drops, adds, section changes and special examinations; maintaining graduate student records; and advising graduate students about their degree plans. The name and contact information for graduate advisors can be found at <http://grad.pci.uta.edu/faculty/advisors> (<http://grad.pci.uta.edu/faculty/advisors/>).

Drug-Free Schools and Communities Act Notification

The Drug-Free Schools and Communities Act amendments of 1989 (the DFSCA) requires institutions of higher education receiving any form of federal funding (IHEs) to meet requirements pertaining to the prevention of illegal use of alcohol and other drugs (AOD) on campus and at campus-sponsored events. These requirements include developing and implementing an AOD-prevention program to prevent the unlawful possession, use, or distribution of illicit drugs and alcohol by students and employees. Furthermore, IHEs are required to conduct biennial reviews of their AOD-prevention programs and publish subsequent reports of those reviews. The purpose of the biennial review is twofold: 1) for an IHE to determine the effectiveness of, and to implement any needed changes to, its AOD-prevention program; and 2) to ensure that IHEs enforce the disciplinary sanctions for violating standards of conduct consistently.

The University of Texas at Arlington (UTA) is a community that cares about the well-being of its students, faculty, and staff, and as such, UTA continually strives to create and maintain a safe, secure, and supportive campus environment. As part of this effort, UTA prohibits the illegal use of AODs on its campus and at campus-sponsored events, has developed an AOD-prevention program (Program), conducts biennial reviews of its Program, publishes a Drug-Free Schools and Communities Biennial Review (this Report), and strictly complies with the requirements of the DFSCA. As such, we are required to provide the information below to each employee and student on an annual basis.

Health risks associated with drug and alcohol abuse

- Alcohol and Drug Awareness (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fhealthservices%2Fhealth%2Fsubstance-abuse.php&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673738090&sdata=VcxuteW6vAJER6Wj3%3D&reserved=0>)
- Illicit Drugs and Alcohol Abuse (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fprocedure%2F3-42&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673738090&sdata=Sq2Sh1mIGlehaErCz%3D&reserved=0>)
(Hard copy brochures are available at the UTA Police Department and Health Services)

University policies related to the illegal possession, use, or distribution of drugs or alcohol

- Drug and Alcohol Testing Policy (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fprocedure%2F3-40&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673748099&sdata=Als6B00EkAH7SQHft%3D&reserved=0>)
- Alcohol and Drug-Free Workplace Policy (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fprocedure%2F3-41&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673748099&sdata=9smt739BX3sZfOSKb%3D&reserved=0>)
- Illicit Drugs and Alcohol Abuse (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fprocedure%2F3-42&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673758108&sdata=%2F3Eu0ObICS9GyEiDBe6%2Fj2LUjefJ1S%2FKHmqL1T3l8zM%3D&reserved=0>)
- Drug-Free Work Force Rules for Employees whose Salaries are Funded by a Department of Defense Contract (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fprocedure%2F3-43&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673768117&sdata=Gfn1mrhzy3xYbrcFV%3D&reserved=0>)
- Drug-Free Workplace (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fhop%2F5-502&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673768117&sdata=yCZCM1zk4Tok41Aw%3D&reserved=0>)

Availability of treatment for drug or alcohol problems

Employees—Employee Assistance Program (EAP) is provided through UTA's Office of Human Resources at 1-800-343-3822 or at [alliancewp.com](https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.alliancewp.com%2F&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673778122&sdata=jyRUFzTZeDg31LnkDsK%2BuWcqDQ%2By7cjxv7%2Bj%2BOCbL1Y%3D&reserved=0) (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.alliancewp.com%2F&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673778122&sdata=jyRUFzTZeDg31LnkDsK%2BuWcqDQ%2By7cjxv7%2Bj%2BOCbL1Y%3D&reserved=0>).

Students—Drug and alcohol counseling and referral services are available through UTA Health Services at 817-272-2771 or [uta.edu/healthservices](https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fhealthservices%2F&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673778122&sdata=otPU5ye%2BBBZ8eNbNybUxJ1D%2B53jsdoLey1WMIjCyjk3Y%3D&reserved=0) (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fhealthservices%2F&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673778122&sdata=otPU5ye%2BBBZ8eNbNybUxJ1D%2B53jsdoLey1WMIjCyjk3Y%3D&reserved=0>).

Internal sanctions and federal, state, and local legal penalties that may result from the illegal sale, possession, consumption, or distribution of drugs or alcohol

- Disciplinary Penalties (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fprocedure%2F3-42&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673788131&sdata=UDU5l48h5mhl45oBp%2BJujnj%2BzmJ5wdh8IMzYq6Q%3D&reserved=0>)
- Student Conduct and Discipline (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fhop%2F9%23section-3-2&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673788131&sdata=l5rtOerxmbinXP91JV%3D&reserved=0>)

- Standards of Conduct Guide (https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fcompliance%2F_downloads%2Fcompliance%2Fdoc%2FFY%252019%2520_Standards%2520of%2520Conduct.pdf&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673798136&sdata=xBSal%2B6jBXXIXtWYyXMnAVxvB5Dg0AgZJGwigVYkXw%3D&reserved=0)
- Illicit Drugs and Alcohol Abuse (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fpolicy%2Fprocedure%2F3-42&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673808145&sdata=K4tzhZH0ZqFOKU%2B6SyBwRJ2X5QBBJ%2FTKR00GZNNJ0b8%3D&reserved=0>) (Hard copy brochures are available at the UTA Police Department and Health Services)

For more information, contact UTA's Health Services at 817-272-2771 or visit [uta.edu/healthservices](https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fhealthservices%2F&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673808145&sdata=0FrC1mhbBgnSt%2FzN5xCMg8Q4yDhiRQ2DMJtK6N7OzI%3D&reserved=0) (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fhealthservices%2F&data=02%7C01%7Cjimmerson%40uta.edu%7Caca97aa5412d47b607be08d6bc4f6ec5%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636903446673808145&sdata=0FrC1mhbBgnSt%2FzN5xCMg8Q4yDhiRQ2DMJtK6N7OzI%3D&reserved=0>).

Enrollment & Attendance

Managing Enrollment

Once a student registers for classes, the University commits resources to provide registered students with instruction by qualified faculty and sufficient class space for the course. Thus, upon registration, a student assumes full responsibility for either paying fees in full by a prescribed due date, or notifying the University in an appropriate time frame that he/she will not attend and take all appropriate action as prescribed to drop a course(s) or officially withdraw from the University. The student must verify his or her schedule of classes each term, must see that necessary corrections are made, and must keep documentation of all schedule changes and other transactions.

Class Attendance, Tardiness and Make-Up Work

The University is not required by an outside entity to take attendance; however, regular attendance at all class meetings is expected. Individual class attendance and tardiness regulations will be established by instructors and published in the course syllabus or announced to their classes. At the discretion of the instructor, such regulations may not include provisions for making up work missed by the student as a consequence of an absence. Special regulations of colleges and schools required by the unique nature of their programs of study may be enacted through the normal approval process. These special regulations may not conflict with University regulations on class attendance and absence. An instructor is under no obligation to accommodate students who are absent or miss work without prior notification and make-up arrangements.

A student's registration is not automatically cancelled for non-attendance. A student should pay fees in full by the designated deadline or take the appropriate steps to withdraw. To avoid financial responsibility to the University, cancellation of enrollment must be completed no later than the day before the first official University class day. Prompt withdrawal notification helps to free up class space for other students.

University Authorized Absences

The Office of the Vice President for Student Affairs provides lists of students who have absences authorized by the University (e.g., participation in athletic events or scholastic activities that are officially sponsored University functions--those are primarily activities that are funded by the University).

The student must notify the instructor in writing at least one week in advance of the start of the excused absence and arrange with the instructor to make up missed work or missed examinations. Instructors will allow students an opportunity to make up the work and examinations within a reasonable time period following the absence or otherwise adjust the grading to ensure that the student is not penalized for the absence, provided that the student has properly notified the instructor. Students who have properly notified the instructor, will not be penalized for the absence. However, the instructor may respond appropriately if the student fails to complete the assignment or examination satisfactorily within the time limit following the absence set by prior arrangement.

If there is disagreement between student and faculty member regarding what constitutes a reasonable amount of time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the Office of the Vice Provost for Academic Analytics and Operations. The decision of the Vice Provost is final.

Absence for Military Service

In accordance with section 51.9111 of Texas Education Code, a student is excused for attending classes or engaging in other required activities, including examinations, if he or she is called to active military service of reasonably brief duration. The student will be allowed a reasonable amount of time after the absence to complete assignments and take examinations.

Withdrawal as a Result of Military Service

A student who must withdraw from the University as a result of military service will receive the following considerations according to Section 54.006 of the Texas Education Code: (1) receive a refund of tuition and fees (2) if eligible, be assigned a grade of incomplete (I) or (3) as determined by

the instructor, receive a final grade or credit in courses where the student has satisfactorily completed a substantial amount of coursework and has demonstrated sufficient mastery of the course material.

Observance of Religious Holy Days

A student who misses an examination, work assignment or other project because of an observance of a religious holy day will be given the opportunity to complete the work missed within a reasonable time after the absence.

Checking Email

E-mail serves a primary means for communication at UT Arlington. Therefore, the University has the right to send communications to students via University-issues e-mail and the right to expect that those communications will be received and read in a timely fashion. The Office of Information Technology (OIT) will assign all students an official University e-mail address. Students are expected to check their official University e-mail account on a frequent and consistent basis to stay current with University communications. The University recommends checking e-mail daily; in recognition that certain communications may be time-critical.

Maintaining updated address and phone

While most of University business and communications is handled through official University email or through MyMav, on occasion the University will need to contact students by phone or mail. The student must give current and correct local and permanent addresses and telephone numbers to the University through self-service in MyMav. Official correspondence may be mailed, versus e-mailed, to the appropriate address depending upon the nature of the correspondence and the academic calendar; if the student has moved and failed to correct this address, he or she will not be relieved of responsibility on the grounds that the correspondence was not delivered.

For the purposes of state authorization compliance and disclosure requirements for licensing and certification programs, the University will consider the state listed in the Mailing Address in MyMav as students' location. Students must report any change in their Mailing Address through self-service in MyMav.

Requirement to Update Academic Records

UT Arlington students who also enroll at other institutions of higher education have an obligation to ensure that UT Arlington has a complete and accurate academic record. Students who enroll in coursework at other institutions must transfer a record of that coursework to UT Arlington's Office of the Registrar at the conclusion of each term completed externally.

Student Rights & Security

Rights Under Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. 1232g and 34 CFR Part 99, also known as the Buckley Amendment, are federal laws and regulations that provide students with the following rights with respect to their education records:

1. To inspect and review the student's education records;
2. To consent to disclosure of the student's education records to third parties, except to the extent that FERPA authorizes disclosure without consent;
3. To request amendment of the student's education records to ensure that they are not inaccurate or misleading, or otherwise in violation of the student's privacy rights under FERPA;
4. To be notified of the student's privacy rights under FERPA; and
5. To file a complaint with the U.S. Department of Education concerning alleged failures by the University to comply with the requirements of FERPA.

At UT Arlington, FERPA rights apply to a student. A student is a person who has been admitted and is registered, regardless of the person's age. It is the policy of The University of Texas at Arlington to protect the privacy and records access rights of its current and former students.

The Clery Act

In compliance with the federal Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (the "Clery Act"), the University of Texas at Arlington publishes its Security and Fire Safety Report (the "Report") annually. The Report is available for review and includes crime statistics for the prior three calendar years. These statistics include crimes that occurred on campus, in non-campus properties owned or controlled by UTA and frequented by students, and on public property within or immediately adjacent to campus. The Report also includes information on fire statistics for campus residential properties for the prior three calendar years and current fire safety systems in these properties. In addition, the Report includes UTA policies related to the safety and security of our campus community. You may access the 2018 Report by clicking the following link: 2018 Security and Fire Safety Report (https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fpolice.uta.edu%2F_docs%2Freports%2F2018%2520Annual%2520Campus%2520Security%2520and%2520Fire%2520Safety%2520Report.PDF&data=02%7C01%7Cjimmerson%40uta.edu%7C2bf1305400b3466acf9108d6b849f9a8%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636899025187707612&sdata=SfEfzrl6F7Q2QxsTzvyGwL%2F2vQqWXTvkNOFoBNMXw%3D&reserved=0). You may request a paper copy of the Report by contacting the University's Office of Legal Affairs (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Flegalaffairs%2F&data=02%7C01%7Cjimmerson%40uta.edu%7C2bf1305400b3466acf9108d6b849f9a8%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636899025187717626&sdata=cvUufaFVkos4C2tcTE9pX%2F8hctn0Nngs6438gGgRA%3D&reserved=0>) or emailing campus_safety_report@uta.edu.

Student Complaints and Appeals

UT Arlington is committed to addressing student complaints in a fair, consistent and professional manner. In an attempt to resolve a complaint, the student must first make a serious effort to resolve the matter with the individual with whom the grievance originated. Grievances involving matters other than grades are appealed to the department chair or office director, then to the Dean or administrative head. All appeals must be submitted in writing on an appeal form available in academic departments.

Information on the process for determining where to file a complaint or appeal, depending on the subject area is available in the Dean of Students (<http://www.uta.edu/deanofstudents/>) page. The **Student Complaint, Appeal and Concern Resolution Matrix** provides students with the processes and procedures for issues or concerns that may arise.

Students can appeal a decision made by the dean or administrative head to the Dean of Students only if they can present evidence of differential treatment or procedural irregularities. The Student Appeal form is available on the Dean of Students (<http://www.uta.edu/deanofstudents/>) page.

Information on procedures related to grades is available in the Grades and Grading (<http://catalog.uta.edu/academicregulations/grades/>) section of the catalog.

Seeking Exceptions to Graduate Policy

A student may petition for exceptions to published graduate policy by submitting a petition. The Graduate Advisor and the departmental Committee on Graduate Studies Chair will evaluate the petition and send it to the Dean for final decision. Limited exceptions to some rules may be approved if the facts presented by the petitioner are fully justified in the views of the Graduate Advisor, Committee on Graduate Studies Chair, and Dean. See Petition for an Exception to a Graduate Policy (<http://www.uta.edu/records/graduate/petition-for-an-exception.php>) for additional information about petitioning for an exception to graduate policy.

Grievances Other Than Grades

In attempting to resolve any student grievance, the student must review the University's Student Complaint (<http://www.uta.edu/deanofstudents/student-complaints/>) Process. The student must first make a serious effort to resolve the matter with the individual with whom the grievance originated. Grievances involving matters other than grades are appealed to the department chair, then the Dean of the School or College; for non-academic units, the student can appeal to the administrative director, then to the appropriate administrative head. The decision of the dean and administrative

head is final unless a student has evidence of differential treatment and/or procedural irregularity (<http://www.uta.edu/deanofstudents/complaints/definitions.php>). In that case, the student can file a University Student Appeal through the Formal Appeal (<http://www.uta.edu/deanofstudents/student-complaints/>) Process.

Student Right-to-Know and Campus Security Act

Campus security and safety guidelines: In case of emergency or to report a crime in progress, contact the UT Arlington Police at (817) 272-3003. For all other security and safety issues, dial (817) 272-3381 or visit the Campus Police homepage (<http://www.uta.edu/campus-ops/police/>).

Campus security policies: In compliance with the federal Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, formerly the Student Right-to-Know and Campus Security Act (P.L. 101-542, as amended), the University of Texas at Arlington publishes specified campus crime statistics and campus security policies through the Office of the Chief of the University Police.

Campus security policies include:

- Procedures for reporting criminal actions or other emergencies occurring on campus.
- Policies concerning security of and access to campus facilities, including campus residences; campus law enforcement authority and responsibilities.
- A description of programs designed to inform students and employees about the prevention of crimes, and campus security procedures.
- The policy of monitoring and recording of students' criminal activity occurring at off-campus locations of student organizations officially recognized by the institution.
- The policy regarding the possession, use and sale of alcoholic beverages and illegal drugs, and enforcement of federal and state drug and drinking laws.
- A description of drug or alcohol-abuse education programs.
- Sexual assault programs to prevent sex offenses, and procedures to follow when a sex offense occurs.
- Policy on emergency response and emergency notification procedures involving immediate threat and campus evacuation.
- Missing student information
- Fire and life safety policies and procedures
- Gang free zones and consequences of engaging in organized criminal activities in these zones
- Campus-wide emergency notification procedures in case of immediate threat or campus evacuation (MavAlert (<http://www.uta.edu/campus-ops/police/docs/mav-alert.pdf>))

To learn more how to prevent crime or to respond to emergency situations, visit the website <http://www.uta.edu/campus-ops/police/emergency-management/> (<http://www.uta.edu/campus-ops/police/emergency-management/>).

Crime statistics may be accessed on the University Police Web site at <http://www.uta.edu/campus-ops/police/> (<http://www.uta.edu/campus-ops/police/>).

Gang-free zones: To promote campus safety and deter crime, premises owned, rented or leased by The University of Texas at Arlington, and areas within 1,000 feet of the premises are "gang-free" zones. Certain criminal offenses, including those involving gang-related crimes, will be enhanced to the next highest category of offense if committed in a gang-free zone by an individual 17 years or older. See Texas Penal Code, Section 71.028 (<http://www.statutes.legis.state.tx.us/Docs/PE/htm/PE.71.htm#71028>).

Missing student notification policy: If a member of the University community has reason to believe that a student who resides in on-campus housing is missing, he or she should immediately notify the UT Arlington Police Department at 817-272-3381. Students residing in on-campus housing have the option to identify confidentially an individual to be contacted by UT Arlington in the event the student is determined to be missing for more than 24 hours. Contact information will be accessible only to authorized campus officials and law enforcement and will not be disclosed outside of a missing person investigation. To designate a confidential contact, contact Apartment and Residence Life (<http://www.uta.edu/studentaffairs/residence-life-home/>) at (817) 272-2926. More details can be found in the Annual Campus Fire and Safety Report (<http://www.uta.edu/campus-ops/police/docs/Annual%20Campus%20Fire%20and%20Safety%20Report%202013.pdf>).

False alarms reports: Since Sept. 1, 2013, Section 42.06(b) of the Texas Penal Code (<http://www.legis.state.tx.us/tlodocs/83R/billtext/pdf/HB01284F.pdf#navpanes=0>) mandates that the penalty for the offense of making a false alarm or report involving a public or private institution of higher education is a state jail felony.

Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. 1232g and 34 CFR Part 99, also known as the Buckley Amendment, are federal laws and regulations that provide students with the following rights with respect to their education records:

1. To inspect and review the student's education records;
2. To consent to disclosure of the student's education records to third parties, except to the extent that FERPA authorizes disclosure without consent;
3. To request amendment of the student's education records to ensure that they are not inaccurate or misleading, or otherwise in violation of the student's privacy rights under FERPA;

4. To be notified of the student's privacy rights under FERPA; and
5. To file a complaint with the U.S. Department of Education concerning alleged failures by the University to comply with the requirements of FERPA.

It is the policy of The University of Texas at Arlington to protect the privacy and records access rights of its current and former students .

UT Arlington's official FERPA policy statements are available in the Handbook of Operating Procedures (<https://www.uta.edu/policy/hop/13-1100/>) (<https://www.uta.edu/policy/hop/13-1100> (<https://www.uta.edu/policy/hop/13-1100/>)) and the University Catalog (<http://catalog.uta.edu/>) (<http://catalog.uta.edu/>). Additional details are available at the FERPA website (<http://www.uta.edu/records/about/ferpa.php>) (<http://www.uta.edu/records/about/ferpa.php>).

STUDENT RIGHTS UNDER FERPA

At UT Arlington, FERPA rights apply to a student. A student is a person who has been admitted and is registered, regardless of the person's age.

The University will not disclose education records or personally identifiable information from an education record without prior consent of the student to a third party, except as authorized by FERPA and its policies.

The University provides an Annual Notice to each enrolled student of his or her rights under FERPA, as well as the procedures for exercising these rights, information about the Directory Information Exception, and the process by which a student may elect to opt out of the release of the student's directory information.

DIRECTORY INFORMATION

The following information about a student has been designated by the University as Directory Information:

1. Name
2. Local and permanent postal addresses
3. Email address
4. Telephone number
5. Place of birth
6. Field of study; dates of attendance
7. Enrollment status
8. Student classification (example: freshman, first year law school student)
9. Degrees awarded
10. Certificates and awards (including scholarships) received
11. Photographs
12. Participation in officially recognized activities and sports
13. Weight and height of members of athletic teams
14. Most recent previous educational agency or institution attended

The University may publish or publicly disclose directory information without the student's consent, unless the student, using MyMav (<http://www.uta.edu/mymav/>), has notified the University that s/he wishes to opt out of such disclosures. If no elections are made, UT Arlington will allow release of the student's directory information.

Any restriction will remain in effect until it is revoked. UT Arlington allows former students to make changes to the disclosure status in effect at the time of their last term of attendance.

WHEN DISCLOSURE IS PERMITTED WITHOUT PRIOR CONSENT OF THE STUDENT

FERPA permits the disclosure of personally identifiable information (PII) from students' education records without consent of the student if the disclosure meets certain conditions found in Section 99.31 of the FERPA regulations. Except for disclosures to University Officials, disclosures related to some judicial orders or lawfully issued subpoenas, disclosures of directory information and disclosures to the student, Section 99.32 of FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures.

The University Official exception permits disclosure without consent and disclosure to University officials with legitimate educational interests. A University Official is:

- Any person employed by the University in an administrative, supervisory, academic, or support staff position, including law enforcement unit and health staff;
- A person or company with whom the University has a contract to provide services on behalf of the University or an affiliation (such as a System attorney or auditor, or a clinical facility where a student is participating in an internship) for the provision of services;
- A member of the University of Texas System Board of Regents; or

- A person employed by The University of Texas System Administration; or another person assisting another University Official in performing his or her tasks (such as a System attorney or auditor, or a clinical facility where a student is participating in an internship).

A University Official has a "legitimate educational interest" in an education record if that person or contractor requires access an education record in order to fulfill his or her official duties on behalf of the University.

The University may also disclose PII from a student's education records without obtaining prior written consent of the student in the following situations as permitted by FERPA:

- To officials of another school in which a student seeks or intends to enroll or is already enrolled if the disclosure relates to purposes of enrollment or transfer.
- To The University of Texas Board of Regents, the Comptroller General of the United States, the Attorney General of the United States, the Secretary of Education and other state and local educational authorities who are authorized by law to audit and evaluate Federal or State supported education programs, or to enforce Federal law which relates to such education programs may access an Education Record as required for the audit, evaluation or enforcement purpose, or their authorized representatives .
- To organizations conducting studies for or on behalf of the school to: develop, validate, or administer predictive testing; administer student aid programs; or improve instruction.
- To accrediting organizations to carry out accrediting functions.
- To parents of an eligible student if the student is a dependent for IRS tax purposes and the student has notified the University that the student agrees to the release of his/her education records under this exception.
- To comply with a judicial order or lawfully issued subpoena.
- To appropriate individuals in connection with a health or safety emergency.
- To a victim of an alleged perpetrator of a crime of violence or non-forcible sex offense. The disclosure may only include the final results of the disciplinary proceeding with respect to that alleged crime or offense.
- To the general public, the final results of a disciplinary proceeding, if the school determines the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and has committed a violation of the school's rules or policies with respect to the allegation.
- To parents of a student regarding the student's violation of any Federal, State, or local law, or of any rule or policy of the school, governing the use or possession of alcohol or a controlled substance if the school determines that the student committed a disciplinary violation and is under the age of 21.
- If the disclosure concerns sex offenders and other individuals required to register under section 17010 of the Violent Crime Control and Law Enforcement Act of 1994.
- Under the Directory Information exception as explained below.
- To defend the University against litigation or complaints filed by the student against the University.

For additional information on exceptions to the consent requirement, see the UT Arlington Handbook of Operating Procedures. (<https://www.uta.edu/policy/hop/13-1100/#section-3-4>)

Research papers, theses, and dissertations authored by students are available to interested members of the public.

FERPA AND PARENTS

Once the student attains the age of 18 or attends an institution of higher education, regardless of age, FERPA rights transfer from the parent to the student. Under FERPA, parents have no inherent rights of access to their students' education records.

Students can give express written permission for their parents' access to their education record by completing the UT Arlington FERPA Release Authorization Form and submitting it with UTA identification to the Office of the Registrar, Room 129 University Administration Building.

Records may be released to parents without a signed consent from the student under certain exceptions. These include:

- In a health or safety emergency.
- Where the student has violated a law or the school's policies governing alcohol or substance abuse, if the student is under 21 years old.
- By submission of evidence that the parents declare the student as a dependent on their most recent Federal Income Tax form.

Parents who wish to access their student's education records without the express written permission of the student may provide a copy of the previous year's tax form demonstrating that the student is a dependent for tax purposes to the Office of the Registrar, University of Texas at Arlington, Room 129 University Administration Building. Income data on the tax record can be redacted.

In a legal separation or divorce situation, biological parents have equal standing as custodial parents to gain access to the student's education records.

PARENTS OF DUAL-CREDIT STUDENTS

For parents of dual-credit students: Students who are enrolled in both high school and courses at a postsecondary institution provide a unique situation. While the rights under FERPA belong to the parents with respect to high school records, they belong to the student with respect to the postsecondary

records. In this case, FERPA's provisions allowing disclosure of information to parents of students who are dependents for income tax purposes would apply, allowing the postsecondary institution to share grades and other information from the student's education records with parents upon presentation of income tax records demonstrating the student is a tax dependent. Students can give express written permission for their parents' access to their education record by completing the UT Arlington FERPA Release Authorization Form and submitting it with UTA identification to the Office of the Registrar, Room 129 University Administration Building.

Additionally, the high school and postsecondary institution may share information from records of dual-enrolled students.

UT Arlington strongly encourages parents of dual-credit students to respect the student's ownership of his or her education record at the college level and seek ways to gain that information while safeguarding the student's rights and responsibilities. Faculty teaching dual-credit courses will make every attempt to communicate with and through the student, as an important maturation point for college students.

ADDITIONAL UT ARLINGTON BUSINESS PRACTICES RELATED TO FERPA

It is the policy of UT Arlington that it will maintain the FERPA disclosure code in effect at the time of a student's last term of enrollment for former students. Furthermore, the University will honor a request from a former student, not re-enrolled, to change a privacy election. FERPA protection excludes records that contain information about an individual after he or she is no longer a student.

FERPA rights cease upon death. However, it is the policy of UT Arlington that no records of deceased students be released for a period of 25 years after the date of the student's death, unless specifically authorized by the executor of the deceased's estate or by next of kin. The University notifies students annually of their FERPA rights through the online undergraduate and graduate catalogs and by annual email notification.

RELEVANT FEDERAL AND STATE STATUTES

- Family Educational Rights and Privacy Act: 20 U.S.C. Section 1232g (<http://www2.ed.gov/policy/gen/guid/fpco/ferpa/>)
- 34 Code of Federal Regulations Part 99 Family Educational Rights and Privacy (http://www.ecfr.gov/cgi-bin/text-idx/?tpl=/ecfrbrowse/Title34/34cfr99_main_02.tpl)

RELEVANT UT SYSTEM POLICIES, PROCEDURES AND FORMS

- *Regents' Rules and Regulations*: Rule 50702
- UTS183 Maintenance of Education Records Subject to the Family Educational Rights and Privacy Act (FERPA) (<http://www.utsystem.edu/sites/utsfiles/policies/uts/uts-183.pdf>)
- Appendix A, Notice of Student Rights under FERPA and Notice Concerning Directory Information

Additional details are available at the FERPA website (<http://www.uta.edu/records/about/ferpa.php>).

Graduation

Degree Conferral and Commencement Ceremonies

Degrees are awarded at the end of the fall semester (December), spring semester (May) and summer session (August).

Formal commencement ceremonies are held every May, August and December; each School and College convenes their own commencement ceremony and reception for their graduates, as well as their families and guests. While commencement ceremonies are held over several days, the Saturday date of each commencement weekend is always the official graduation date for that term and will be the date of graduation listed on all diplomas. Students should contact the Office of the Dean of their department for information concerning the commencement ceremonies.

Doctoral students must submit the Dissertation Defense Report showing the dissertation has been defended successfully to the Office of the Registrar no later than one week before the first scheduled university Commencement ceremony in order to participate in any college/school ceremony. The Office of the Registrar will send a list of all doctoral students who have not defended their dissertations to each academic dean immediately after this deadline has passed. The Dean will inform these students that they will not be allowed to participate and the Dean will invite them to participate in a Commencement Ceremony taking place in a later semester after they have met all requirements for their degree. Doctoral students who do not participate in Commencement may still graduate and receive their degrees in that term if they complete their defenses and other requirements by deadlines set by the Office of the Registrar.

Application for Graduation

All graduating students must file an Application for Graduation through their Student Center in MyMav (<http://www.uta.edu/mymav/>) by the published deadlines for the semester of graduation. Students are encouraged to meet with their academic advisor to insure that they will meet degree plan requirements in a timely way to allow graduation. Neither the graduation application nor graduation fees are transferable to a subsequent semester; therefore, if a student does not graduate in the semester indicated in the initial application, a new application must be filed for the semester of graduation and the appropriate fees paid again. Additional information on graduation processes is available on the Office of the Registrar's Graduation website (http://www.uta.edu/aa0/recordsandregistration/content/student_services/graduation.aspx).

Students who fail to apply for graduation by the specified deadlines may apply late by completing the Application for Graduation and paying a late fee. Applications for graduation will be accepted with a late fee for 30 calendar days after the deadline for applying for graduation. After that date, no applications will be accepted and students must apply for graduation for a subsequent semester. Applicants for graduation will be billed the Graduation Application fee and, as appropriate, the late graduation application fee. Again, graduation charges are non-transferable and non-refundable. See the section titled Tuition, Fees, and Charges in this catalog for information on specific fees.

The Office of the Registrar reserves the right to post degrees and/or certificates for current or former students who have met degree completion requirements but have not formally applied for graduation.

Diplomas

Diplomas will be issued approximately 6-8 weeks after commencement ceremonies, and will be sent to graduates via USPS mail. Graduates with account balances or transcript or any diploma holds must clear these before their diploma can be released for mailing. Diplomas are only kept and available for mailing for one (1) year after graduation. After one year, the graduate will need to order a replacement diploma.

Graduation With Latin Honors

Bachelor's degree candidates who have attempted and completed at least 45 semester hours in residence at The University of Texas at Arlington, including all hours completed in the first and final semesters that contain the last 45 hours, will receive:

Cum Laude Latin Honors,

- if their overall GPA is 3.500 - 3.699 OR
- (their overall GPA is 3.300 - 3.499 and the GPA for their last 45 semester hours in residence is 3.500 - 3.699)

Magna Cum Laude Latin Honors,

- if their overall GPA is 3.700 - 3.899 OR
- (their overall GPA is 3.500 - 3.699 and the GPA for their last 45 semester hours in residence is 3.700 - 3.899)

Summa Cum Laude Latin Honors,

- if their overall GPA is 3.900 - 4.000 OR
- (their overall GPA is 3.700 - 4.000 and the GPA for their last 45 semester hours in residence is 3.900 - 4.000)

Graduation Under a Particular Catalog

Students may obtain a degree or certification according to the course requirements for a degree or certification stated in the catalog under which they first entered the University, provided the courses are being offered. Or, students may choose to graduate under the course requirements in effect during any subsequent year in which they are registered, provided the courses are offered. A student entering for the first time in the summer session may obtain a degree or certification according to the course requirements of the catalog of the previous long session or the next long session. The above provisions, however, are subject to the restriction that all requirements for a degree or certification must be completed in eight years from the date of the catalog chosen and that the courses are still offered. A student may graduate under the current catalog. The above provisions are also subject to the University's authority to modify degree, certification or graduation requirements as necessary.

Policy on Posthumous Degrees

A posthumous degree will be awarded if the deceased was enrolled in his or her final semester in courses that would have completed all work required for the degree and meets the minimum GPA requirements for graduation. If an Application for Graduation is not already on file, one may be completed by the deceased's academic advisor or family member. For further information, individuals may contact the Office of the Registrar or the appropriate dean's office.

Graduation Rates

As of October 1, 2020, the six-year graduation rate was 52 percent for students who entered The University of Texas at Arlington in Fall 2014 on a full-time basis as first-time, degree-seeking undergraduates.

Undergraduate Education

New Maverick Orientation (Freshman and Transfer Orientation)

B160 Lower Level, University Center • Box 19348 • 817-272-9234 • www.uta.edu/orientation/

The University of Texas at Arlington is dedicated to the retention and overall success of our students, by promoting academic excellence and fostering lifelong learning. New Maverick Orientation offers a variety of programs, both on campus and online, for new freshmen, transfer students, and veterans students. These programs are designed to meet your individual needs and to assist you in making a smooth transition into life as a UT Arlington Maverick. Our goal is to assist you with the transition process, acclimate you to our way of doing things, connect you to our community and its resources that support your success, and assist you in registering for your first semester of classes.

Attending New Maverick Orientation helps students begin to take ownership of their educational goals and create a framework for their future. Embracing UT Arlington traditions and jumping into the experience will help you learn, right from the beginning, what it means to "Be a Maverick!"

Our office is staffed by professionals who specialize in providing outstanding support and service to incoming students, undergraduate student leaders who service as guides and resources in the on campus programs, and graduate students who are gaining experience for future careers in higher education. Together, we look forward to providing you with a memorable and helpful experience. Welcome to Maverick Country!

New Student Courses

The Division of Student Success is committed to providing students with the academic and personal resources they need to be successful at UTA. In order to support students in charting a course towards graduation, the Division offers a number of high impact educational practices aimed at building an environment where students can learn skills to participate fully in their courses, engage with faculty, and gain the tools to take advantage of the many opportunities UTA has to offer in the areas of research, leadership, service, and career development. One such practice are the new student courses, classes designed specifically for students entering into the UTA community.

UT Arlington's New Student Courses, housed within the Division of Student Success, are designed to orient students to life on the Maverick campus by providing them with essential resources for their student success, instruction on critical thinking skills for academic success, and access to faculty and peer networks. These courses are for undergraduate students who are entering their first semester of coursework at UTA and they are required for both first time in college students and transfer students. Students are required to enroll in one of three major-specific courses (UNIV 1000, UNIV 1131 or UNIV 1101) or a departmental equivalent course. Students should work with their academic advisor to enroll in the appropriate course for their major.

Students who have not yet declared a major should enroll in one of the Division of Student Success's UNIV sections. If a student would like to drop a New Student Course, they will need to get permission to do so and work with their academic advisor on that process. Students are allowed 3 attempts to pass a UNIV course. If a student does not pass the UNIV class after a third attempt, or is nearing graduation and has not earned credit for the UNIV course requirement, they are to file an appeal with their home college following normal course appeal processes.

Transfer students who are non-degree seeking or who already hold a bachelor's degree are not required to take a New Student Course, but they may still be required to take an equivalent course as determined by their college/school/department. Transfer students may also meet an equivalency standard for the course if they have taken a similar one at their previous institution. To determine if a student has a transfer equivalency, they should work with their academic advisor and fill out this form (https://forms.office.com/Pages/ResponsePage.aspx?id=Q1vcXL7XqkyBc3KeOwpi2VpMSni8c-VCqyel5g9x_8VUNDZIOE5ZVzFRVDI4NEZLQjNMTzhaWVA2MSQIQCN0PWcu).

Academic Coaching for First Time in College Students (FTIC)

FTIC INDIVIDUAL REVIEW ADMITS

First-Time in College students who are admitted under individual review may be required to participate in an academic coaching session in the first three weeks of the first semester before being eligible to register for courses for the second semester. These sessions will provide students with assistance in academic planning, self-assessments, and success strategies. An Academic Coaching hold can be added to their record. This is a registration hold that prevents students from registering for the following semester until the coaching requirement is met. This requirement is in addition to any made by the student's college, school, or academic program.

FTIC ACADEMIC PROBATION OR WARNING

First-Time in College students who have less than a 2.00 Total Institutional GPA at the end of their first semester of enrollment will be required to participate in an academic coaching session in the first six weeks of their second semester before being eligible to register for courses in the third semester. These coaching sessions will provide students with assistance in academic planning, self-assessments, and success strategies. An Academic Coaching hold will be added to their record. This is a registration hold that prevents students from registering for the following semester until the coaching requirement is met. This requirement is in addition to any made by the student's college, school, or academic program.

Student Feedback Surveys

As part of the UT Arlington's efforts toward continually improving the quality of teaching, the University developed the Student Feedback Survey (SFS) program, a campus-wide program that affords students with an opportunity to reflect upon their experience in each organized course (lectures, seminars, and labs) and offer relevant feedback.

Toward the end of each term, each student enrolled in a lecture, seminar, or lab course will receive an e-mailed invitation to participate in the SFS for that particular section. (Students will receive separate e-mail messages for each course in which they are enrolled.) With few exceptions, each SFS is administered online. In every case, the feedback is submitted anonymously. Students also have an opportunity to provide feedback on dropped courses. Students who withdraw from one or more courses will be sent a drop survey via their student email. Questions related to dropping a course will also be asked on the final SFS.

Once the final grades for the term have been officially certified by the University, summaries of the SFS data are provided to both the professor and his/her supervisor. These reports help members of the faculty identify which aspects of a course should remain unchanged and which aspects might benefit from revision.

Graduate Education

Mission and Philosophy

The Office of Graduate Studies is part of the Office of Research.

The goal of graduate study is to develop a student's potential for original research, scholarship, creative expression and teaching in his or her chosen field of endeavor. Graduate study actively involves students in research, creative and scholarly pursuits that foster acquisition of factual knowledge and professional skills in an environment that values and promotes discovery, innovation, and the spirit of creative scholarship. Ultimately, graduate study prepares students to become important contributors to and intellectual leaders of their disciplines.

History and Overview

Graduate study at the University of Texas at Arlington began in 1966 with the initiation of six master's degree programs. Doctoral degree programs were added in 1969 with a Ph.D. in engineering. Today the University offers master's degrees in 71 disciplines or interdisciplinary programs and 29 doctoral degree programs.

Office of Graduate Studies Website

Students and faculty are encouraged to visit the Office of Graduate Studies website at <http://www.uta.edu/gradstudies> (<http://www.uta.edu/gradstudies/>) to locate important information about graduate programs and to learn about support resources that help students hone critical skills which lead to academic and professional success.

Administration of the Advanced Degree Programs

Academic Deans

Academic deans oversee and regulate graduate program practices taking place in their colleges or schools.

Committees on Graduate Studies

Each graduate program is governed by a Committee on Graduate Studies. The committee is composed of all full members of the graduate faculty in that program. Graduate faculty from allied fields may serve on the committee, when appropriate. In an interdepartmental program, the Committee on Graduate Studies is appointed by the Vice Provost for Academic Programs and Curricula.

Graduate Advisors

Each graduate program has a Graduate Advisor. The Graduate Advisor represents the academic dean of the college and the departmental Committee on Graduate Studies in matters pertaining to advising graduate students in their academic areas. The Graduate Advisor's functions include clearing of students for registration, acting upon requests for drops, adds, section changes and special examinations; maintaining graduate student records; and advising graduate students about their degree plans.

Office of International Education

Mission Statement

The Office of International Education furthers an international focus for the university and supports the development of activities, programs, exchanges and events that create deeper international and global awareness among faculty, staff, students, and the surrounding community.

International Student and Scholar Services (ISSS)

INTERNATIONAL STUDENT SERVICES

Advising for international students is available Monday through Friday. In addition, ISSS processes a variety of requests to help students remain in compliance with university policies and government (Department of Homeland Security, Department of State) regulations. ISSS also offers various workshops and seminars throughout the year for international students who want to learn more about topics such as off-campus employment. For more information, including advising hours, request forms, and seminar schedules, please visit: <http://www.uta.edu/oie/>

J-1 SCHOLAR SERVICES

ISSS works closely with other departments at UT Arlington to bring international exchange visitors to campus for research activities, teaching, and internships. For more information, please visit: <http://www.uta.edu/oie/>

Programs and Events

The OIE seeks to engage UTA international and domestic students through a variety of programs, including International Student Orientation, Global Grounds International Coffee Hour and International Week, among others. For more information, please visit: <http://www.uta.edu/oie/?page=programs>

Study Abroad

To help students attain the education demanded by today's increasingly interdependent world, UT Arlington offers the opportunity to study overseas while earning credit toward a degree. Some programs involve direct enrollment in an overseas institution, while others are led by UT Arlington faculty members. For more information, including program and application requirements, please visit: <http://studyabroad.uta.edu>.

College of Architecture, Planning, and Public Affairs

Vision

In CAPPA, we work with our hands, heads, and hearts to change the world one place at a time.

Mission and Philosophy

The College of Architecture, Planning and Public Affairs (CAPPA) interweaves the unique gifts and expertise of each person and profession to co-create urban, ecological, and social fabrics that unleash the inherent potential of places and communities in the DFW region and beyond.

A New Era Begins

In 2015, The University of Texas at Arlington's School of Architecture and School of Urban and Public Affairs combined to form the College of Architecture, Planning and Public Affairs. The integration of the two schools strengthened the academic, research, and outreach opportunities available for students and faculty at UTA.

CAPPA offers degrees in architecture, landscape architecture, interior design, sustainable urban design, urban planning, public administration, and public policy. The college also hosts the David Dillon Center for Texas Architecture, Digital Architectural Research Consortium, and Institute of Urban Studies (<http://www.uta.edu/ius/>), and partners with the City of Arlington on the Arlington Urban Design Center located at City Hall.

Accreditations

CAPPA offers the Master of Architecture (<http://www.uta.edu/cappa/academics/architecture/architecture/m-architecture.php>) and the Master of Landscape Architecture (<http://www.uta.edu/cappa/academics/planning-landscape-architecture/landscape-architecture/>) as first professional degrees in the respective programs. The former is accredited by the National Architecture Accrediting Board (NAAB) and the latter by the Landscape Architecture Accrediting Board (LAAB). The Bachelor of Science in Interior Design (<http://www.uta.edu/cappa/academics/architecture/interior-design/>) is accredited by the Council for Interior Design Accreditation (CIDA) and the National Association of Schools of Art and Design (NASAD). The Master of Public Administration (<http://www.uta.edu/cappa/academics/public-affairs/public-administration/>) degree is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA) and the Master of City and Regional Planning (<http://www.uta.edu/cappa/academics/planning-landscape-architecture/planning/>) is accredited by the Planning Accreditation Board (PAB).

Undergraduate Degrees

- Bachelor of Science in Architecture
- Bachelor of Science in Interior Design
- Bachelor of Science in Sustainable Urban Design

Graduate Degrees

- Master of Architecture
- Master of City and Regional Planning
- Master of Landscape Architecture
- Master of Public Administration
- Master of Public Policy, MA
- Master of Sustainable Building Technology, MS
- Ph.D. in Public and Urban Administration
- Ph.D. in Urban Planning and Public Policy

Graduate Certificates

- Development Review
- Geographic Information Systems (GIS)
- Public Budgeting and Financial Management
- Urban Nonprofit Management
- Transportation Planning and Policy

Undergraduate Minors

- Architectural History
- Environmental and Sustainability Studies
- Urban and Public Affairs

Scholastic Activity and Research Interests of the Faculty

CAPPA faculty are actively engaged in research and community service projects that benefit local jurisdictions, public and nonprofit agencies with expertise that is beyond the normal scope of their particular services and resources. Typical projects include revitalization studies for inner-city neighborhoods, development plans for central business districts, economic development strategies for municipalities, inter-local contracting studies, and assessments of service delivery alternatives in communities and school districts.

The broad range of faculty research interests primarily focuses on local issues and provides support for local officials and urban professionals, but it also includes basic research into urban problems and public policy that is published in national journals and used in university texts. Research topics include such planning issues as urban design, land use analysis, environmental planning, economic development, community service and development, focus group research and group facilitation; such public administration issues as public management, intergovernmental relations, entrepreneurship in government, education and economic development; and such urban affairs issues as urban theory, development, management, politics, social welfare policy, social service administration and minority relations.

Institute of Urban Studies

The Institute of Urban Studies (<http://www.uta.edu/ius/>) was established in 1967 by an act of the Texas Legislature. The institute's mandate was to offer Texas city and county governments and other public agencies high-caliber, university-based research, training and other technical services. In 1992, after significant expansion of its staff and programs, the School of Urban and Public Affairs was created. The Institute of Urban Studies continues to operate as a vital research and outreach arm of the College of Architecture, Planning and Public Affairs.

The Institute is the state's only university-based center for applied research and service in urban affairs. It is called upon routinely to study and recommend solutions for problems confronting government agencies, nonprofit organizations and private industry.

During its more than 40 years of existence, the Institute of Urban Studies has conducted hundreds of studies on such topics as transportation, housing, local economic development, public safety, corrections, education, human services, child care and regional governance. These reports are included in the collections of virtually every major library in Texas and have been adopted as texts at many colleges and universities.

Students are offered a wide array of opportunities for projects, internships and employment. CAPPA faculty, staff and students work on "real-life" urban and public affairs projects in cooperation with city governments, public agencies and nonprofit organizations.

Architecture

Bachelor's Degrees

- Bachelor of Science in Architecture (<https://www.uta.edu/cappa/academics/architecture/architecture/bs-architecture.php>)
- Bachelor of Science in Interior Design (<https://www.uta.edu/cappa/academics/architecture/interior-design/>)

Master's Degrees

- Master of Architecture (<https://www.uta.edu/cappa/academics/architecture/architecture/m-architecture.php>)
- Master of Science in Sustainable Building Technology (<https://www.uta.edu/academics/schools-colleges/cappa/academics/architecture/ms-in-sustainable-building-technology/>)

Minor Offered

- Architecture History (p. 140)

Overview

The design disciplines - **Architecture and Interior Design** - teach us to understand and to shape the spaces in which we live: rooms, buildings, and cities. These disciplines are old, being among the first activities of civilization itself. They are also new, requiring advanced knowledge and skills to serve contemporary societies. The design disciplines operate at many levels of thought and concern. On one hand they are very practical, dealing with a host of concrete realities; on the other hand, they are highly conceptual, concerned with meaning and society's highest aspirations.

The purpose of the School of Architecture's undergraduate curriculum is to pursue professional studies within the context of a liberal education. This goal is a natural one for the design disciplines, drawn as they are from the arts, the sciences, and the humanities.

The School of Architecture offers programs leading to the following degrees:

- Bachelor of Science in Architecture (p. 136)
- Bachelor of Science in Interior Design (p. 169)
- Master of Architecture (p. 142)
- Master of Science in Sustainable Building Technology

Bachelor of Science in Architecture: A four-year program of studies comprising, with a later two-year graduate program, the six-year Master of Architecture curriculum. This sequence, called the **4 + 2 model**, has been adopted by many major universities as the most effective way of combining liberal education with professional education. (See the Graduate Catalog for the Master of Architecture (p. 142) program, which is accredited by the National Architectural Accrediting Board.) The four-year undergraduate degree is not an accredited professional degree; the Master of Architecture is fully accredited.

Bachelor of Science in Interior Design: A four-year program of studies, interdisciplinary with architecture, on the design of interior environments. Following the two-year Basic Studies sequence, the student completes two years of Major Studies, an intensive series of courses and studios on the theory, history, skill, and practice of interior design. The program leads to the professional degree in interior design, accredited by the Council for Interior Design Accreditation (CIDA) and the National Association of Schools of Art and Design (NASAD).

Minor in History of Architecture (<https://www.uta.edu/cappa/academics/minors/minor-history.php>): For undergraduate students in architecture, interior design, or allied disciplines, the School of Architecture offers a minor in History of Architecture.

Master of Architecture: The Master of Architecture is an NAAB-accredited professional degree offered only at the graduate level. The Master of Architecture curriculum is coordinated with the Bachelor of Science in Architecture curriculum degree to form a six-year professional program. Below is the language from the National Architectural Accrediting Board explaining accreditation policy:

"In the United States, most registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit professional degree programs in architecture offered by institutions with U.S. regional accreditation, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted an eight-year, three-year, or two-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may require a pre-professional undergraduate degree in architecture for admission. However, the pre-professional degree is not, by itself, recognized as an accredited degree."

The University of Texas at Arlington, School of Architecture offers the following NAAB-accredited Master of Architecture degree programs:

- **Path A** (104 credit hours; requires a 4-year bachelors degree)
- **Path B** (57 credit hours; requires a 4-year pre-professional degree in architecture)
- **Path C** (33 credit hours; requires a professional degree in architecture)

Master of Science in Sustainable Building Technology: The Master of Science in Sustainable Building Technology is a post-professional degree that answers a need for practitioners in diverse fields to have a comprehensive understanding of sustainable building technology. The program provides a curriculum for the strategic intersection of energy efficient building design and sustainable building technologies.

*The MS in Sustainable Building Technology does not lead to architecture licensure. Students seeking professional licensure should pursue the School of Architecture's accredited Master of Architecture degree.

History and Overview

Architecture was first taught at what is now The University of Texas at Arlington in the early 1940s as a two-year, non-degree program within the School of Engineering. In 1968, with the support of professional architects in the Dallas/Fort Worth area, architecture became a department of the College of Liberal Arts, granting the degree of Bachelor of Science in Architecture. The department prospered, and by 1973 a decision was made to establish a separate school of architecture based on a four-year undergraduate program with a two-year master of architecture program as the professional degree.

By 1978, the School of Architecture and Environmental Design (as it was named in 1974) had an enrollment of more than 1,000 students with 31 full-time faculty. Four programs were included at that time: architecture, interior design, landscape architecture, and city and regional planning. Subsequently, planning moved to the Institute of Urban Studies. In 1989, the school was renamed the School of Architecture.

Architecture and landscape architecture serve as both the means and the goals of the education that we offer. As *means*, our fields provide a ready path to the larger domain of ideas, history and the human condition, reflected in the fact that architecture was one of the essential liberal arts during the Renaissance. As *goals*, our fields call upon us to learn specific professional knowledge and skills: they focus our attitudes and abilities to produce tangible, concrete things. This demand that we alternately widen and narrow our vision is one of the great strengths of the fields and is one source of their effectiveness as courses of study.

Within a broad curriculum, design as a discipline and a process is emphasized. Students are encouraged to give rich visual and material substance to both theoretical and pragmatic ideas. The context for design at UT Arlington centers on the contemporary urban condition, an approach appropriate for a school at the heart of a diverse, expanding and internationally oriented region like Dallas/Fort Worth.

The school's location at the center of the Dallas/Fort Worth area is especially important for students of architecture and landscape architecture. Almost every cultural, social and professional opportunity is nearby. The urban setting serves as a laboratory to observe the issues that confront current design and to test the proposals put forward. Built work by many of the foremost contemporary architects and landscape architects may be experienced and studied firsthand. Kahn, Pei, Wright, Johnson, Meier, Legoretta, Rudolph, Giurgola, Barnes, Predock, Holl, KPF, Kiley and Walker all have major projects here.

The School of Architecture offers large and up-to-date facilities for research and study. Constructed in 1984, the Architecture Building houses studios, classrooms and offices in addition to a digital fabrication lab, a CAD lab, a photography studio, a materials shop, and the Architecture and Fine Arts Library that has 40,000 books and 190 periodicals. The UT Arlington Libraries contains more than 1 million volumes, and students have access to The University of Texas System Library, which houses 12 million volumes.

The School of Architecture has an enrollment of approximately 1,000 students, of whom about 160 are graduate students. They come from all parts of the United States and the world; more than 20 percent are international students. About one-third of the graduate students are women.

In terms of recognition of quality, 134 School of Architecture students have received awards in 63 major design or research competitions over the last 10 years, most at the national or international level. This record of competitive accomplishment reflects the education focus of the school. Highly developed skills, along with a tradition of integrating work and academic experience, give UT Arlington graduates ready entry and advancement in the professional world.

Mission and Philosophy

The mission of the School of Architecture programs is to prepare students for sustained contributions and leadership in the design professions. This mission occurs in partnership with the larger University. Together the programs and the University share the aim of educating broadly to the demands of a complex society and, more specifically, to the demands of sophisticated and changing professions.

Accreditation

The school offers the Master of Architecture (<http://www.uta.edu/cappa/academics/architecture/architecture/m-architecture.php>) as a first professional degree, which is accredited by the National Architecture Accrediting Board (NAAB). The Bachelor of Science in Interior Design (<http://www.uta.edu/cappa/academics/architecture/interior-design/>) (<http://www.uta.edu/cappa/academics/architecture/interior-design/>) is accredited by the Council for Interior Design Accreditation (CIDA) and the National Association of Schools of Art and Design (NASAD).

Scholastic Activity and Research Interests of the Faculty

Full time, part-time and adjunct faculty are active in their areas of academic and professional interest. This involvement takes many forms: built projects, design studies and competitions, scholarly writing, and applied research. Their work enriches the teaching mission of the school, and provides contributions to the larger community.

Special Programs and Opportunities

Visiting faculty members are an integral part of the graduate program at UT Arlington. Noted teachers from other schools in the United States and abroad as well as distinguished practicing designers offer advanced studios and courses each year. Thus, students have access to both a core of permanent faculty members and to a changing spectrum of approaches and values. In addition to on-campus coursework, graduate students may study and travel abroad as an integrated part of the curriculum. The school maintains semester-long, full-credit student exchanges during the academic year with architecture schools at the Universities of Barcelona (Spain,) Lund (Sweden,) Innsbruck (Austria,) and Cottbus (Germany.) During the summer, there are several study abroad program opportunities.

Graduate Studio Lottery Process (<https://www.uta.edu/cappa/academics/architecture/current-students/grad%20studio%20lottery.php>)

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

COURSES

ARCH 1101. ACADEMIC SUCCESS SKILLS IN ARCHITECTURE. 1 Hour.

This is a required course intended to establish a solid overview of the School of Architecture and the architecture program for all first semester UTA students who intend to declare as an architecture major. Topics for the class include: critical thinking, presentation techniques, internships, attendance of exhibitions and lectures, navigating the advising process, portfolio review and techniques, and using the library and other university resource sources. Other topics may also be discussed. The course be taken only once for credit.

ARCH 1191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Permission of the instructor and architecture undergraduate advisor required. Restricted to architecture-intended majors.

ARCH 1301. INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN. 3 Hours.

The interrelationships between society, culture, and the built environment. Prerequisite: Department consent.

ARCH 1341. DESIGN COMMUNICATIONS I. 3 Hours.

Introduction to freehand drawing within the dual concepts of observation and representation. This course explores various graphic techniques with emphasis on preparatory sketching, composition, contrast, texture, narrative, and line quality. Students will also be exposed to color use, physical model-making, orthographic delineation, and digital documentation. Prerequisite: Restricted to Architecture-Intended, ARCH_UCOL, Interior Design-Intended and INTD_UCOL majors.

ARCH 1342. DESIGN COMMUNICATION II. 3 Hours.

A continuation of ARCH 1341 with emphasis on refined techniques and more complex drawing problems. This course focuses on constructed geometries and spatial representation through orthographic projection and axonometric delineation, digital modeling, and in-situ notational sketching. Students will also be exposed to line weight, multi-point perspectives, and digital documentation. This course is offered as INTD 1342; credit will be granted only once. Prerequisites: ARCH 1301, ARCH 1341. Restricted to Architecture-Intended, ARCH_UCOL, Interior Design-Intended and INTD_UCOL majors.

ARCH 2300. MASTERWORKS OF WESTERN ARCHITECTURE. 3 Hours.

Selected architectural complexes as representative of various periods of Western culture. Stresses cultural relevance rather than stylistic analysis. Intended as humanities elective for non-architecture majors.

ARCH 2303. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused primarily on the period from prehistory through 1750. Prerequisite: ARCH 1301, ARCH 1341 and ARCH 1342 or INTD 1342. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 2304. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused on the period from 1750 to the present. Prerequisites: ARCH 1301, ARCH 1341, ARCH 1342 or INTD 1342, and ARCH 2303. Sophomore standing in the program. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 2341. DESIGN COMMUNICATION FOR ENGINEERS. 3 Hours.

This course introduces engineering students to design communication skills. Content includes sketching, drawing, graphic layout, diagramming and an introduction to orthographic projections and perspectives. Media will be both analog and digital. Digital tools may include image processing software, graphic design software and computer aided design (CAD) software. Prerequisite: Restricted to AREN students.

ARCH 2391. TOPICS IN ARCHITECTURE. 3 Hours.

Selected topics in concepts, philosophy, and models of architecture and allied arts of design. Prerequisite: Department Consent.

ARCH 2551. BASIC DESIGN AND DRAWING I. 5 Hours.

An introduction to design, design drawing, and color theory utilizing lectures and studio exercises. Two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Emphasis on form, color, texture, and spatial determinants. Prerequisite: ARCH 1342 or INTD 1342, credit or concurrent enrollment in ARCH 2303. Sophomore standing in the program. Restricted to Architecture-intended, ARCH_UNIV, Interior Design-intended, and INTD_UNIV majors.

ARCH 2552. BASIC DESIGN AND DRAWING II. 5 Hours.

An introduction to design, design drawing, and color theory utilizing lectures and studio exercises. Two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Emphasis on form, color, texture, and spatial determinants. This course is offered as ARCH 2552 and INTD 2552, credit will not be granted for both. Prerequisite: ARCH 2303, ARCH 2551 and credit or concurrent enrollment in ARCH 2304. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 3312. HISTORY OF CONTEMPORARY THEORY. 3 Hours.

This course will familiarize students with major intellectual paradigms and themes that have informed postwar architectural practice in Western tradition. Through reading primary theoretical texts that have had major impact on practice, students will hone their skills of critical thinking and be better able to position themselves in their navigation of contemporary theoretical issues. Prerequisite: ARCH 2303 and ARCH 2304 and Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 3323. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

The nature of materials and structural concepts to be used in the construction process. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3324. STRUCTURES I. 3 Hours.

An introduction to architectural structures, including statics and strength of materials, with emphasis on design in timber. Prerequisite: ARCH 3323, PHYS 1441 or PHYS 1443, MATH 1327 or MATH 1426. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3336. STRUCTURAL SYSTEMS FOR ARCHITECTURAL ENGINEERS. 3 Hours.

This course covers the engineering design of various concrete, steel and masonry structural systems used in the construction of buildings. Building types vary from single-story commercial buildings to low-rise and high-rise buildings. Current building codes and project examples are examined from a fundamental structural engineering perspective, in which the rationale for the structural system is analyzed, calculations performed, and systematic construction design processes are developed for gravity loads and lateral loads from start to completion of each project. The project examples culminate with a detailed cost analysis based on current industry trends. Prerequisite: Restricted to CE_AENUCOL, CE_ARENINT, CE_ARENBS, and CE_AREPROB majors.

ARCH 3343. ARCHITECTURE COMPUTER GRAPHICS (DESIGN COMMUNICATION III). 3 Hours.

An advanced course to develop visual sensitivity and awareness of digital techniques to enable the student to study design ideas and present those ideas in the various design disciplines. Emphasis on the relationship of computer graphics with the design process. This course is offered as ARCH 3343 and INTD 2343, credit will only be granted once. Prerequisite: Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3354. INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES. 3 Hours.

Introduces major topics, questions, issues and methods within interdisciplinary and cross-disciplinary environmental studies. Includes a study of some of the most significant texts, studies, practices, and creative works from at least four different fields as they pertain to questions of environment, ecology, and sustainability. Prerequisite: Acceptance in the Environmental and Sustainability Studies Minor.

ARCH 3357. DESIGN TECHNOLOGIES - BUILDING INFORMATION MODELING FOR ARCHITECTS/ENGINEERS. 3 Hours.

Introduction to Building Information Modeling (BIM); discussions of the roles and impacts of BIM in the design process, energy assessment, and facility management. The course includes creating building elements such as walls, windows, doors, roof, ceiling, stairs, ramp, and structural and MEP systems. Course provides an overview of BIM applications such as daylight and energy analysis. Prerequisite: AREN 2352. Restricted to CE_AENUCOL, CE_ARENINT, CE_ARENBS, and CE_AREPROB majors.

ARCH 3361. ARCHITECTURE AND ENVIRONMENT. 3 Hours.

An overview of sustainable design integrated with natural resource conservation. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3364. SITE DESIGN. 3 Hours.

The related site design process includes site planning pertaining to land use, case studies, siting of structures, codes, and topography. Prerequisite: Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3551. BASIC DESIGN FOR ENGINEERS. 5 Hours.

This course is an introduction to design communication (verbal and graphic), the process of design, architectural principles and the process of navigating the relationship between architectural design and engineering. Precedent studies introduce students to Architecture and two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Prerequisite: ARCH 1301 and ARCH 2341 and restricted to AREN students.

ARCH 3553. DESIGN STUDIO: ARCHITECTURE I. 5 Hours.

The reiteration of basic design principles/spatial concepts toward the synthesis of simple building types, with application of materials, introduction of structural systems, with preliminary understanding of site design and environmental issues. Credit will be given for only one of ARCH 3553 or INTD 3553. Prerequisite: ARCH 2552. Credit or concurrent enrollment in ARCH 3323 and ARCH 3343. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3554. DESIGN STUDIO: ARCHITECTURE II. 5 Hours.

A continuation of ARCH 3553 with an increased complexity and scale of projects which address buildings within urban contexts incorporating a variety of design theory, technical, site and structural considerations. Prerequisite: ARCH 3323, ARCH 3343, ARCH 3553. Credit or concurrent enrollment in ARCH 3324 and ARCH 3364. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor.

ARCH 4305. THE CITY OF ROME. 3 Hours.

History, topography, and monuments of the city of Rome and its environs from its legendary founding in 753 B.C. until the 20th Century. Urban form and architecture will be inspected in context of contemporaneous culture, with special emphasis on imperial and papal Rome. Prerequisite: Department consent. Restricted to Architecture and Interior Design Majors.

ARCH 4306. URBAN DESIGN THEORY. 3 Hours.

Design theory and its application to the urban scale, as applied to historical and contemporary examples. Prerequisite: ARCH 2552. Department consent. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4307. THE LIFE OF CITIES. 3 Hours.

A look at a series of world cities by situating their architectural context, with a particular focus on the impact of 20th century modernism and postmodernism on city fabric. Prerequisite: ARCH 2303 and ARCH 2304 and Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4308. HISTORY OF URBAN FORM. 3 Hours.

The history of cities as physical form, influenced by political, economic, and social forces. Prerequisite: Department consent. Restricted to Architecture and Interior Design majors.

ARCH 4309. MUSEUMS: HISTORY, CULTURE, DESIGN. 3 Hours.

This course investigates the historical and cultural forces driving the design of museums in the 19th and 20th centuries with special attention to the development of a diverse range of new museum types beyond traditional art and natural science museums. Field trips to local museum sites are required. Prerequisite: ARCH 2303 and ARCH 2304, junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4311. TOPICS IN ARCHITECTURAL THEORY. 3 Hours.

Selected topics in concepts, philosophy, and models of architecture and allied arts of design with specific application to 20th Century problems. May be repeated for credit as specific topics vary. Prerequisites: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4313. THE ARCHITECT IN CONTEMPORARY SOCIETY. 3 Hours.

Readings on the Culture of Architecture The focus of this course is to examine this social construct in the belief that critical self-reflection can assist in improving success within it. This examination will be conducted through readings in a collection of publications both historical and contemporary that offer critical insight into the professional/social culture of architects. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture. This course is offered as ARCH 4314 and INTD 4314; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4315. TOPICS IN THE HISTORY OF ARCHITECTURE AND DESIGN. 3 Hours.

Selected topics in architecture and the allied arts of design. Some recent topics include: Architecture of Texas, The Life of Cities, History of Architecture Theory, Developing World Slum Housing, Architecture and Politics, and Contemporary Architecture. Certain topics may be offered every second or third year. The course may be repeated up to four times as the topics change. Prerequisite: ARCH 2303 and ARCH 2304, junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4316. MODERN ARCHITECTURE I. 3 Hours.

Development of 20th Century architecture from the origins of the modern movement in the 1890s until its diffusion in Europe and America in the 1930s. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4317. MODERN ARCHITECTURE II. 3 Hours.

Development of 20th Century architecture from the diffusion of modernism in the 1930s to the present day. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4319. HOUSING PROTOTYPES: 1920s TO PRESENT. 3 Hours.

An extensive investigation of the many states of housing that architects and educators have encountered in the last 100 years. The course is organized through introduction, research, analysis, and case study of various housing typologies, unit design principles, density concerns, site, relationship of inside and outside, zoning and building codes, and new emerging housing building types. Prerequisite: ARCH 2303 and ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4320. PERFORMANCE-BASED DESIGN IN ARCHITECTURE. 3 Hours.

An overview of Performance-Based Building Design (PBBD) in architecture and how clients' expectations are translated into performance requirements, how we describe performance objectives, how we define performance indicators, and finally, how we can quantify and assess building performance. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4325. ENVIRONMENTAL CONTROL SYSTEMS I. 3 Hours.

Acoustics and illumination and their significance in the total design. Prerequisite: PHYS 1442. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4326. ENVIRONMENTAL CONTROL SYSTEMS II. 3 Hours.

Climate controls, mechanical and electrical systems, and their significance in the total design. Prerequisite: ARCH 4325 or AREN 3331. Junior standing in program. Restricted to Architecture, Interior Design, and Architectural Engineering majors.

ARCH 4329. TOPICS IN COMPUTERS AND DESIGN. 3 Hours.

Selected topics in the range and potential of digital computer applications in the design professions. May be repeated for credit as specific topics vary. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4332. ENERGY USE AND CONSERVATION IN ARCHITECTURE. 3 Hours.

Basic concepts of the efficient use and conservation of energy related to architectural design principles. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4338. CODES AND REGULATIONS. 3 Hours.

A study of accessibility, building and energy codes and related regulations including the architects' responsibility for compliance. This course is offered as ARCH 4338 and INTD 3338; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4339. DIGITAL FABRICATION METHODOLOGY. 3 Hours.

The history, theory, and methodology framing the discourse for parametric design and digital fabrication with an emphasis on digital fabrication techniques and introduction to parametric modeling software. Prerequisites: Junior standing in program. Open to ARCH and INTD majors.

ARCH 4341. NOTATIONAL DRAWING. 3 Hours.

Seminar concerned with analytical drawing techniques and how to use the sketchbook as a tool and process for architectural production. Emphasis will be on cultivating drawing strategies that will heighten the ability to make observations through first-hand experience and record them with the correct conventions in order to enable recovery for future use in architectural design. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4344. CONCEPTUAL DRAWING. 3 Hours.

A seminar to explore the aspects of conceptual drawing for the architect and the relationship of design ideas in the drawing process. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4345. DIGITAL CONSTRUCTION. 3 Hours.

A workshop exploring video cartography using photography, animation, motion graphics and digital video. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4346. CONSTRUCTION DRAWINGS. 3 Hours.

The techniques of building construction, the communication of technical information, and the process of preparing contract drawings for construction. Prerequisite: ARCH 3343. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4347. DIGITAL TECTONICS & PROTOTYPING. 3 Hours.

The use of digital technology in the architectural design process focusing on the research and fabrication of full-scale production of prototypes. ARCH 4339 Digital Fabrication Methodology is highly recommended. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4348. ARCHITECTURAL PHOTOGRAPHY. 3 Hours.

Basic photography for architects. The use of photography as an investigative and presentation device in architecture. Emphasis on composition and black and white technique. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4349. PORTFOLIO DESIGN. 3 Hours.

Principles and techniques of producing an architectural/interior design portfolio and resume including graphic design, layout, typography, grid systems, model photography as well as use of layout and photographic software. Prerequisite: ARCH 3553, ARCH 3554. Restricted to Architecture and Interior Design majors.

ARCH 4351. WILDERNESS: A CONDITION OF MIND. 3 Hours.

Changing conceptions of wilderness in Western thought, from ancestral prejudices to recent, revolutionary appreciation. Literary and visual documentation. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4352. HOUSING: FROM CAVES TO MANSIONS IN THE CLOUDS. 3 Hours.

This course examines the evolution of American urban settlements as they evolved from French, Spanish and English concepts of town-planning. The course begins with the Native American settlements in the American Southwest, particularly Mesa Verde and Hovenweep, followed by examination of the earliest European capital cities of Rome, Paris and London. Since the wholesale transplanting of European principles of town-planning traditions could not take root in the New World, distinctly American housing settlements evolved such as Savannah, Santa Fe, Taos and St. Augustine.

Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4353. HISTORY OF LANDSCAPE ARCHITECTURE. 3 Hours.

Development of landscape design from prehistory through 19th century with emphasis upon rural gardens and urban parks as representative of the social, cultural, and intellectual circumstances of the times and places in which they were created. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4354. CONVERGENCES: BETWEEN ART AND ARCHITECTURE. 3 Hours.

This course explores the convergences of artist methods of production with the processes of architectural practices. The course traces the work of leading filmmakers, both artistic and documentarian, whose professional leanings verge on the province of the architect. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

To gain a working knowledge of Building Information Modeling software (Revit) and advanced 3D modeling software. This course is offered as ARCH 4357 and INTD 3357, credit will only be granted once. Prerequisite: ARCH 3343, INTD 2343, or INTD 3343; and Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4360. POLITICS AND PRACTICE OF PRESERVATION. 3 Hours.

The history and theory of preservation and of the political context that influence these. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4362. STRUCTURAL SYSTEMS IN BUILDINGS. 3 Hours.

An overview of various structural systems including those used in long-span and high-rise buildings. Numerical work limited to the explanation of relevant structural concepts. Prerequisite: ARCH 3324. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4365. CATALYTIC MAPPING. 3 Hours.

An advanced theory elective course and workshop using the potential of mapping as a design, analytic and research mechanism for exploring complex contexts. Prerequisite: Junior standing in Architecture, Interior Design or permission of the advisor.

ARCH 4366. RADICAL URBANISM. 3 Hours.

An advanced theory course focused on the exposure to and critical analysis of some of the most radical, inspirational, and transformative urban design ideas and projects from Vitruvius to today. Prerequisite: Junior standing in Architecture, Interior Design or permission by the advisor.

ARCH 4391. CONFERENCE COURSE. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor.

ARCH 4395. SELECTED TOPICS ARCHITECTURE. 3 Hours.

Studio and lecture courses to explore and present selected topics in architecture and design. May be repeated for credit as topics change. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4556. DESIGN STUDIO: ARCHITECTURE III. 5 Hours.

Advanced architectural design problems in programming schematic organization, synthesis and design of buildings in their environmental context. Prerequisites: ARCH 3324, ARCH 3337, ARCH 3343 and ARCH 3554. Senior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4557. DESIGN STUDIO: ARCHITECTURE IV. 5 Hours.

Advanced architectural design problems in programming, schematic organization, synthesis and design of buildings in their environmental context. Prerequisite: ARCH 3324, ARCH 3337, ARCH 3343 and ARCH 3554. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4591. CONFERENCE COURSE. 5 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor. Senior standing in program. Restricted to Architecture majors.

ARCH 4595. SELECTED TOPICS ARCHITECTURE. 5 Hours.

A transitional studio course to explore and present selected topics in architecture and design. May be repeated for credit as topics change. Prerequisite: Department consent.

ARCH 5191. CONFERENCE COURSE. 1 Hour.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit as topic changes.

ARCH 5301. INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN. 3 Hours.

A survey study of the interrelationships between society, culture, and architecture. Concurrent enrollment of ARCH 5591 and ARCH 5342 required.

ARCH 5303. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused primarily on the period from prehistory through 1750. Prerequisite: Permission of the instructor.

ARCH 5304. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused on the period from 1750 to the present. Prerequisite: ARCH 5303 and permission of the instructor.

ARCH 5305. CITY OF ROME. 3 Hours.

History, topography, and monuments of Rome and its environs from its legendary founding in 753 B.C. until the 20th Century, with special emphasis on imperial and papal Rome.

ARCH 5306. URBAN DESIGN. 3 Hours.

Urban design theory, method, and implementation using contemporary and historic examples.

ARCH 5307. THE LIFE OF CITIES. 3 Hours.

A look at a series of world cities by situating their architectural context, with a particular focus on the impact of 20th century modernism and postmodernism on city fabric. Prerequisites: ARCH 2303 & ARCH 2304 or ARCH 5303 & ARCH 5304.

ARCH 5308. HISTORY OF URBAN FORM. 3 Hours.

The history of cities as physical form, influenced by political, economic, and social forces.

ARCH 5309. MUSEUMS: HISTORY, CULTURE, DESIGN. 3 Hours.

This course investigates the historical and cultural forces driving the design of museums in the 19th and 20th centuries with special attention to the development of a diverse range of new museum types beyond traditional art and natural science museums. Field trips to local museum sites are required. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304. Department consent.

ARCH 5311. ARCHITECTURAL THEORY. 3 Hours.

A review and analysis of the concepts, philosophy, ideology, and models that promulgated 20th Century architectural design. May be repeated for credit as topics change. Prerequisite: ARCH 2303 or ARCH 5303, ARCH 2304 or ARCH 5304, and permission of the department.

ARCH 5313. THE ARCHITECT IN CONTEMPORARY SOCIETY. 3 Hours.

Readings on the Culture of Architecture The focus of this course is to examine this social construct in the belief that critical self-reflection can assist in improving success within it. This examination will be conducted through readings in a collection of publications both historical and contemporary that offer critical insight into the professional/social culture of architects. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304.

ARCH 5314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture.

ARCH 5315. TOPICS IN ARCHITECTURAL HISTORY. 3 Hours.

Courses to explore and present selected topics in architecture and related fields of the Ancient Mediterranean, the Classical World, the Middle Ages, the 19th Century, and the Non-Western Traditions. May be repeated for credit as topics change. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304. Department consent.

ARCH 5316. MODERN ARCHITECTURE I 1890 TO 1945. 3 Hours.

Origins and development of Modern Architecture in Europe from 1890 to World War II, and its further evolution in Europe and America from 1918 to 1945. Prerequisites: ARCH 2303 and ARCH 2304.

ARCH 5317. MODERN ARCHITECTURE II 1945 TO PRESENT. 3 Hours.

Architectural developments in Europe, Asia, and America since World War II. Prerequisites: ARCH 2303 and ARCH 2304.

ARCH 5319. HOUSING PROTOTYPES: 1920s TO PRESENT. 3 Hours.

An extensive investigation of the many states of housing that architects and educators have encountered in the last 100 years. The course is organized through introduction, research, analysis, and case study of various housing typologies, unit design principles, density concerns, site, relationship of inside and outside, zoning and building codes, and new emerging housing building types. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304.

ARCH 5320. PERFORMANCE-BASED DESIGN IN ARCHITECTURE. 3 Hours.

An overview of Performance-Based Building Design (PBBD) in architecture and how clients' expectations are translated into performance requirements, how we describe performance objectives, how we define performance indicators, and finally, how we can quantify and assess building performance.

ARCH 5321. ADVANCED COMPUTER APPLICATIONS. 3 Hours.

The study and application of specialized computer programs in environmental design. Prerequisites: ARCH 3343 or INTD 3343 or ARCH 5343, or the equivalent. Department consent.

ARCH 5323. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

Construction materials and structural concepts as used in buildings. Prerequisite: permission of the instructor.

ARCH 5324. STRUCTURES I. 3 Hours.

Statics, strength of materials and simple structural systems in buildings. Prerequisite: permission of the instructor.

ARCH 5325. ENVIRONMENTAL CONTROL SYSTEMS I. 3 Hours.

Illumination, acoustics, climate controls, mechanical and electrical systems, and their significance in the total design.

ARCH 5326. ENVIRONMENTAL CONTROL SYSTEMS II. 3 Hours.

Climate controls, mechanical and electrical systems, and their significance in the total design.

ARCH 5327. STRUCTURES II. 3 Hours.

Continuation of ARCH 5324 with emphasis on structural theory and systems in wood and steel. Prerequisite: ARCH 5324.

ARCH 5328. STRUCTURES III. 3 Hours.

Continuation of ARCH 5327 with emphasis on structural theory and systems in masonry and reinforced concrete. Prerequisite: ARCH 5327.

ARCH 5329. TOPICS IN COMPUTERS AND DESIGN. 3 Hours.

Computer aided design, drafting and graphic techniques as applied to architecture. May be repeated for credit as topics change.

ARCH 5330. COMPARATIVE STRUCTURES. 3 Hours.

Comparative analysis and design of structural systems and construction techniques, including architectural and economic determinants. Prerequisite: ARCH 5328 or permission of the instructor.

ARCH 5331. PROFESSIONAL PRACTICE. 3 Hours.

Survey of the administrative functions, and the ethical and legal responsibilities of the architect.

ARCH 5332. ENERGY USE AND CONSERVATION IN ARCHITECTURE. 3 Hours.

Basic concepts of the efficient use and conservation of energy related to architectural design principles. Prerequisite: permission of the instructor.

ARCH 5333. CONSTRUCTION II. 3 Hours.

Advanced construction assemblies and methods, including the principles of cost control. Prerequisites: ARCH 5670.

ARCH 5335. ADVANCED PROFESSIONAL PRACTICE II: MARKETING DESIGN SERVICES. 3 Hours.

A study of the strategies and methods for marketing professional services. Presented as case studies of architecture, interior design, and landscape architecture firms.

ARCH 5336. PROGRAMMING AND SITE DESIGN II. 3 Hours.

The course focuses on project programming and the technical aspects of site design.

ARCH 5337. SOILS AND FOUNDATIONS. 3 Hours.

Soil classifications, field and laboratory identification, physical properties and load-bearing characteristics, retaining walls and foundations.

ARCH 5338. CODES AND REGULATIONS. 3 Hours.

A study of accessibility, building and energy codes and related regulations including the architects' responsibility for compliance. Prerequisite: Permission of Department.

ARCH 5339. DIGITAL FABRICATION METHODOLOGY. 3 Hours.

The conceptualizing and making of objects lying outside the traditional scope of architectural practice, including elements of industrial and product design and the development of working prototypes.

ARCH 5341. NOTATIONAL DRAWING. 3 Hours.

Seminar concerned with analytical drawing techniques and how to use the sketchbook as a tool and process for architectural production. Emphasis will be on cultivating drawing strategies that will heighten the ability to make observations through first-hand experience and record them with the correct conventions in order to enable recovery for future use in architectural design.

ARCH 5342. DESIGN COMMUNICATIONS. 3 Hours.

Architectural drawing, perception, projections, and three-dimensional representation. Prerequisite: Concurrent enrollment in ARCH 5591 is required.

ARCH 5343. ARCHITECTURAL GRAPHICS II. 3 Hours.

An advanced course to develop visual sensitivity and awareness of digital techniques to enable the student to study design ideas and present those ideas in the various design disciplines. Emphasis on the relationship of computer graphics to the design process. Prerequisite: ARCH 5342 or program approval.

ARCH 5344. CONCEPTUAL DRAWING. 3 Hours.

Seminar to explore aspects of conceptual drawing for the architect and the relationship of design ideas in the drawing process.

ARCH 5345. DIGITAL CONSTRUCTION. 3 Hours.

A workshop exploring video cartography using photography, animation, motion graphics and digital video.

ARCH 5346. CONSTRUCTION DRAWINGS I. 3 Hours.

The techniques of building construction, the communication of technical information, and the process of preparing contract drawings for construction.

ARCH 5347. DIGITAL TECTONICS & PROTOTYPING. 3 Hours.

The use of digital technology in the architectural design process focusing on the research and fabrication of full-scale production of prototypes. Completion of ARCH 4339 or ARCH 5339 Digital Fabrication Methodology is highly recommended.

ARCH 5348. ARCHITECTURAL PHOTOGRAPHY. 3 Hours.

The use of photography as an investigative and presentation medium in architecture. Emphasis on composition in black and white technique.

ARCH 5349. ARCHITECTURE PORTFOLIO. 3 Hours.

Seminar concerned with goal toward the production of a personal design portfolio.

ARCH 5350. VESSELS. 3 Hours.

The design of objects for the post-Industrial Age, including vehicles, furniture, jewelry, household objects, and clothing.

ARCH 5351. WILDERNESS: A CONDITION OF MIND. 3 Hours.

Changing conceptions of wilderness in Western thought, from ancestral prejudices to recent, revolutionary appreciation. Literary and visual documentation.

ARCH 5352. HOUSING: FROM CAVES TO MANSIONS IN THE CLOUDS. 3 Hours.

This course examines the evolution of American urban settlements as they evolved from French, Spanish and English concepts of town-planning.

ARCH 5354. CONVERGENCES: BETWEEN ART AND ARCHITECTURE. 3 Hours.

This course explores the convergences of artist methods of production with the processes of architectural practices. The course traces the work of leading filmmakers, both artistic and documentarian, whose professional leanings verge on the province of the architect.

ARCH 5355. HEMISPHERES. 3 Hours.

The study and analysis of Japanese arts and contemporary culture. The arts of ceramics, painting, calligraphy, and sculpture are examined. Prerequisite: departmental approval.

ARCH 5357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

To gain a working knowledge of Autodesk Revit and 3D Studio Max. Prerequisites: ARCH 3343 or ARCH 5343 or INTD 3343.

ARCH 5361. ARCHITECTURE AND ENVIRONMENT. 3 Hours.

An overview of sustainable design integrated with natural resource conservation.

ARCH 5362. STRUCTURAL SYSTEMS IN BUILDING. 3 Hours.

An overview of various structural systems including those used in long-span and high-rise buildings. Numerical work limited to the explanation of relevant structural concepts. Prerequisite: ARCH 5324.

ARCH 5363. DESIGN RESEARCH. 3 Hours.

Seminar directed toward the understanding of research methods and the programming of an independent design project, leading to the thesis substitute. Graded P/F/R. Prerequisite: Permission of Graduate Advisor.

ARCH 5364. SITE DESIGN. 3 Hours.

The related site design process includes site planning pertaining to land use, case studies, siting of structures, codes, and topography.

ARCH 5365. CATALYTIC MAPPING. 3 Hours.

An advanced theory elective course and workshop using the potential of mapping as a design, analytic and research mechanism for exploring complex contexts.

ARCH 5366. RADICAL URBANISM. 3 Hours.

An advanced theory course focused on the exposure to and critical analysis of some of the most radical, inspirational, and transformative urban design ideas and projects from Vitruvius to today.

ARCH 5370. ADVANCED DESIGN STUDIO. 3 Hours.

Studio course in the generation and development of architectural ideas in formal and environmental contexts. May be repeated for credit. Two of these courses are equivalent to ARCH 5670.

ARCH 5381. PRACTICUM. 3 Hours.

Internship program including work done through an approved architect's office, designed to give practical experience leading to a broader knowledge of the profession. Placement in offices must be approved, and in some cases may also be arranged by the school. Students may enroll in ARCH 5381 for half-time employment or ARCH 5681 for full-time employment. Students enrolled in Practicum may also participate in the Intern Development Program of the American Institute of Architects. No more than six total credit hours in Practicum are allowed for degree. Graded P/F/R.

ARCH 5391. CONFERENCE COURSE. 3 Hours.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit as content changes. Prerequisite: Permission of Graduate Advisor.

ARCH 5395. TOPICS IN ARCHITECTURE. 3 Hours.

Studio, lecture or seminar courses to explore and present special topics in architecture and environmental design. May be repeated for credit as topics change.

ARCH 5591. DESIGN STUDIO I. 5 Hours.

An intensive studio course in architectonic theory and operations. Emphasis on analytic, conceptual, and manipulation procedures.

ARCH 5592. DESIGN STUDIO II. 5 Hours.

Continuation of ARCH 5591. Studio course emphasizing the interrelationship of formal/spatial ideas, use, and the building fabric. Prerequisite: ARCH 5591.

ARCH 5593. DESIGN STUDIO III. 5 Hours.

Continuation of ARCH 5592. Studio course emphasizing the interrelationship of formal/spatial ideas, use, and the building fabric with special attention to the urban context. Prerequisite: ARCH 5592.

ARCH 5594. DESIGN STUDIO IV. 5 Hours.

Continuation of ARCH 5593. Emphasis on complex building designs in urban environments. Off campus study may be substituted. Prerequisite: ARCH 5593.

ARCH 5665. INTERMEDIATE DESIGN STUDIO. 6 Hours.

Advanced architectural design problems in programming, schematic organization, synthesis and design of buildings in their environmental context.

ARCH 5670. ADVANCED DESIGN STUDIO. 6 Hours.

Studio course emphasizing the analysis and design of building aggregations within the urban context. May be repeated for credit.

ARCH 5671. INTEGRATIVE DESIGN STUDIO I. 6 Hours.

Introduces the design of a small to moderate scaled architectural building program. Focus on pre-design, site design, structural resolution, building assembly, building performance, detailing and materiality will be made through graphical identification, analysis, and evaluation. Additional considerations of codes, regulations, cost analysis, and life-cycle cost, are areas of emphasis informing the design process. Prerequisite: ARCH 5325 or ARCH 4325, ARCH 5327. Credit or concurrent enrollment in ARCH 5357, ARCH 4357, or INTD 3357.

ARCH 5672. INTEGRATIVE DESIGN STUDIO II. 6 Hours.

Introduces the design of a larger-scaled architectural project with more complex programming requirements. Focus on the integration of environmental stewardship, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems will be made through graphical identification, analysis, and evaluation, and technical documentation. Project demonstration includes problem identification, contextual evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation. Prerequisite: ARCH 5671 with a grade of C or above.

ARCH 5681. PRACTICUM. 6 Hours.

Internship program including work done through an approved architect's office, designed to give practical experience leading to a broader knowledge of the profession. Placement in offices must be approved, and in some cases may also be arranged by the school. Students may enroll in ARCH 5381 for half-time employment or ARCH 5681 for full-time employment. Students enrolled in Practicum may also participate in the Intern Development Program of the American Institute of Architects. No more than six total credit hours in Practicum are allowed for degree. Graded P/F/R.

ARCH 5691. CONFERENCE COURSE. 6 Hours.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit. Prerequisite: Permission of Graduate Advisor.

ARCH 5693. DESIGN THESIS. 6 Hours.

Individual study project conducted by a supervising committee, with program and statement of intent to be filed with the Graduate Advisor during the previous semester. Graded R. Prerequisite: ARCH 5363.

ARCH 5695. TOPICS IN ARCHITECTURE. 6 Hours.

Studio, lecture or seminar courses to explore and present special topics in architecture and environmental design. May be repeated for credit as topics change. Prerequisite: Permission of Graduate Advisor.

ARCH 5698. RESEARCH THESIS. 6 Hours.

Architecture - Undergraduate Programs

Bachelor's Degree

- Bachelor of Science in Architecture

Minor Offered

- Architecture History (p. 140)

Overview

The four-year Bachelor of Science in Architecture degree is a four-year pre-professional degree program of studies comprising, with a later two-year graduate program, the six-year Master of Architecture curriculum. This sequence, called the **4 + 2 model**, has been adopted by many major universities as the most effective way of combining liberal education with professional education. It provides the basis for various career possibilities, including the professional degree of Master of Architecture (<http://catalog.uta.edu/cappa/architecture/graduate/>) or the Master of Landscape Architecture (<http://catalog.uta.edu/cappa/landscape/>); these advanced degrees are normally awarded after two years of graduate study (refer to the graduate catalog for details).

About Us

The Bachelor of Science in Architecture degree combines a core liberal arts curriculum with a structured sequence of courses in architecture and design. A large number of electives allows the student the flexibility to pursue special interests in the school and in the University. The four-year undergraduate architecture program (128 credit hours) consist of two two-year segments: **Basic Studies** and **Major Studies**.

The first two years (**Basic Studies**) is a foundation curriculum taken by all undergraduates at that level in the school. In addition to work in the arts and sciences, Basic Studies includes a series of lecture and studio courses which introduce the student to the concepts, history, skills, and vocabulary of design.

Following the two-year Basic Studies sequence, in the third and fourth years (**Major Studies**), the student concentrates in one of the design disciplines, taking courses and studios of a more advanced and professional nature. Those pursuing the Bachelor of Science in Architecture degree follow the architecture sequence.

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Advising:

BS ARCH Academic Advisor: Kelsey Childress

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Undergraduate Admissions Requirements

BS ARCH Program Director: Brad Bell

Admission to the architecture-intended program is open to all students meeting the general requirements for entrance to the University.

Prospective Students Contact: James Brown, Academic Recruiter

Major Studies: Admissions Requirements

To declare a major (enter 3rd year) in Architecture and gain permission to enroll in upper-level ARCH or INTD courses:

- The student will have completed the final architecture-intended courses and core curriculum.
- Have a minimum of a 2.8 GPA both overall at UT Arlington as well as within the major (first and second year ARCH courses).
- Complete a Major Declaration form available through the School of Architecture

Prior to completing the application in the School of Architecture office, ALL required architecture-intended coursework must be completed.

GPA requirements may change based on changes in the curriculum of the program. Qualified students must meet the GPA requirements that are in place at the time they fulfill all other requirements to declare their major.

To declare a major for a fall semester, qualified applicants will submit their request to declare a major in the School of Architecture office at the completion of the spring semester, by the department specified deadline.

Students meeting the qualifications to declare a major during the summer or fall semesters will submit their request to declare a major at the completion of the fall semester, by the department specified deadline, for spring entrance consideration*.

Consideration for fall admission into the major studies programs for qualified summer applicants will be based on space availability.

Coursework taken at other institutions or universities must be noted on the application with accompanying attachments showing the completion of/ or current attendance in the course(s). It is the student's responsibility to ensure that all coursework is transferred to the Office of Admissions at UT Arlington in a timely manner.

Upon entrance into the major studies programs, students will be required to maintain the minimum 2.8 GPAs both overall at UT Arlington and within the major to remain active and proceed within the program.

Programs Cohort

The undergraduate programs in the School of Architecture at the University of Texas at Arlington are organized in a structured cohort format.

What Is a Cohort?

A cohort is a group of students that follows the same set schedule and progresses through a program together. The sequential scheduling of the courses promotes an interactive learning environment and facilitates networking opportunities and career-strengthening relationships.

How Does It Work?

The program consists of a sequence of courses that takes a minimum of eight semesters to complete. The courses are offered in specific semesters (Fall and Spring) that require the students to complete the prior level before proceeding to the next level. If a student gets off-track in the cohort, she/he must wait until the missing course(s) are offered again.

How Are the Courses Sequenced?

The major courses must be taken as follows (*Please note: For every year listed below, 'First Semester' is Fall and 'Second Semester' is Spring*):

Architecture Students Cohort

First Year			
Fall Semester	Hours	Spring Semester	Hours
UNIV-AR 1131 or ARCH 1101		1 ARCH 1342	3
ARCH 1301		3	
ARCH 1341		3	
		7	3
Second Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 2303		3 ARCH 2304	3
ARCH 2551		5 ARCH 2552	5
		8	8
Third Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 3323		3 ARCH 3324	3
ARCH 3343		3 ARCH 3361	3
ARCH 3553		5 ARCH 3364	3
		ARCH 3554	5
		11	14
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 4362		3 ARCH 4557	5
ARCH 4556		5	
		8	5

Total Hours: 64

¹ Course may be offered both Fall and Spring semesters.

Special Academic Requirements

GPA Requirements: Upon admission to the Major Studies, all declared majors must maintain a minimum GPA of 2.8 both within the major and in the cumulative GPA to continue in the upper level program to satisfy requirements for graduation.

Grade Requirements: A grade of C or higher must be earned in each School of Architecture course used for credit toward an undergraduate degree and minor offered by the school. A grade of C or higher must be earned in all required Math and Physics courses. Grades of P are not acceptable for classes in which a grade of C or higher is required.

Repetition of Courses: Three attempts to achieve a satisfactory grade are permitted for each required course in the School of Architecture. Beyond that number of attempts, the student is denied access to the course in question, or to the sequence of courses for which it is requisite. Enrollment in the course for the time sufficient to receive a grade, including the grade W, is considered an attempt.

Transfer of Credit: The extent of credit toward degree requirements for academic work done elsewhere will be determined by the representatives of the appropriate program. Students applying to transfer credits from studio courses taken elsewhere must present examples of that work for evaluation.

Student Projects: The School of Architecture reserves the right to retain, copyright, use, exhibit, reproduce, and publish any work submitted for course credit. The student is encouraged to develop a portfolio of all work accomplished in advanced courses for future professional and academic uses.

Requirements for a Bachelor of Science Degree in Architecture

Architecture

UNIV-AR 1131	STUDENT SUCCESS	1
or ARCH 1101	ACADEMIC SUCCESS SKILLS IN ARCHITECTURE	
ARCH 1301	INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN	3
ARCH 1341	DESIGN COMMUNICATIONS I	3
ARCH 1342	DESIGN COMMUNICATION II	3
ARCH 2303	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I	3
ARCH 2304	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II	3
ARCH 2551	BASIC DESIGN AND DRAWING I	5
ARCH 2552	BASIC DESIGN AND DRAWING II	5
ARCH 3323	CONSTRUCTION MATERIALS AND METHODS	3
ARCH 3324	STRUCTURES I	3
ARCH 3343	ARCHITECTURE COMPUTER GRAPHICS (DESIGN COMMUNICATION III)	3
ARCH 3361	ARCHITECTURE AND ENVIRONMENT	3
ARCH 3364	SITE DESIGN	3
ARCH 3553	DESIGN STUDIO: ARCHITECTURE I	5
ARCH 3554	DESIGN STUDIO: ARCHITECTURE II	5
ARCH 4362	STRUCTURAL SYSTEMS IN BUILDINGS	3
ARCH 4556	DESIGN STUDIO: ARCHITECTURE III	5
ARCH 4557	DESIGN STUDIO: ARCHITECTURE IV	5

Communications

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3

Political Science

POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3

History

HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3

Mathematics

MATH 1303	TRIGONOMETRY	3
MATH 1327	ARCHITECTURAL CALCULUS WITH ANALYTIC GEOMETRY	3
or MATH 1426	CALCULUS I	

Natural Science

PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4

Language, Philosophy & Culture Elective	3
Literature	
English or modern languages literature or other approved substitute	3
Social & Behavioral Sciences Elective	
Designated courses in social or cultural anthropology, archaeology, social/political/cultural geography, economics, psychology, sociology, classical studies, or linguistics	3
University Elective	
Selected from University course offerings and approved by the academic advisor	2
Advanced Electives	
Advanced architectural history	3
Advanced architectural theory	3
Advanced architectural elective	3
Advanced courses selected by the student with the advice, counsel, and approval of the designated undergraduate advisor for the option	12
Total Hours	128

A least 36 hours must be 3000/4000 level.

Suggested Course Sequence

First Year			
Fall Semester	Hours	Spring Semester	Hours
UNIV-AR 1131 or ARCH 1101		1 ARCH 1342	3
ARCH 1301		3 ENGL 1302	3
ARCH 1341		3 HIST 1301	3
ENGL 1301		3 MATH 1327	3
MATH 1303		3 Social & Behavioral Sciences Elective	3
POLS 2312		3	
		16	15
Second Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 2303		3 ARCH 2304	3
ARCH 2551		5 ARCH 2552	5
HIST 1302		3 PHYS 1442	4
PHYS 1441		4 POLS 2311	3
Language, Philosophy, & Culture Elective		3 Literature Elective	3
		18	18
Third Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 3323		3 ARCH 3324	3
ARCH 3343		3 ARCH 3361	3
ARCH 3553		5 ARCH 3364	3
Adv. ARCH History or Adv. ARCH Elective		3 ARCH 3554	5
University Elective		2	
		16	14
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 4362		3 ARCH 4557	5
ARCH 4556		5 Adv. ARCH Theory Elective	3
Adv. ARCH or Adv. ARCH History Elective		3 Advanced Elective	3
Advanced Elective		3 Advanced Elective	3
Advanced Elective		3	
		17	14
Total Hours: 128			

COMPETENCE IN ORAL PRESENTATIONS

Students obtaining a Bachelor of Science degree in Architecture demonstrate oral proficiency by taking and passing ARCH 2551, ARCH 2552, ARCH 3553, ARCH 3554, ARCH 4556, and ARCH 4557 or approved equivalents.

COMPETENCE IN COMPUTER USE

Students obtaining a Bachelor of Science degree in Architecture can demonstrate computer proficiency by:

- Taking and passing ENGL 1301 or ENGL 1302 at UT Arlington in a computer classroom environment or ENGL 3372, ENGL 3374, CSE 1301 (or equivalent), or any other class approved by the Undergraduate Assembly.
- Passing the University computer literacy examination.

* Acceptance into the major studies (3rd year) is based on space availability.
Plan requirements/classes are subject to change. As needed, students may be changed into the most current plan. Any changes will not impact the students graduation timeline.

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Minors Advising (all minors):

arch.advising@uta.edu (<http://www.uta.edu/cappa/resources/advising/>)

Minor in Architecture History

Minor Director: Dr. Kathryn (Kate) Holliday

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

The school offers numerous courses from which to select the 18 hours required for the Architecture History minor (<https://www.uta.edu/cappa/academics/minors/minor-history.php>).

Students who choose to pursue the minor in History of Architecture must complete our 6 hours of core courses (**ARCH 2303** and **ARCH 2304**).

Upon completion of the two core classes, students must select an additional 12 hours from our other Architecture History courses.

CORE		6
ARCH 2303	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I	3
ARCH 2304	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II	3
ADDITIONAL 4 ARCH HISTORY COURSES		12
ARCH 3312	HISTORY OF CONTEMPORARY THEORY	3
ARCH 4305	THE CITY OF ROME	3
ARCH 4307	THE LIFE OF CITIES	3
ARCH 4308	HISTORY OF URBAN FORM	3
ARCH 4315	TOPICS IN THE HISTORY OF ARCHITECTURE AND DESIGN (as topic varies) ¹	3
ARCH 4316	MODERN ARCHITECTURE I	3
ARCH 4317	MODERN ARCHITECTURE II	3
ARCH 4353	HISTORY OF LANDSCAPE ARCHITECTURE	3
Total Hours		18

¹ A Special Topics courses whose offerings continually are changing.

Minor in Environmental and Sustainability Studies

Minor Director: Dr. Meghna Tare (mtare@uta.edu)

Asst. Director for Academic Affairs and Advising:Cheryl Donaldson (cappa.advising@uta.edu)

The University offers a variety courses from which to select the 18 hours required for the Environmental and Sustainability Studies minor (<http://www.uta.edu/cappa/academics/planning-landscape-architecture/environmental-sustainability/>).

Students are required to take one core course, **ESST 2300**: Introduction to Environmental and Sustainability Studies, which surveys topics and methods in interdisciplinary studies of sustainability and the environment. This course should be taken in the freshman or sophomore year.

An additional 15 hours of coursework is to be completed from the list of courses below (or others approved by the ESS advisor). At least one course must be taken in each of the two groups. Students are encouraged to inquire about other courses that might qualify for credit. At least 6 hours must be taken as 3000- or 4000-level courses. Additional courses are expected to be approved each semester, so students are encouraged to consult regularly with the advisor. *Students may be allowed to take additional classes from alternate group with advisor approval.

CORE		3
ESST 2300	INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES	3
or CE 2300	INTRODUCTION TO SUSTAINABLE ENGINEERING	
FIELD OF INTEREST [4 courses] (choose group)		12
Group 1: Liberal Arts, Social Sciences, and Business (CAPPA, COBA, COLA, SSW)		
or		
Group 2: Natural Sciences and Engineering (COS, COE)		
ALTERNATE GROUP [1 course]		3
Total Hours		18

Minor in Urban and Public Affairs

Minor Director: Dr. Ivonne Audirac

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

The University offers numerous courses from which to select the 18 hours required for a minor.

The Urban Affairs minor (<https://www.uta.edu/cappa/academics/minors/urban-affairs.php>) is for students interested in complementing their academic career with a broader understanding of Urban Affairs, Urban Planning and the Environment, or Public Administration.

Students are required to take two core courses, **PLAN 1301**: Intro to Urban Life and **PLAN 3301**: The Metroplex,

Students pursuing the minor complete the 2 required core courses then select 4 courses (12 hours) from one of the fields of interest.

CORE		6
PLAN 1301	INTRODUCTION TO URBAN LIFE	3
PLAN 3301	THE METROPLEX	3
FIELD OF INTEREST [4 courses] (choose group)		12
Group 1: Public Administration		
or		
Group 2: Urban Affairs		
Total Hours		18

Architecture - Graduate Programs

Master's Degree

- Master of Architecture (<https://www.uta.edu/cappa/academics/architecture/architecture/m-architecture.php>)

Overview

The purpose of the Master of Architecture degree program is to educate and prepare students to ultimately securing leadership positions in the profession of architecture. Within a broad curriculum, design as a discipline and as a process is emphasized. Students are encouraged to give rich visual and material substance to both theoretical and pragmatic ideas. The context for design at the School of Architecture is the contemporary urban condition, a point of departure that is especially appropriate for a school at the heart of a diverse, expanding, and internationally oriented region like Dallas/Fort Worth.

Each student's prior record of study of each student determines where, in a progression from introductory to advanced work, the program is entered. There are three distinct programs of study, which provide options to graduate students with different backgrounds and needs.

- **Path A** is for students with a baccalaureate degree but no specific background in architecture, and requires approximately three and one-half years of study.
- **Path B** is for students with a baccalaureate degree in architecture. Assuming that students have already completed satisfactory core studies, it requires approximately two years of advanced professional studies.

The University of Texas at Arlington, School of Architecture also offers the following post-professional Master of Architecture degree program:

- **Path C** is for applicants who already hold an accredited professional degree in architecture and desire to earn a second professional degree. It requires at least one year of advanced work.

Objective

The discipline of design is deeply informed by history, theory, technology, and broader cultural settings. Architecture and its practice exist within the social fabric. Thus discourse and communication are a vital part of the educational process. Design studios, lecture courses, seminars, and workshops develop critical thinking skills of students, as well as their visual sensibilities. Through case studies in studios and courses, students learn to present ideas, and to receive and give constructive criticism. Visiting faculty, leading practitioners, and teachers from other schools provide a rich connection to the world of building and to a diversity of views. In addition, international student exchange programs, study-travel courses, and numerous internship opportunities in the Dallas-Fort Worth area connect the learning of architecture with the wider world.

Accreditation

In the United States, most state registration boards require a degree from an accredited degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB,) which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards. Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree. The University of Texas at Arlington does not offer the Bachelor of Architecture degree.

The Master of Architecture is a NAAB-accredited professional degree offered only at the graduate level. The Master of Architecture Path B curriculum is coordinated with the Bachelor of Science in Architecture curriculum degree to form a six-year professional program.

NAAB Statement

The National Architectural Accrediting Board (<http://www.naab.org/>) explains the accreditation policy:

"In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB,) which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes two types of degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree."

The complete NAAB Conditions for Accreditation, including Student Performance Criteria, can be found on the NAAB website at www.naab.org (<http://www.naab.org/>).

Graduate Teaching Assistantships

To be considered for a Graduate Teaching Assistant position, the candidate must be admitted without provisional conditions. Candidates whose native language is not English must submit an acceptable score on the Test of Spoken English (TSE-A) before arriving in the United States. GTA positions in architecture are limited and are very competitive.

Fellowships

To be considered for a Dean's Fellowship, the candidate must have a favorable review in most of the evaluation criteria. Candidates must be new students coming to UT Arlington, must have a GPA of 3.0 in their last 60 undergraduate credit hours and any graduate credit hours, and must be enrolled in a minimum of 6 hours in both long semesters to retain their fellowships. Fellowships in architecture are limited and very competitive.

Prospective students are strongly encouraged to contact the Graduate Advisor and discuss their options, the admission process, and how the M.Arch program may fit in their professional plans. Students are also invited to visit the School, sit in on classes, and meet faculty and students at the School of Architecture.

Graduate Studio Lottery Process (<https://www.uta.edu/cappa/academics/architecture/current-students/grad%20studio%20lottery.php>)

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Advising

MARCH Academic Advisor: Ana-Maria Peredo-Manor

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Master's Admissions Requirements

MARCH Program Director: Brad Bell

Prospective Students Contact: James Brown, Academic Recruiter

Unconditional Admission

Path A: For unconditional admission to the Path A program, the candidate must meet the following requirements:

- B.S. or B.A. Degree - Hold a 4-year B.S. or B.A. degree from an accredited program.
- GPA of 3.0 - Have a GPA of 3.0 as calculated by Graduate Admissions.
- GRE score of 297 - Have a minimum total score of 154 in the verbal and 143 in the quantitative portions of the Graduate Record Exam (GRE).
- 3 Letters of recommendation - Submit three letters of recommendation from sources who are familiar with the applicant's academic record, preferably former professors. (For applicants who have been out of school for an extended period, letters of recommendation may be from professional sources if academic ones are no longer available).
- 200 Word Essay
Submit a short 200-word personal statement providing evidence of professional or academic goals consistent with the Architecture Program.
- For applicants whose native language is not English, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 is required. Further, when the TOEFL iBT is taken, sectional scores of at least 22 on the Writing section, 21 on the Speaking section, 20 on the Reading section, and 16 on the Listening section are preferred. For otherwise highly qualified candidates, this requirement may be eased.
- Portfolio Submission (Optional)
Submission of a design portfolio is not required. If a candidate does have a portfolio of creative work showing freehand drawings or sketches, painting, graphic design, architectural or furniture design, he/she is encouraged to submit it.

Path B: For unconditional admission to the Path B program, the candidate must meet the above requirements, and in addition must:

- Portfolio Submission (required)
Submit a portfolio of design work and/or professional involvement, which shows evidence of design capability on a level expected in the graduate program as determined by the Graduate Architecture Admissions Committee. (Design work produced in an office as an employee carries less weight

because of the difficulty in determining the applicant's exact contribution to the work shown). The best indication of probable success in the program is the quality of work demonstrated in the portfolio.

Path C: For unconditional admission to the Path C program, the candidate must meet the requirements of the Path A and Path B programs (except the requirement of a B.A. or B.S. degree) and must:

- Professional Architecture Degree
Have a professional architecture degree (B.Arch. or M.Arch. or the international equivalent) from an accredited architecture program.

Probationary Admission

Path A: Candidates who do not meet the criteria for unconditional admission to Path A, will be considered for probationary admission in which they will be required to maintain a grade of B or better in the first 12 credit hours of courses in the program. To be considered for probationary acceptance, the candidate must perform well on four of the following six criteria:

- Undergraduate performance in relevant courses
- Work experience
- GPA
- GRE
- Portfolio review (optional)
- Letters of recommendation

Path B: Candidates who do not meet the criteria for unconditional admission to Path B may be considered for probationary admission in which they will be required to maintain a grade of B or better in the first 12 credit hours of courses in the program. And/or they may also be required to take one or more Path A and/or fourth year design studio as determined by the graduate advisor on review of their portfolio before continuing with the Path B design studio sequence.

To be considered for probationary acceptance, the candidate must perform well on three of the following five criteria:

- Undergraduate performance in relevant courses
- GPA
- GRE
- Letters of recommendation
- Portfolio review

Path C: Candidates who do not meet the criteria for unconditional admission to Path C, may be considered for probationary admission in which they will be required to maintain a grade of B or better in the first 12 credit hours of courses in the program. To be considered for probationary acceptance, the candidate must perform well on three of the following five criteria:

- Performance in relevant courses in a program leading to the B.Arch or M.Arch degree.
- GPA
- GRE
- Letters of recommendation
- Portfolio review

Note: Applicants whose native language is not English who do not meet the program's minimum TOEFL score, may be asked to complete extramural training in English through the Pathways Admission Program described in the Admission section of this Catalog.

Provisional Admission

An applicant unable to supply all required documentation prior to the submission deadline but who otherwise appears to meet admission requirements may be granted provisional admission. All missing documentation must be received before the end of the first semester of study.

Deferred Admission

A deferred admission may be granted when a file is incomplete or when a denied decision is not appropriate.

Waiver of Graduate Record Exam (GRE)

A waiver of the Graduate Record Exam may be considered for a UT Arlington undergraduate who has completed an undergraduate degree in Architecture or Interior Design; the student's GPA must equal or exceed 3.50 in all undergraduate coursework completed at UT Arlington. The GRE waiver may also be extended to other UT Arlington undergraduates who have completed an undergraduate degree at UT Arlington; the student's GPA must equal or exceed a 3.50 in all undergraduate coursework completed at UT Arlington. The final decision to waive the GRE also requires a positive review of completed coursework by the graduate advisor to determine the applicant's readiness to study Architecture.

Denial of Admission

Candidates who do not satisfy the requirements for probationary admission will not be admitted.

Graduate Teaching/Research Assistantships

To be considered for a Graduate Teaching or Research Assistantship, the candidate must be admitted unconditionally. In order to be eligible for teaching assistantships, students whose native language is not English, must complete extramural training in English as approved by the Program and the Office of Graduate Studies, score of 23 on the TOEFL-iBT Speaking subtest or score a 7.0 on the Speaking portion of the IELTS.

Fellowships and Scholarships

To be considered for fellowships or scholarships in the Program the candidate must be admitted without provisional conditions and have a favorable review in most of the evaluation criteria. Fellowships and scholarships in architecture are limited and very competitive. Generally, candidates must be new students coming to UT Arlington, must have a GPA of 3.0 in their last 60 undergraduate credit hours and any graduate hours, and must be enrolled in a minimum of 9 hours in both long semesters to retain their fellowships or scholarships. For further information and to apply for scholarships visit: <http://www.uta.edu/cappa/resources/scholarships/index.php> (<http://www.uta.edu/cappa/resources/scholarships/>)

CAPPA Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Architecture Degree Requirements

Professional Degree Program: Path A (3.5 years)

For applicants holding a baccalaureate (B.A., B.S.) degree in a subject outside architecture, such as liberal arts, sciences, business, or another profession.

A minimum of 104 credit hours in architectural design, theory, and practice is required of Path A candidates for the professional degree in architecture (M.Arch). Due to the rigor of the program (not unlike any other professional school, law or medicine), students entering this program are advised to discontinue outside employment.

Advancement in Professional Degree Program Path A is predicated upon successful and timely completion of required coursework as well as an annual review of the student's portfolio of design work by the Directors Group of the Architecture Program.

In addition to completing an introductory curriculum beginning in the Fall of the first semester of enrollment, students must also complete the Path B core curriculum of 39 credit hours. The curriculum of this course of study is:

Path A Students

First Year

Summer Session	Hours	Fall Semester	Hours	Spring Semester	Hours
ARCH 53xx (Optional Electives)		ARCH 5301	3	ARCH 5304	3
		ARCH 5303	3	ARCH 5343	3
		ARCH 5342	3	ARCH 5364	3
		ARCH 5591	5	ARCH 5592	5
	0		14		14

Second Year

Summer Session	Hours	Fall Semester	Hours	Spring Semester	Hours
ARCH 5670	6	ARCH 5323	3	ARCH 5324	3
ARCH 53xx Arch Elective	3	ARCH 5325	3	ARCH 5326	3
		ARCH 5357	3	ARCH 5594	5
		ARCH 5593	5	ARCH 53xx History or Theory Elective	3
	9		14		14

Third Year

Summer Session	Hours	Fall Semester	Hours	Spring Semester	Hours
ARCH 5331		3 ARCH 5327		3 ARCH 5328	3
ARCH 5670		6 ARCH 5336		3 ARCH 5333	3
		ARCH 5671		6 ARCH 5672	6
		ARCH 53xx Technical/Practice Elective		3 ARCH 53xx Elective	3
		9		15	15

Total Hours: 104

Electives must include at least one course from each of the following categories of courses offered by the school:

1. history and theory
2. technology and practice, and
3. allied disciplines (landscape architecture, urban design, housing, and interior design).

Professional Degree Program: Path B (2 years)

For applicants holding a baccalaureate degree with a major in architecture. Placement in the graduate curriculum may be adjusted on the basis of previous academic and professional work.

The core curriculum for this course of study is:

Path B Students

First Year

Fall Semester	Hours	Spring Semester	Hours
ARCH 5325		3 ARCH 5326	3
ARCH 5327		3 ARCH 5328	3
ARCH 5357		3 ARCH 5670	6
ARCH 5670		6 ARCH 53xx Technical/ Practice Elective	3
		15	15

Second Year

Fall Semester	Hours	Spring Semester	Hours
ARCH 5336		3 ARCH 5331	3
ARCH 5671		6 ARCH 5333	3
ARCH 53xx Arch Elective		3 ARCH 5672	6
ARCH 53xx History or Theory Elective		3	
		15	12

Total Hours: 57

Electives must include at least one course from each of the following categories of courses offered by the School of Architecture:

1. history and theory
2. technology and practice and
3. allied disciplines (landscape architecture, urban design, housing and interior design).

Post-Professional Degree Program: Path C (1 year)

For applicants holding a previous professional degree in Architecture (B.Arch.) from an accredited program. The M.Arch, as a second rather than a first professional degree, does not receive NAAB Accreditation.

A minimum of 18 hours is required in architectural program courses including six hours of history/theory as well as advanced studio. Students are also required to take an advanced studio which may be waived by student request if design proficiency or equivalent experience has been demonstrated. The remainder of the work will be arranged with and approved by the Graduate Advisor to suit the interests of the student. Courses of study provide for an area of specialization or for advanced general studies.

Path C Students

First Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 5670		6 ARCH 5670	6
ARCH 53xx History or Theory Elective		3 ARCH 53xx Technical/ Practice Elective	3
ARCH 53xx Arch Elective		3 ARCH 53xx Arch Elective	3
ARCH 53xx Arch Elective		3 ARCH 53xx Arch Elective	3
		15	15

Total Hours: 30

Electives must include at least one course from each of the following categories of courses offered by the School of Architecture:

1. history and theory
2. technology and practice and
3. allied disciplines (landscape architecture, urban design, housing and interior design).

The School of Architecture offers international study programs in Rome, Italy, Barcelona, Spain, Innsbruck, Lund, Sweden and Cottbus, Germany. The Rome Program, conducted for five weeks each summer by UT Arlington faculty, is open to upper division and graduate students and may be used to satisfy history and elective requirements. The Barcelona, Innsbruck and Lund programs are semester-long exchange programs with universities in these cities, with the normal expectation of both studio and elective credit.

M.C.R.P. and M.Arch. Dual Degree Program

Students in this dual program may earn both the Master of City and Regional Planning and the Master of Architecture degrees in a curriculum of 87 semester credit hours. Applicants must meet the admission requirements of both the M.C.R.P. and the M.Arch. programs. City and Regional Planning students wishing to earn the M.Arch degree will be required to take Path A in the Architecture Program unless they have earned an undergraduate degree in architecture which will allow CIRP applicants to take Path B. Programs of study will follow both master's programs, with all of the 15 credit hours of electives in the M.Arch program to be taken in the MCRP program. In addition to the 36 credit hours of architectural core courses, the remainder of coursework will be in the City and Regional Planning program in the School of Urban and Public Affairs with a required thesis proposal and programs of work to be jointly approved by the City and Regional Planning Program and the Architecture Program. A thesis supervisor should be selected from CIRP or the School of Architecture, and committee members should be selected from both faculties.

Course selection and programs of study should be designed with the assistance of the Graduate Advisors in both programs. Only in special instances may students select the thesis substitute plan of the MCRP program. The successful candidate will be awarded both degrees rather than one joint degree.

Admissions Requirements

Applicants must meet the general requirements of the Office of Graduate Studies. A personal interview with the Director, Graduate Advisor or members of the landscape architecture faculty is strongly recommended. Three letters of recommendation are required, and it is suggested that at least two of the letters come from former educators or academic contact. Applicants also are required to submit scores from the Graduate Record Exam (GRE). Average GRE scores of successful applicants since 1998 have been approximately 550 Verbal and 550 Quantitative. Also required is a grade point average (GPA) of 3.00 as calculated by the Office of Graduate Studies.

Applicants holding first professional degrees in landscape architecture, or in some cases degrees related to landscape architecture (such as architecture, engineering, environmental design, horticulture, interior design, planning, and the like) are required to submit portfolios reflecting the applicants' professional and/or academic experiences and interests. Portfolios are assessed according to proficiency in design, presentation and layout, technical skills, and content, similar to criteria used in design studios.

Applicants who have a weakness in one of the criteria for admission can enhance their credentials with strengths in the remaining criteria.

Applicants can be admitted according to four conditions: Unconditional; Provisional; Probationary; and, Deferred. Applicants who do not meet the criteria of one of these conditions will be denied admission to the Program.

Unconditional Admission

Applicants must possess a bachelor's degree from an accredited college or university. Transcripts from all previous college or university work, along with scores from the Graduate Record Exam (GRE), and three letters of recommendation are required of all applicants. In addition, applicants should have a minimum Grade Point Average (GPA) of 3.0, as calculated by the Office of Graduate Studies. Applicants holding the first professional degree in landscape architecture, or a related field, must submit a portfolio.

Provisional Admission

Those who have submitted their applications forms, but whose packets are incomplete, can be admitted provisionally if their GPA meets minimum requirements, and if the Program and the Office of Graduate Studies have received official transcripts. In this case, incomplete materials could include letters of recommendation, GRE scores, and/or portfolios.

Probationary Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, GRE scores, and GPA), can be admitted on probation, with the condition that they make no less than a B in the first 12 hours of coursework in landscape architecture. Such students must complete no fewer than 9 credits during the semester in which they are on probation.

Deferred Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, GRE scores, and GPA), and/or who have not submitted all of the materials required for unconditional admission, can have their applications deferred for one semester, until outstanding requirements and criteria are met.

International Student Admission

International applicants must meet the Degree Requirements (letters of recommendation, GRE scores, and GPA), and must be admitted in one of the admission categories described above. In addition, applicants whose native language is not English must have a demonstrated speaking ability in English. They also must meet the Program's minimum required score of 575 on the paper exam, or an equivalent score on the computer based- or internet-based tests, on the Test of English as a Foreign Language (TOEFL). International applicants who do not meet the Program's minimum TOEFL score, must complete extramural training in English, as approved by the Program and the Office of Graduate Studies.

Graduate Studio Lottery Process (<https://www.uta.edu/cappa/academics/architecture/current-students/grad%20studio%20lottery.php>)

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Visit the CAPP website for current graduate certificates (<https://www.uta.edu/cappa/academics/certificate-programs/>) offered in the College of Architecture, Planning and Public Affairs.

Prospective Students Contact: James Brown, Academic Recruiter

City and Regional Planning

Master's Degrees

- City & Regional Planning, MCRP (<https://www.uta.edu/cappa/academics/planning/master-city-regional-planning.php>)

Doctoral Degree

- Urban Planning and Public Policy, Ph.D. (<https://www.uta.edu/academics/schools-colleges/cappa/academics/public-affairs-planning/planning/phd-in-urban-planning-and-public-policy/>)

Certificates

- Developmental Review Certificate (<https://www.uta.edu/cappa/academics/certificate-programs/>)
- Geographical Information Systems Certificate (<https://www.uta.edu/cappa/academics/certificate-programs/>)

Minor Offered

- Environmental and Sustainability Studies (<http://www.uta.edu/cappa/academics/planning-landscape-architecture/environmental-sustainability/>)

Overview

Located in the heart of the Dallas-Fort Worth Metroplex, the fourth largest metropolitan region in the U.S., both our City and Regional Planning Master's Degree Program (MCRP (<https://www.uta.edu/cappa/academics/planning/master-city-regional-planning.php>)) (<http://www.uta.edu/cappa/academics/planning-landscape-architecture/planning/>) and Ph.D. in Urban Planning & Public Policy (UPPP) (<https://www.uta.edu/cappa/academics/planning/phd-urban-planning-public-policy.php>) programs are situated in an optimal laboratory to study, analyze, and provide planning solutions to contemporary urban problems, such as sprawl, pollution, equity, carbon footprints, economic development, aging infrastructure, and, more generally, contributing to the development of sustainable cities and regions.

Both programs reside in the College of Architecture, Planning and Public Affairs (CAPPA), whose Institute of Urban Studies (<https://www.uta.edu/cappa/research/ius/>) provides student research and practical experience through the professional planning services it offers to cities across the state of Texas.

MCRP ([HTTPS://WWW.UTA.EDU/CAPPA/ACADEMICS/PLANNING/MASTER-CITY-REGIONAL-PLANNING.PHP](https://www.uta.edu/cappa/academics/planning/master-city-regional-planning.php))

The MCRP program prepares students for careers as professional planners with public, private and nonprofit organizations. It does this by training students to apply planning theory, knowledge, techniques, and skills to "real world" planning problems through coursework, studios, and internship opportunities.

UTA's City and Regional Planning Master's Degree Program is accredited by the Planning Accreditation Board (<http://www.planningaccreditationboard.org/>) (PAB). The program's mission, goals and objectives, and accreditation efforts are shaped in consultation with the MCRP Advisory Board composed of alumni and area practitioners.

UPPP ([HTTPS://WWW.UTA.EDU/CAPPA/ACADEMICS/PLANNING/PHD-URBAN-PLANNING-PUBLIC-POLICY.PHP](https://www.uta.edu/cappa/academics/planning/phd-urban-planning-public-policy.php))

The Ph.D. Program in Urban Planning and Public Policy (UPPP) prepares Doctoral students for careers in university teaching and research, research organisations and think tanks, senior public, private, or non-profit sector positions and also policy or advocacy institutes. It does this by integrating the academic disciplines of urban planning and public policy, providing students with a rich core of substantive and procedural knowledge concerning policy and planning.

The Program combines theoretical inquiry and analysis with application, offering students diverse approaches to policy and planning issues. Students are encouraged to pursue dissertation research using either or both quantitative and qualitative methodologies, and the Program offers extensive preparation in these modes of inquiry.

Advising

MCRP Graduate Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Admissions Requirements

MCRP Interim Program Director: Dr. Ardeshir Anjomani

Prospective Students Contact: James Brown, Academic Recruiter

The MCRP program takes a holistic approach to the application review process. Each applicant file is reviewed individually with equal consideration given to the quantitative and qualitative aspects of the student's record. A complete application includes:

- Undergraduate Grade Point Average (GPA): The undergraduate GPA based on the last 60 hours of course work as calculated by the Graduate Admissions from the official transcript.
- Graduate Record Exam (GRE) scores: Verbal, Quantitative, and Writing (Exceptions: Outstanding UT Arlington graduates may qualify for GRE waiver providing they meet certain requirements. See "Waiving the GRE" below)
- Letters of Recommendation attesting to the applicant's potential to do Master's-level work and complete the program. Letters for Master's programs should be from professors or supervisors at work (download Letter of Recommendation form) (http://grad.pci.uta.edu/resources/pdf/Request_Recommendation.pdf)
- Essay by applicant approximately one double-spaced page in length (approximately 250 words). The Essay is considered both for its content and quality of writing. The Essay should address the following questions: 1. Why do you want to earn a Master's degree in the program for which you are applying? 2. What relevant background and experience do you bring to the program? The essay can also include other concerns you'd like to bring to the attention of the CAPP Academic Recruiter, the Graduate Advisor, or the Master's Admissions Committee.
- Non-native English speakers only: TOEFL-iBT or IELTS scores meeting University minimum admission standards are required (TOEFL-iBT 79 with sectional scores of at least 22 Writing, 21 Speaking, 20 Reading, and 16 Listening; or an IELTS score of at least 6.5.). However, a non-native English speaking applicant holding either a Bachelor's or a Master's degree from a regionally accredited U.S. college or university is not required to take these tests. Students failing to meet English proficiency requirements may be admitted on probation to the Pathway Admission program to improve their English skills. Go to <https://catalog.uta.edu/academicregulations/admissions/graduate> (<https://catalog.uta.edu/academicregulations/admissions/graduate/>) for a description of the Pathway Program.

Official transcripts and test scores must be sent directly to Graduate Admissions by the issuing institution or testing service. Letters of recommendation and personal essay should be sent directly to the CAPP College Recruiter via email or postal service, CAPP RECRUITER, Box 19108, Arlington TX 76019. It is the applicant's responsibility to ensure all application materials are received by the application deadline. Incomplete applications or applications received after the deadline could be deferred.

A student who is well-prepared through an undergraduate degree in planning or related field and has as well five or more years of relevant and verifiable professional experience maybe eligible to complete the degree in 30 credit hours.

The MCRP program admits students for Fall and Spring semesters; the application deadlines are June 15th and October 15th respectively.

Waiving the GRE

The MCRP program waives the requirement that an applicant take the GRE under any of the following conditions:

1. A completed UT-Arlington undergraduate degree awarded within three years of application for admission and a 3.0 or higher GPA on the last 60 hours of coursework.

Types of Admission

Unconditional Admission

Applicants who meet all the following requirements will be considered for unconditional admission:

1. Undergraduate GPA of 3.0 or better
2. A preferred minimum Verbal GRE score of 150 a preferred minimum Quantitative GRE score of 141 and a preferred minimum Writing GRE score of 4.
3. Outstanding letters of recommendation
4. Strong, well-written personal essay
5. Non-native English speakers only: Students must demonstrate proficiency in English by earning a TOEFL-iBT score of at least 79 with sectional scores of at least 22 Writing, 21 Speaking, 20 Reading, and 16 Listening; or an IELTS score of at least 6.5. A non-native English speaking applicant holding either a Bachelor's or a Master's degree from a regionally accredited U.S. college or university is presumed to be English-proficient and is not required to take these tests.

Probationary Admission

Applicants who do not meet all requirements for Unconditional admission will be considered for Probationary admission based on the strength of all the listed admission factors. International students who do not meet the minimum requirements for demonstrating proficiency in English may be admitted on probation to the Pathways Admission program (<https://catalog.uta.edu/academicregulations/admissions/graduate> (<https://catalog.uta.edu/academicregulations/admissions/graduate/>)) to strengthen their English skills. Under Probationary admission, special course requirements or other conditions may be imposed by the CAPP Master's Admissions Committee. Applicants who meet all the standards for Unconditional admission except

for deficiency in Writing GRE score will be considered for Probationary Admission conditional on completing an approved Writing course in their first semester.

1. Other types of admission decisions pertaining to Master's applicants:

- a. **Deferred:** Applicants who are unable to supply required application materials, or who must complete additional preparatory work before their admissibility can be determined, may be deferred until records are complete.
- b. **Provisional:** Applicants who are unable to supply all required documentation prior to the admission deadline but who otherwise appear to meet admission requirements may be granted Provisional admission pending submission of complete and satisfactory credentials before the end of the semester in which they have registered in a Provisional status.
- c. **Denied:** Applicants who fail to meet more than one of the admission requirements and for whom the CAPP Master's Admission Committee finds there is insufficient basis to justify any other kind of admission will be Denied admission. GRE test scores will not constitute the sole or primary basis for ending the consideration of an applicant. As the admission process is competitive, applicants meeting basic admission requirements who are less well qualified than other applicants may also be denied admission.

Scholarship and Fellowship Criteria

- Graduate students with a GPA of 3.0 or better who are enrolled in six hours or more are eligible to apply for competitive scholarships, fellowships and the planner-in-training internship.
- Scholarships and fellowships for Master's and Doctoral students will be competitively awarded based on consideration of all admission criteria assessed by their admitting programs.

CAPPA Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Master's Degree Curriculum

The program's curriculum imparts knowledge, skills and values necessary for entering the planning profession. The degree requires completion of 48 hours of study. The generalist core (33 hrs) is organized into three knowledge tiers: Theory, Analysis and Techniques, and Implementation and Plan Making, plus a Professional Report (3 hrs) or Thesis (6 hrs) and 9-12 hours in elective coursework.

Core Courses		33
PLAN 5303	PLANNING HISTORY, THEORY AND ETHICS	3
PLAN 5304	PLAN IMPLEMENTATION, ZONING, AND REGULATIONS	3
PLAN 5308	METROPOLITAN SUSTAINABILITY AND PLAN MAKING	3
PLAN 5310	PLANNING, URBAN DEVELOPMENT AND STRUCTURE	3
PLAN 5316	LAND USE PLANNING AND THE LAW	3
PLAN 5318	TECHNIQUES OF PLANNING ANALYSIS I	3
PLAN 5330	TECHNIQUES OF PLANNING ANALYSIS II	3
PLAN 5332	PROJECT STUDIO	3
PLAN 5363	LEADERSHIP AND COMMUNICATION SKILLS IN THE PLANNING PROCESS	3
PLAN 5333	GRAPHICS AND MULTIMEDIA COMMUNICATION IN PLANNING	3
PLAN 5380	RESEARCH QUESTIONS IN PLANNING	3
Required Professional Report or Thesis Courses		3-6
PLAN 5397	PROFESSIONAL REPORT	3
Elective Courses		9-12
Select 3-4 of the following: ¹		
PLAN 5305	LAND USE, MANAGEMENT AND DEVELOPMENT	3
PLAN 5306	URBAN REVITALIZATION	3

PLAN 5309	TRANSPORTATION/LAND USE MODELING AND POLICY ANALYSIS	3
PLAN 5317	INTERMEDIATE DATA ANALYSIS	3
PLAN 5324	COMMUNITY DEVELOPMENT	3
PLAN 5340	GIS AND SUITABILITY ANALYSIS	3
PLAN 5341	ENVIRONMENTAL REGULATIONS: LAWS AND PLANNING	3
PLAN 5346	QUALITATIVE METHODS	3
PLAN 5356	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS	3
PLAN 5357	INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS	3
PLAN 5361	PLANNING INTERNSHIP	3

¹ Electives as approved by the Graduate Advisor or Program Director.

City and Regional Planning Students

First Year

Summer Semester	Hours	Fall Semester	Hours	Spring Semester	Hours
PLAN 5361	3	PLAN 5310 ¹	3	PLAN 5303 ¹	3
		PLAN 5316 ¹	3	PLAN 5308 ¹	3
		PLAN 5318 ¹	3	PLAN 5330 ¹	3
		PLAN 5333 ¹	3	53xx (Elective) ³	3
	3		12		12

Second Year

	Hours	Fall Semester	Hours	Spring Semester	Hours
		PLAN 5304 ¹	3	PLAN 5332 ¹	3
		PLAN 5380 ¹	3	PLAN 5363 ¹	3
		53xx (Elective) ³	3	PLAN 5397 ²	3
		53xx (Elective) ³	3		
	12		9		

Total Hours: 48

- ¹ Core Courses
² Required Professional Report or Thesis Course
³ Electives as approved by the Graduate Advisor or Program Director

City and Regional Planning Students w/GIS Certification

First Year

Summer Semester	Hours	Fall Semester	Hours	Spring Semester	Hours
PLAN 5331	3	PLAN 5310 ¹	3	PLAN 5303 ¹	3
PLAN 5340	3	PLAN 5316 ¹	3	PLAN 5308 ¹	3
		PLAN 5318 ¹	3	PLAN 5330 ¹	3
		PLAN 5356 ⁴	3	PLAN 5357 ⁴	3
	6		12		12

Second Year

	Hours	Fall Semester	Hours	Spring Semester	Hours
		PLAN 5304 ¹	3	PLAN 5332 ¹	3
		PLAN 5333 ¹	3	PLAN 5363 ¹	3
		PLAN 5380 ¹	3	PLAN 5397 ²	3
	9		9		

Total Hours: 48

- ¹ Core Courses
² Required Professional Report or Thesis Course
³ Electives as approved by the Graduate Advisor or Program Director
⁴ GIS Core

The GIS certificate requires 15 hours of graduate course work. Up to 12 GIS-certificate-credit hours may be applied to the master's degree in City and Regional Planning, subject to the policies on grades and graduate credit described in the Graduate School catalog (see GIS certificate information).

See the program's Graduate Advisor for a list of approved electives in each study area, or download a copy from the MCRP webpage (<https://www.uta.edu/cappa/academics/planning/master-city-regional-planning.php>). Other courses may be substituted upon approval of the program's Graduate Advisor and/or Program Director.

See the program's Graduate Advisor for a list of approved electives in each study area, or download a copy from the MCRP webpage (<https://www.uta.edu/cappa/academics/planning/master-city-regional-planning.php>). Other courses may be substituted upon approval of the program's Graduate Advisor and/or Program Director.

Thesis or Professional Report (6 hours thesis students; 3 hours thesis-substitute students)

All MCRP students must enroll in PLAN 5380 RESEARCH QUESTIONS IN PLANNING in their next to last semester to prepare for the Thesis or Professional Report.

Thesis (minimum of 6 credit hours): This option is recommended for students who enjoy research and/or are interested in pursuing a career in research or private consulting, or who intend to obtain another advanced degree. However, this option is also available to students who intend to go into professional planning practice.

Thesis format and submission calendar must adhere to the Office of Graduate Studies' thesis criteria. Thesis students identify a committee chair from among the Planning faculty no later than their next to last semester and, in consultation with the chair, form a thesis committee consisting of at least two additional members of the CAPP Graduate Faculty. The thesis committee guides the student's development of research question and choice of research method and analysis. Thesis students must defend their thesis in a public oral examination- open to all members of the faculty- and before all members of the student's thesis committee. The thesis committee must have copies of the thesis at least two weeks prior to the thesis defense. All members of the student's committee must be present at the defense. Thesis students must be enrolled in the appropriate section of PLAN 5698 PLANNING THESIS (under their committee chair) during the semester they receive advise from their chair and committee for preparing the thesis, as well as during the semester they defend their thesis. Once the student is enrolled in the thesis course, continuous enrollment is required.

Professional Report (3 credit hours): This option is recommended for students who are going into professional practice and/or who desire additional experience beyond the Project Studio course by working on a professional report. This option does not preclude professional report students the opportunity of further pursuing an advanced graduate degree. Students identify a professional report committee chair from among the Planning faculty no later than their next to last semester and, in consultation with the chair, form a professional report committee consisting of at least two additional members of the CAPP Graduate Faculty. The professional report committee guides the student's choice of planning project and method of analysis. Professional report students must defend their report in a public oral examination- open to all CAPP graduate faculty and students- and before all members of the student's professional report committee. Professional Report students must be enrolled in the appropriate section (under their committee chair) of PLAN 5397 PROFESSIONAL REPORT the semester in which the professional report is defended.

Dual Degrees

To participate in the dual degree program, students must make separate application to each program and must meet the admission requirements of each program. Students must be admitted to the second program before completing more than 24 credit hours in the first program and must complete the second degree within three academic years following completion of the first. By participating in a dual degree program, students may apply 6-18 total credit hours jointly to meet the requirements of both degrees, thus reducing the total number of hours required to earn each degree separately (shared courses are subject to approval by Program Advisors of each program). Degree plans, thesis or professional report proposals, and the final thesis or report must be submitted separately for each degree and approved by Program Advisors and relevant committees of each program. The successful candidate is awarded two degrees (not one joint degree).

Those interested in the dual degree program should consult the appropriate Program Advisors for further information and review the statement on Dual Degree Programs in the general information section of the catalog.

Dual degrees can be arranged with any suitable program. Arrangements for the following dual degrees have already been made between M.C.R.P. and the relevant Program Advisors.

- M.C.R.P. and M.P.A. (<https://www.uta.edu/cappa/academics/public-affairs/master-public-administration/>) (Master of Public Administration)
- M.C.R.P. and M.P.P. (Master of Public Policy)
- M.C.R.P. and M.S.W. (<https://www.uta.edu/ssw/academics/msw/>) (Master of Social Work)
- M.C.R.P. and M.Arch. (<https://www.uta.edu/cappa/academics/architecture/architecture/m-architecture.php>) (Master of Architecture)*
- M.C.R.P. and M.L.A. (<https://www.uta.edu/cappa/academics/landscape-architecture/master-landscape.php>) (Master of Landscape Architecture)**
- M.C.R.P. and M.S.C.E. (<https://www.uta.edu/engineering/future-students/programs-masters/civil-engineering/msce.php>) (Master of Science in Civil Engineering)/M.Engr. (Master of Engineering)
- M.C.R.P. and M.S.Ev.S.E. (Master of Science in Environmental Science and Engineering)

*MCRP students without a Bachelor's degree in Architecture take Path A in the architecture program; those with an undergraduate degree take Path B. All 15 credit hours of electives in the M.Arch. program must be taken in the MCRP program. Only in special instances may students select the thesis

substitute plan of the MCRP program. Student will write one thesis and the thesis supervisor should be selected from CIRP or the School of Architecture, and committee members should be selected from both faculties.

****MCRP students pursuing a dual degree with another program that requires a thesis (ex. MLA) must select the thesis substitute plan of the MCRP program. Student will write one thesis and the thesis supervisor should be selected from CIRP or the other program, and committee members should be selected from both faculties. If the student does not select the thesis substitute plan of the MCRP program, the student will be required to complete a thesis for both programs separately and the thesis supervisors should be selected from CIRP and the other program, and committee members should be selected from both faculties.**

Advising

UPPP Graduate Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Ph.D. in Urban Planning and Public Policy (UPPP)

UPPP Program Director: Dr. Karabi Bezboruah

Prospective Students Contact: James Brown, Academic Recruiter

The UPPP Ph.D. program requires a minimum of 48 credit hours beyond the master's degree, including 39 credit hours of coursework and a minimum of 9 dissertation credit hours. The 39 credit hours of coursework include: 6 hours of leveling courses, 9 hours in the required core of urban planning and public policy, 12 hours of methods courses and 12 hours of elected field area courses. Qualified applicants hold a master's degree in planning or in another discipline or are in the process of completing the degree. Depending on the master's degree, admission might be contingent on taking leveling courses that provide the necessary background.

Application Requirements and Deadlines

Along with the Office of Graduate Studies application requirements, a complete application includes:

1. Official transcripts from colleges and universities attended. Information about submitting transcripts is available in the Graduate Catalog.
2. Graduate Record Exam (GRE) and, for international applicants, the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) official test scores.
3. Three letters of recommendation attesting to the applicant's ability to do doctoral-level work and complete the dissertation. Letters from professors or supervisors who hold a Ph.D. degree are strongly preferred.
4. Essay by applicant (minimum 500 words, maximum 1000 words). The essay is considered both for its content and writing quality. The essay should discuss: (1) tentative research topic, (2) how your undergraduate and graduate studies have prepared you for doctoral study in Urban Planning and Public Policy; (3) identify your desired field area (see field areas, below) and identify potential Planning faculty whose area relates to your research interests; and (4) the reasons for wanting to earn the doctoral degree.
5. Samples of applicant's written work (e.g., thesis, publication, professional report) that demonstrates graduate level English writing proficiency as compared to the writing proficiency of students who have successfully completed the program.

Official transcripts and test scores must be sent directly to the Office of Graduate Admissions by the issuing institution and testing agency respectively.

Letters of recommendation and personal essay should be sent directly via email to cappa.advising@uta.edu (%20cappa.advising@uta.edu) or by postal service, to: CAPPA Program - Ph.D. in Urban Planning and Policy (UPPP), Box 19108, Arlington TX 76019.

It is the applicant's responsibility to ensure all application materials are received by the application deadline. Incomplete applications or applications received after the deadline could be deferred.

CAPPA primarily admits UPPP doctoral students for Fall semester. Spring admissions are rare and there are no summer admissions. The Fall application deadline is February 1st.

Admission Criteria

The Doctoral Admission Committee determines admission based on the applicant's academic record, commitment to scholarly research, and overall fit with the program.

Unconditional Admission

Applicants are typically admitted unconditionally with a graduate GPA of 3.6, a Verbal GRE score of at least 153 and a Quantitative GRE score of at least 144. GRE requirements are applied flexibly as different areas of study vary in the relative importance of quantitative and verbal analysis. GRE scores must be from a test taken in the past 5 years. In no case will standardized test performance be the sole or primary determinant of admissibility. Strength of letters of recommendation, quality of personal statement and master's degree field of study are also considered carefully.

International applicants are required to have a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79. Further, when the TOEFL iBT is taken, sectional scores of at least 22 on the Writing section, 21 on the Speaking section, 20 on the Reading section, and 16 on the Listening section are preferred.

U.S. students, with a master's degree from an accredited U.S. institution in Urban Planning, Public Administration, Public Policy or in a closely related field, or a master's in Architecture or Landscape Architecture and several years of increasing responsibilities on the job, are not required to submit GRE scores. The Admissions Committee may require written samples demonstrating graduate level English proficiency.

The UPPP PhD Admissions Committee will consider other types of admission decisions for applicants who do not meet all unconditional admission requirements:

Probationary Admission

Applicants with a 3.0 graduate GPA or better and based on the strength of admission requirements (personal statement, letters of recommendation and scores on standardized tests). Under Probationary Admission, special course requirements or other conditions may be imposed by the Admissions Committee (e.g., applicants who meet all the standards for Unconditional Admission, except for required Writing GRE score, will be considered for Probationary Admission conditioned on completing an approved writing course).

Foreign applicants with low TOEFL or IELTS scores may be accepted probationary on the condition of successfully completing the Pathway Admission Program. More information about that program may be found at <https://catalog.uta.edu/academicregulations/admissions/graduate> (<https://catalog.uta.edu/academicregulations/admissions/graduate/>).

Deferred Admission

Applicants who are unable to supply required application materials, or who must complete additional preparatory work before their admissibility can be determined, may be deferred until records are complete.

Provisional Admission

Applicants who are unable to supply all required documentation prior to the admission deadline, but who otherwise appear to meet admission requirements may be granted Provisional Admission pending submission of complete and satisfactory credentials before the end of the semester in which they have registered in a provisional status.

Denied Admission

Applicants who fail to meet more than one of the admission requirements and for whom the UPPP PhD Admission Committee finds there is insufficient basis to justify any other kind of admission. GRE performance will not be the sole factor leading to a decision to deny admission. As the admission process is competitive, applicants meeting basic admission requirements who are less well qualified than other applicants may also be denied admission.

Continuous Enrollment And Readmission

UTA Continuous Enrollment Policy requires students to remain enrolled throughout the duration of their studies. UPPP students must comply with this policy by enrolling in at least three or six credit hours each fall and spring semester, depending on the stage in their program of studies. Enrollment in summer sessions is not required.

Students who are unable to continue their Ph.D. studies due to legitimate reasons can petition a leave of absence by following the university policies at <https://www.uta.edu/records/graduate/leave-of-absence-loa.php>. Students who are granted a leave of absence are subject to the university's policy on readmission.

Readmission

Students who have been absent without approval of leave of absence, but wish to resume their graduate work, will need to follow the university's readmission policy published at <http://catalog.uta.edu/academicregulations/admissions/graduate/>

Students who have been absent from the program for four or more long semesters will, in addition to the university policies, be subject to the program's admission criteria and the program's new procedures, guidelines, curriculum and degree requirements existing **at the time of the readmission application**. UPPP readmission policy and application instructions can be obtained from the UPPP Graduate Advisor: Barbara Saenz

Graduate Assistantships & Scholarships

Applicants who wish to be considered for graduate teaching/research assistant positions or other financial assistance, must submit their applications by their first week in February for full consideration. Only complete applications (including GRE scores and letters) will be considered for financial assistance. Students must also complete the university application for financial aid in **Mav ScholarShop**.

Students may be subject to dismissal from the program if they accumulate 4 deficiency points during their Ph.D. studies. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Ph.D. students who do not complete all requirements for the Doctoral degree within four years after passing the field examination will accrue 1 deficiency point per year beyond the four-year mark.

Curriculum and Degree Requirements:

Leveling Courses (6 hours)		6
PLAN 6303	PLANNING HISTORY, THEORY AND ETHICS	3
PLAN 6310	PLANNING, URBAN DEVELOPMENT AND STRUCTURE	3
Required Core Courses (9 credit hours)		9
PAPP 6307	THE URBAN ECONOMY	3
PLAN 6300	ADVANCED URBAN THEORY	3
PLAN 6311	SPATIAL THEORY AND POLICY: URBAN FORM AND STRUCTURE	3
Methods Courses (12 hours)		12
PLAN 6317	INTERMEDIATE DATA ANALYSIS	3
PLAN 6301	RESEARCH FOUNDATIONS AND Ph.D. WORKSHOP	3
PLAN 6346	ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS	3
PLAN 6347	QUALITATIVE METHODS	3
Urban Planning and Public Policy Field Area Courses (12 hours)		12

Students take 12 hours of courses in their elected field area of planning and/or policy, preparing the student for the dissertation and beyond. Courses are determined in consultation and approval with the student's Diagnostic/Supervisory Committee.

Students are encouraged to use faculty resources and the opportunities offered in CAPPA and UTA to specialize in following field areas or their combinations:

Urban Policy and Planning

Physical Planning, Development and Urban Design

Land Use/Transportation Analysis, Planning and policy

Environmental Planning Policy/Sustainability

Dissertation (minimum 9 hours) 9

UPPP Students

First Year

Summer Semester	Hours	First Semester	Hours	Second Semester	Hours
Deficiency or Field Course ¹		3 PLAN 6310		3 PLAN 6303	3
		PLAN 6311		3 PAPP 6307	3
		Deficiency or Field Course ¹		3 PLAN 6347	3
	3		9		9

Second Year

First Semester	Hours	Second Semester	Hours
PLAN 6300		3 PLAN 6346	3
PLAN 6301		3 Deficiency or Field Course ¹	3
PLAN 6317		3 Deficiency or Field Course ¹	3
9		9	

Third Year

First Semester	Hours	Second Semester	Hours
PLAN 6399, 6699, or 6999		3-9 PLAN 6399, 6699, or 6999	3-9
3-9		3-9	

Fourth Year

First Semester	Hours
PLAN 6399, 6699, 6999, or 7399	3-9
3-9	

Total Hours: 48-66

- ¹ Deficiency or Field Courses must be determined in consultation with the student's Diagnostic Chair and/or Committee.
- ² Students must complete a minimum of 9hrs of Dissertation and/or PLAN 7399 (Final Dissertation) which must be taken in the final graduating semester.

Organization

UPPP Diagnostic/Supervisory Committee

When students are admitted into the UPPP program, a Staff Graduate Advisor or the Program Director will advise them regarding first semester courses and registration and will assign them a faculty advisor based on the student's interest area and/or application essay.

Students form a three-member Diagnostic Supervisory Committee toward the end of their first semester or early in their second semester and complete a diagnostic evaluation, which the Committee uses to guide them in their selection of courses, including any extra courses needed. As a part of this process, the university requires that a student and his/her Diagnostic Supervisory Committee Chair complete the Milestone form during the student's first year of study. CAPPA will keep a copy of the completed form on file and the student will be provided a copy for his/her records.

Deficiency & Field Courses

The Diagnostic Committee decides and provides guidance on needed field area competencies and additional coursework based on the deficiencies noted during the diagnostic process. During the proposal preparation and proposal defense stages, the Dissertation Committee (selected by the student once all required coursework is completed) may require additional deficiency or field courses.

Deficiency courses may include courses from the selected field area and other needed courses. The final decision on field area or other deficiencies will be determined in the proposal defense session.

Waivers or Substitutions

Based on UT Arlington regulations, no course that has been applied to any degree, at any graduate or undergraduate institution, may be applied to any other degree, either directly or by substitution. Graduate-level coursework completed in the student's major area of doctoral study at institutions of recognized standing that grant doctoral degrees in those subject areas may serve to establish the student's competency in equivalent UTA courses. Competency demonstrated by successful completion of equivalent courses may provide a basis for waiving some UPPP course requirements and the credit hours associated with those courses. Waivers must be recommended by the student's graduate advisor and current supervising professor and their recommendation must be approved by both the Committee on Graduate Studies of the student's major area and the Office of Graduate Studies. Only courses in which the student has earned a B (3.0) or better will be considered for purposes of a waiver. Waived courses must be shown on the student's academic plan.

UPPP Field Area Exam

The Diagnostic/Supervisory Committee function ceases toward the completion of the required coursework when the student must select a three-member Dissertation Committee to start working on his/her dissertation proposal. The Dissertation Committee Chair and at least the 2nd member must be chosen from among the Ph.D. Planning faculty. The 2nd member may also be selected from the PAPP Ph.D. program faculty (further information on committee members selection is provided in the UPPP Handbook). After completion of the coursework and when the student's dissertation proposal has been sufficiently developed and is fully established in the chosen field area, the student will be given a take-home field exam by the Dissertation Committee. The exam may include questions in both broader and more specific aspects of the selected field area as well as questions designed to guide the student toward completion of the dissertation proposal. It is crucial to select the dissertation proposal topic very carefully as the dissertation is the stepping stone for the student's future career goals, forming the first important building block of research work in the student's field area of expertise.

Once the field exam is successfully completed, the student must continue work on the dissertation proposal which must be defended within 6 months of his/her field exam.

POSSIBLE COURSES TO ENHANCE FIELD AREAS

Urban Policy and Planning

PAPP 5304	URBAN POLITICS	3
PAPP 5309	LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING	3
PAPP 6305	ADVANCED THEORIES OF URBAN SOCIETY	3
PAPP 6311	ADVANCED PUBLIC POLICY FORMATION AND ANALYSIS	3

All CAPPA policy courses

Physical Planning, Development and Urban Design

Physical Planning

PLAN 6306	URBAN REVITALIZATION	3
PLAN 6313	URBAN GROWTH POLICIES	3
PLAN 6315	LAND USE, MANAGEMENT AND DEVELOPMENT	3
PLAN 6340	GIS AND SUITABILITY ANALYSIS	3
PLAN 6358	INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND PLANNING	3

Urban Design		
ARCH 5306	URBAN DESIGN	3
LARC 5301	SITE PLANNING AND DEVELOPMENT PROCESSES	3
LARC 5302	LAND DEVELOPMENT PLANNING	3
LARC 5382	URBAN DESIGN SEMINAR	3
PLAN 6321	ELEMENTS OF URBAN DESIGN	3
Real Estate Development		
PLAN 6313	URBAN GROWTH POLICIES	3
PLAN 6345	PLANNING AND REAL ESTATE DEVELOPMENT	3
REAE 5350	QUANTITATIVE METHODS FOR REAL ESTATE	3
REAE 6390	SEMINAR IN SPECIAL TOPICS IN REAL ESTATE	3
Land Use/Transportation Analysis, Planning & Policy		
Urban Economics		
PAPP 5312	ECONOMIC POLICY	3
PAPP 6307	THE URBAN ECONOMY	3
PLAN 6322	ECONOMIC DEVELOPMENT PLANNING AND POLICY	3
Land Use/Transportation		
CE 5328	FUNDAMENTALS OF AIR POLLUTION	3
CE 5338	SYSTEM EVALUATION	3
CE 6306	PUBLIC TRANSIT PLANNING & OPERATIONS	3
CE 6308	ANALYTICAL MODELS IN TRANSPORTATION	3
PLAN 6309	TRANSPORTATION/LAND USE MODELING AND POLICY ANALYSIS	3
PLAN 6315	LAND USE, MANAGEMENT AND DEVELOPMENT	3
PLAN 6325	TRANSPORTATION POLICIES, PROGRAMS AND HISTORY	3
PLAN 6340	GIS AND SUITABILITY ANALYSIS	3
PLAN 6358	INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND PLANNING	3
Environmental Planning Policy/Sustainability		
Environmental Policy Planning		
PLAN 5341	ENVIRONMENTAL REGULATIONS: LAWS AND PLANNING	3
PLAN 5351	TECHNIQUES OF ENVIRONMENTAL ASSESSMENT	3
PLAN 5342	ENVIRONMENTAL POLICY	3
PLAN 6340	GIS AND SUITABILITY ANALYSIS	3
PLAN 6350	ENVIRONMENTAL PLANNING	3
Environmental Science & Engineering		
CE 5329	ENVIRONMENTAL RISK BASED CORRECTIVE ACTION	3
EVSE 5310	ENVIRONMENTAL SYSTEMS-CHEMICAL ASPECTS	3
EVSE 5311	ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS	3

Dissertation Proposal

Upon completion of the coursework, students will work in preparation of their dissertation proposal. This preparation is guided by the student's Dissertation Committee. The Dissertation committee may advise the student to take courses which provide theoretical background and techniques to prepare the student for completing the dissertation proposal. Students must also work closely with their dissertation supervisor and committee to develop their dissertation proposal. A formal proposal defense must be held, and the proposal must be formally approved by the dissertation committee before the student may continue to complete the dissertation. The dissertation represents the culmination of the student's academic efforts and so is expected to demonstrate original and independent research activities and be a significant contribution to knowledge.

Dissertation

A student receiving advice and assistance from a faculty member in the preparation of a dissertation must register for the appropriate course commensurate with the student's level of effort that is equivalent to an organized course of the same credit value. Once the student is enrolled in the dissertation course, continuous enrollment is required. The student must accumulate a minimum of nine dissertation hours to graduate.

The Office of Graduate Studies offers Dissertation Seminars each semester and encourages all Dissertation students to attend.

Upon the successful defense of their dissertation proposal, the student is required to submit an application to the UT Arlington's Institutional Review Board if their research involves human subjects. Detailed information on the application process is available at: UTA's Human Subjects Research (<http://www.uta.edu/research/administration/departments/rs/human-subjects-irb/>)

Doctoral students must enroll in a minimum of 3 dissertation hours (PLAN 6399 DISSERTATION) every long semester (Fall & Spring). The student must accumulate a minimum of nine dissertation hours to graduate. Once the student's committee has reviewed the completed dissertation and agree that the student is ready to defend, the student enrolls in PLAN 7399 DOCTORAL DEGREE COMPLETION / in the term designated as their completion term. Students may designate only one term as the completion term. Doctoral students who do not graduate at the end of their completion term will receive a grade of R, W or F and must enroll in a minimum of 6 hours of dissertation research (PLAN 6699 DISSERTATION) every term until graduation.

The dissertation defense is a public oral examination open to all members (faculty, students and invited guests) of the University community. Questioning of the candidate will be directed by the student's dissertation committee. All members of the student's committee must be present at the defense. Although the defense is concerned primarily with the dissertation research and its interpretation, the examining committee may explore the student's knowledge of areas relevant to the core of the dissertation problem.

The dissertation defense may result in a decision that the candidate has:

1. passed unconditionally;
2. passed conditionally with remedial work specified by the committee;
3. failed, with permission to be re-examined after a specified period; or
4. failed and dismissed from the program.

The dissertation must be approved unanimously by the student's dissertation supervising committee.

Graduate Certificates

Prospective Students Contact: James Brown, Academic Recruiter

CERTIFICATE IN DEVELOPMENT REVIEW

Certificate Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Certificate Coordinator: Dr. Ardeshir Anjomani

The Certificate in Development Review provides training in zoning, subdivision plat review, site design, communication skills, and urban development, while keeping in mind the interests of citizens and the spirit of places. These skills are essential for planners who want to understand proposed development activity, ensure that proposed development is consistent with a city's vision, and facilitate review of development proposals. The program is geared for both entry-level planners/planning technicians, and for professionals in allied fields such as architecture, landscape architecture, law, engineering, and real estate.

The certificate requires completion of 15 hours of graduate-level coursework.

Required		3
PLAN 5304	PLAN IMPLEMENTATION, ZONING, AND REGULATIONS	3
Electives		12
Land Use and Development (select 2 from the following - 6 hours):		
PLAN 5305	LAND USE, MANAGEMENT AND DEVELOPMENT	3
PLAN 5306	URBAN REVITALIZATION	3
PLAN 5316	LAND USE PLANNING AND THE LAW	3
Communications (Select one from the following - 3 hours):		
PLAN 5308	METROPOLITAN SUSTAINABILITY AND PLAN MAKING	3
PLAN 5363	LEADERSHIP AND COMMUNICATION SKILLS IN THE PLANNING PROCESS	3
Agencies and Policies (Select one of the following - 3 hours):		
PLAN 5313	URBAN GROWTH POLICIES	3
PLAN 5328	PUBLIC BUDGETING	3
Total Hours		15

CERTIFICATE IN GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Certificate Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Certificate Coordinator: Dr. Jianling Li

The Geographic Information Systems (GIS) Certificate program is designed for students and professionals wishing to acquire skills in spatial data analysis. GIS is a powerful computer-based analytical tool used at all levels of government, in business, industry, and institutions. GIS skills are a must in many different fields including urban planning, engineering, geology, and the social sciences. In planning for instance, GIS skills provide professionals a spatial analytical edge with application in all areas of planning including land use, environmental, transportation and economic development planning.

Applying for admission to the GIS-Certificate program does not require the GRE or a degree in planning and should be done as a Non-Degree Seeking Special Applicant through the Graduate School. To obtain the 15-credit hour certificate, students must maintain a GPA of 3.0 in their coursework.

Up to 12 GIS-certificate-credit hours earned as a special non-degree seeking student may be applied to the Master's degree in City and Regional Planning, subject to the policies on grades and graduate credit described in the Graduate School catalog

Required		9
PLAN 5331	GIS WORKSHOP	3
PLAN 5356	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS	3
PLAN 5357	INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS	3
Electives		6
Select two electives, from the following, with approval of the GIS Certificate Program advisor:		
Engineering		
CE 5349	ADVANCED GIS AND HYDROLOGIC AND HYDRAULIC MODELING	3
CSE 5330	DATABASE SYSTEMS	3
Earth and Environmental Science		
GEOL 5323	REMOTE SENSING FUNDAMENTALS	3
Planning		
PLAN 5333	GRAPHICS AND MULTIMEDIA COMMUNICATION IN PLANNING	3
PLAN 5340	GIS AND SUITABILITY ANALYSIS	3
Total Hours		15

CERTIFICATE IN TRANSPORTATION PLANNING AND POLICY

Certificate Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Certificate Coordinator: Dr. Ivonne Audirac

In partnership with Civil Engineering and the Center for Transportation Equity Decisions and Dollars (CTEDD (<https://ctedd.uta.edu/>)), the College of Architecture, Planning and Public Affairs offers a certificate program that prepares students to plan, advocate and engineer for sustainable transportation and for better equity within existing transportation resources and infrastructure. The certificate enables students and professionals with:

an engineering or technical background to gain knowledge in transportation planning and policy
 a planning and/or policy-related background interested in transportation to complement their degree.
 The program is open to both degree and non-degree seeking students.

The certificate requires completion of 15 hours of graduate-level coursework maintaining a grade point average of 3.0 or higher.

Required		9
PLAN 5309	TRANSPORTATION/LAND USE MODELING AND POLICY ANALYSIS	3
or CE 5337	URBAN TRANSPORTATION PLANNING	
PLAN 5315	TRANSPORTATION POLICIES, PROGRAMS AND HISTORY	3
PLAN 5327	GREEN CITIES AND TRANSPORTATION	3
Electives		6
Select two electives from the approved list:		
Public Affairs		

PAPP 5309	LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING	3
Planning		
PLAN 5310	PLANNING, URBAN DEVELOPMENT AND STRUCTURE	3
PLAN 5313	URBAN GROWTH POLICIES	3
PLAN 5333	GRAPHICS AND MULTIMEDIA COMMUNICATION IN PLANNING	3
PLAN 5358	INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND PLANNING	3
PLAN 5360	COMPUTER METHODS FOR TRANSPORTATION PLANNING	3
PLAN 5395	SPECIAL TOPICS IN PLANNING ((Topic: Exploring A Future of Hypermobility))	3
PLAN 6311	SPATIAL THEORY AND POLICY: URBAN FORM AND STRUCTURE	3
Engineering		
CE 5331	TRAFFIC ENGINEERING OPERATIONS	3
CE 5333	TRAFFIC CONTROL SYSTEMS	3
CE 5338	SYSTEM EVALUATION	3
CE 5392	SPECIAL TOPICS IN AIR POLLUTION ((Topic: Transportation and Air Quality))	3
CE 6308	ANALYTICAL MODELS IN TRANSPORTATION	3
CE 6309	TRAFFIC FLOW THEORY	3
Social Work		
SOCW 5303	FOUNDATIONS OF SOCIAL POLICY AND SERVICES	3
SOCW 5343	HEALTH POLICY AND SOCIAL JUSTICE	3
Total Hours		15

Students can apply for these fifteen credit hour programs as non-degree seeking students and should apply for admission to the UTA Graduate Admissions as a Non-Degree Seeking Student (<http://grad.pci.uta.edu/faculty/resources/advisors/applicants/>).

Students can also complete the certificates as part of the accelerated online MPA program by completing hours applicable to the MPA degree.

COURSES

PLAN 1301. INTRODUCTION TO URBAN LIFE. 3 Hours.

An examination of major urban problems, opportunities, and policy issues including crime, transportation, housing, education, welfare, and the environment with emphasis on racial, ethnic, and cultural diversity issues and alternative future possibilities; and an examination of the major political, social, and economic challenges facing contemporary urban planners and administrators - with emphasis on the interrelations among the national, state, and local governments.

PLAN 3301. THE METROPLEX. 3 Hours.

An in-depth orientation to urban dynamics, using as a case study the Dallas/Fort Worth metroplex - with its hundreds of cities, governmental units, neighborhoods, and business enterprises as well as its major concentrations of racial minorities and ethnic groups. Special attention is paid to the changing patterns of growth and demography occurring in the Dallas/Fort Worth metropolitan area and the impact of these on emerging social, political, and economic issues of this area. Emphasis also placed on career specializations and professional opportunities in the urban context.

PLAN 4305. FOUNDATIONS OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY. 3 Hours.

The organization, structure and practice of environmental protection at the federal, state and local levels of government. Course will develop a full understanding of how the goals of protecting human health and the environment are achieved through the implementation of environmental law, policy, practice, enforcement and collaboration among governmental entities, industry, environmental groups and the general public. Wide ranging use of case studies will be made and full engagement in new developments in the era of climate change will be achieved.

PLAN 4310. PLANNING THE AMERICAN CITY. 3 Hours.

Students in this course will develop an understanding of the role of the private and public sectors in the development and management of the American city. It will consider such topics as the organization of city government, demographic, economic, and physical conditions analysis, land use planning, the quality of the urban environment, urban redevelopment, urban design, and regional planning. An off-campus service learning component is a key required element of this course.

PLAN 4320. SUSTAINABLE COMMUNITIES. 3 Hours.

This course explores broad environmental and social issues in sustainable communities. Potential topics include urban water management, food and resources, wildlife conservation, native landscaping, waste management, green building, housing diversity, public transportation and community participation. The course serves as a laboratory for working with governmental and non-governmental organizations in the DFW area and developing issue-based, action research projects to solve real-world problems in our communities. This hands-on course combines lecture, student-led discussion, site visits and collaborative team work for service learning projects.

PLAN 4356. INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Introduction to GIS and the application of computer graphics systems in the storage, processing, and retrieval of geographic urban and regional information; case examples and related projects and issues of system management.

PLAN 4357. INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Applications of GIS to typical urban and regional geographic information problems and projects. Prerequisite: PLAN 4356.

PLAN 4391. INDEPENDENT STUDY. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: permission of the instructor.

PLAN 4394. COMMUNITY RESEARCH & APPLICATION. 3 Hours.

Exposes students to research methods typically employed in planning and to their application to a community-based research project.

PLAN 4395. STUDIES IN PLANNING. 3 Hours.

Advanced studies in various subjects of city and regional planning. May be repeated for credit as topic varies. Prerequisite: Consent of the instructor.

PLAN 5160. URBAN MANAGEMENT/PLANNING INTERNSHIP. 1 Hour.

Intended to enhance readiness for professional work through exposure to planning practice in a one semester log internship (100 hrs in the spring or fall semester or 75 hrs in the summer). Integrates work experience and coursework through journaling and reflective practice. Requirements: (1) student secures an internship from a planning related employer and approval from the student's major professor prior to enrolling in the course; (2) the intern must provide performance evaluation by the job supervisor and the intern's evaluation of the internship experience. Enrollment open to students with no previous formal planning experience. Credit not available for previous internship or planning experience. P/F grade.

PLAN 5191. CONFERENCE COURSE. 1 Hour.

Special subjects and issues as arranged by individual students and faculty members. May be repeated for credit.

PLAN 5193. MASTER'S COMPREHENSIVE EXAMINATION. 1 Hour.

Directed study, consultation and comprehensive examination over coursework leading to thesis substitute for MCRP degree. Required of all thesis substitute students who were admitted to the MCRP program prior to Fall 2009 and who are not enrolled in thesis or other thesis substitute courses during semester in which they plan to graduate. Students beginning the MCRP program in Fall 2009 or after may not choose the Master's Comprehensive Examination as a thesis substitute option and may not enroll in this course.

PLAN 5197. PROFESSIONAL REPORT. 1 Hour.

Preparation of final professional report as a thesis substitute for MCRP degree. Required of all thesis substitute students not enrolled in PLAN 5193.

PLAN 5297. PROFESSIONAL REPORT. 2 Hours.

Preparation of final professional report as a thesis substitute for MCRP degree. Required of all thesis substitute students not enrolled in PLAN 5193.

PLAN 5300. FOUNDATIONS OF URBAN THEORY. 3 Hours.

Spatial development of human settlements, their life cycles, expansion, and decay. Covers key theories of social, spatial, and economic structures of cities, nineteenth century to present. Considers influences of urban form and development on class, race, gender, and community.

PLAN 5303. PLANNING HISTORY, THEORY AND ETHICS. 3 Hours.

Various theories of planning including rational comprehensive, communicative action, social learning, and radical planning. Sets theories within their historical contexts, and examines the social and political details of each era to show the development of diverse planning practices and theories of planning. Evaluates the values embodied in different theories and their relationship to practice and social justice, including planning ethics as contained in the AICP Code of Ethics and Professional Conduct.

PLAN 5304. PLAN IMPLEMENTATION, ZONING, AND REGULATIONS. 3 Hours.

Introduction to plan preparation and implementation. Topics include zoning, subdivision regulations, form-based codes, site planning, strategic planning, and comprehensive planning.

PLAN 5305. LAND USE, MANAGEMENT AND DEVELOPMENT. 3 Hours.

Assesses land use, management and development and considers new directions. Relates comprehensive planning, environmental management, and land use.

PLAN 5306. URBAN REVITALIZATION. 3 Hours.

Examines various urban revitalization projects from coordinated, large-scale ventures to grassroots and informal neighborhood initiatives. Emphasis on the history, logic, politics, and implementation of these projects as well as their physical, social, and economic outcomes.

PLAN 5307. URBANIZATION IN THE DEVELOPING WORLD. 3 Hours.

Explores the social, political and spatial dimensions of urbanization processes in developing countries. Covers urban, social, and cultural movements as well as development, processes of urban-rural migration, and globalization. The course will cover all developing regions of the world with an emphasis on Latin American countries.

PLAN 5308. METROPOLITAN SUSTAINABILITY AND PLAN MAKING. 3 Hours.

Provides the background for sustainability planning at the city and metropolitan levels including plan making (e.g., comprehensive plans, small area plans, functional plans, etc.). Explores the relationship of environmental sustainability to economic vitality and social equity including planning ethics.

PLAN 5309. TRANSPORTATION/LAND USE MODELING AND POLICY ANALYSIS. 3 Hours.

Overview of transportation/land use with specific transportation models and simulation methods; topics include economic theory of travel demand, land use models, UTPS framework for travel demand estimation, disaggregated travel demand models and abstract mode models.

PLAN 5310. PLANNING, URBAN DEVELOPMENT AND STRUCTURE. 3 Hours.

Overview of functional areas of planning (e.g., urban design, housing, transportation, etc.); fundamentals of urban structure and development of cities and regions including environmental, social, economic, and political factors and issues affecting urban settlements; global dimensions of planning.

PLAN 5311. ELEMENTS OF URBAN DESIGN. 3 Hours.

Study of contemporary urban form and environmental design, emphasizing visual-spatial qualities, social needs and economic linkages. Examination of processes, methods and techniques for solving urban design problems.

PLAN 5312. STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Readings and case studies of strategic planning and management in the public and non-profit sectors; application of principles to an actual situation, involving stakeholder identification, environmental scanning, and formulation of mission statements, goals, and strategies. Offered as PLAN 5312 and PAPP 5357. Credit will be granted only once.

PLAN 5313. URBAN GROWTH POLICIES. 3 Hours.

Study of the political, societal and physical policies involved in urban growth management.

PLAN 5315. TRANSPORTATION POLICIES, PROGRAMS AND HISTORY. 3 Hours.

Transportation and related programs and policies in relation to city development and housing patterns. Interdependencies of land use, building development, and social change are explained as transportation-related.

PLAN 5316. LAND USE PLANNING AND THE LAW. 3 Hours.

Explores the law of land use in the context of the American legal, economic, and political systems. Examines leading court decisions and precedents for their background, content, and applicability to contemporary land use. Offered as PLAN 5316 and PAPP 5331. Credit will be granted only once.

PLAN 5317. INTERMEDIATE DATA ANALYSIS. 3 Hours.

An intermediate level examination of statistical and research techniques appropriate to urban and social analysis. Presuming a basic understanding of descriptive and inferential statistics, the course covers multivariate regression, including error analysis and non-linear models, path analysis, Analysis Of Variance (ANOVA), logit and probit models, and techniques for data reduction (e.g., factor analysis). Offered as PAPP 5342 and PLAN 5317; credit will be granted only once. Prerequisite: PAPP 5302.

PLAN 5318. TECHNIQUES OF PLANNING ANALYSIS I. 3 Hours.

Introduction to analytical techniques used in urban and regional planning. Topics include: census data and geography and introduction to GIS, demographic analysis, cost-benefit analysis, economic base analysis, gravity models, and displaying and communicating data analysis and results in graphic, written, and oral forms.

PLAN 5319. AGENCIES OF PLANNING AND ADMINISTRATION. 3 Hours.

Contemporary managerial functions involved in running public, private, or non-profit organizations: goal setting, planning, organizing, delegating and motivating others, personal productivity and motivation, time and stress management, controlling, and project management.

PLAN 5320. DATABASE MANAGEMENT FOR URBAN PLANNING AND ADMINISTRATION. 3 Hours.

Concepts and computer applications of data management. Topics include data sources, data models, database design, data query, data analysis, and database management techniques for urban planning, management and administration. Credit will be given only once.

PLAN 5321. VISUAL BASIC AND GIS. 3 Hours.

Provides an introduction to the techniques and applications of computer graphics and mapping for presenting socioeconomic information in graphic and spatial form.

PLAN 5322. ECONOMIC DEVELOPMENT PLANNING AND POLICY. 3 Hours.

Introductory seminar in subnational economic development programs in the U.S. Covers basics of location theory, economic planning, budgeting, incentives, public and private revenue sources, analysis methods such as central place and economic base, intergovernmental efforts, redevelopment, high tech, trade and/or tourism.

PLAN 5323. HISTORIC PRESERVATION. 3 Hours.

Covers elements of historic designation, rehabilitation, financial incentives, district regulations, and preservation impacts.

PLAN 5324. COMMUNITY DEVELOPMENT. 3 Hours.

Focuses on current problems of community development and neighborhood revitalization. Housing, community assets, the roles of community development corporations and social capital in cities, and community economic development will be analyzed. Federal, state, and local policies, with grassroots initiatives evaluated for effectiveness on promoting alternatives for community building and organizing. Also offered as URPA 5313; credit will be granted only once.

PLAN 5325. PHYSICAL PLANNING AND URBAN DESIGN. 3 Hours.

Introduction to basic concepts in urban design and physical planning. Provides an understanding of how built environments evolve, and how they can be creatively planned and designed so as to meet social and ecological goals. Special attention to principles and analyses related to the physical planning of neighborhoods and streets, as well as patterns of urban form and public places.

PLAN 5326. CULTURAL PLANNING AND URBAN DEVELOPMENT. 3 Hours.

This course examines 1) the composition of the creative economy in cities around the world, 2) arts, culture, and creative economy planning and policy efforts at the neighborhood, city, and regional levels, and 3) the social, spatial and political ramifications of these efforts and of the creative economy broadly.

PLAN 5327. GREEN CITIES AND TRANSPORTATION. 3 Hours.

Concepts of green cities and transportation, environmental and transportation challenges, and schools of thought on causes of environmental and transportation problems, with emphasis on planning practices and policies in relation to environmental and transportation issues and roles of planners in shaping urban landscape and infrastructure.

PLAN 5328. PUBLIC BUDGETING. 3 Hours.

This course introduces students to the principles and practices used by federal, state, and local governments to acquire and spend revenues within the context of American democracy, capitalism, federalism, and economics. The primary objective of this course is to provide students with the practical skills and theoretical knowledge to enable them to be effective participants in the budgeting process and critical consumers and producers of research relevant to public budgeting. Offered as PLAN 5328 and PAPP 5326. Credit will be granted only once.

PLAN 5329. PUBLIC CAPITAL BUDGETING. 3 Hours.

Examines governmental capital budgeting processes with a focus on understanding the significance of capital improvement planning, public facility investment, and project evaluation to sound infrastructure financing and regional economic growth. Governments purchase or construct long-lasting physical assets or facilities financed mostly through borrowing. This course aims to understand the rationale for public capital budgeting and debt instruments used to finance capital investment in the political context of public budgeting in America. Offered as PAPP 5332 and PLAN 5329; credit will be granted only once.

PLAN 5330. TECHNIQUES OF PLANNING ANALYSIS II. 3 Hours.

Introduction to research methods, both quantitative and qualitative and mixed methods. Relating planning problem identification and definition with appropriate method of data gathering and analysis. Analysis and interpretation of qualitative and quantitative data including interview and small group techniques, and basic statistical analysis. Communication of analysis results in graphic, written, and oral forms.

PLAN 5331. GIS WORKSHOP. 3 Hours.

Skills, practical experience, problem-solving methods and techniques in geographic information systems. Capstone course for GIS Certificate Program; substitutes for one Project Planning Course. Prerequisite: PLAN 5357.

PLAN 5332. PROJECT STUDIO. 3 Hours.

Studio course working on applied city and regional planning projects within the Dallas-Fort Worth area or elsewhere. Provides students with practical experience in collaborative teamwork and the application of skills, methods, and techniques in city and regional planning, including citizen participation, problem analysis, mapping, design, presentation, working with clients, and applied planning process. Should be taken in the second half of the student's program of study, with exceptions for those with applied planning experience. May be repeated as topic changes.

PLAN 5333. GRAPHICS AND MULTIMEDIA COMMUNICATION IN PLANNING. 3 Hours.

Builds skills in the use and application of contemporary graphic techniques that enable planners to visually communicate and display data, design concepts and ideas as solutions to planning problems. Training in the use of various graphic communication and multimedia software, including online web media and print media.

PLAN 5335. PROFESSIONAL WRITING. 3 Hours.

Builds student writing skills in professional communication of ideas and information. Includes review of basic writing skills, grammatical construction, report and memo writing based on current standardized formats; considering the role of audience, writing in a clear, concise and professional style; emphasizes revising writing assignments for effective communication. Also offered as PAPP 5341; credit will be granted for only one.

PLAN 5340. GIS AND SUITABILITY ANALYSIS. 3 Hours.

Acquaints students with theoretical and practical aspects of suitability analysis process or activity allocation on land use/environmental policies. Uses Geographic Information System (GIS) and computer models for overlaying map analysis, buffering, market demand and activity locations, etc. to incorporate environmental and ecological factors into the determination of land development potential including soils, slope, drainage, vegetation, and related factors.

PLAN 5341. ENVIRONMENTAL REGULATIONS: LAWS AND PLANNING. 3 Hours.

Federal, state, and local environmental regulations which have effect on the practice of city and regional planning. Specific articles, laws, and directives contrasted and compared to local city design and development controls. Subjects include CERCLA, RCRA, SARA, TSCA, OSH Act, among others.

PLAN 5342. ENVIRONMENTAL POLICY. 3 Hours.

Focuses on the physical environmental dimensions of urbanization including such factors as pollution, waste disposal, and land use; stresses the role of economic, social, and political institutions as these affect environmental quality of the city. Offered as PLAN 5342 and PAPP 5317; credit will be granted only once.

PLAN 5343. FOUNDATIONS OF ENVIRONMENTAL POLICY. 3 Hours.

Explores how environmental controversy is rooted in conflict between a number of schools of environmental policy thought with divergent perspectives on issues such as how to define progress, how to balance the needs of economy and ecosystem, how to cope with environmental complexity, and what role science should play in environment affairs. Also offered as URPA 5365; credit will be granted only once.

PLAN 5344. HUMAN SERVICES PLANNING. 3 Hours.

Social welfare institutions: private and public; needs assessment, resource allocation, procedures, city/state/federal/private policy review; highlights of current system demands and changes. Also offered as URPA 5316.

PLAN 5345. PLANNING AND REAL ESTATE DEVELOPMENT. 3 Hours.

The goals, strategies, methods, and achievements of major participants in the urban land and building markets are examined. Land owners, speculators, real estate brokers, developers, bankers, lawyers, non-profit builders, and government agencies are studied, as well as such business tools as: market and feasibility analysis, appraisal techniques, proforma analysis, and others.

PLAN 5346. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PLAN 5346 and PAPP 5344; credit will be given only once.

PLAN 5347. URBAN PROBLEMS. 3 Hours.

Specific urban problems examined in depth, traced to their historical origins to see how they or similar problems have been dealt with in other times and places. Students will then propose possible solutions to the problems in their contemporary form. Offered as PLAN 5347 and PAPP 5319.

PLAN 5350. ENVIRONMENTAL PLANNING. 3 Hours.

Overview of environmental planning issues and problems, including basic ecological principles; development and effects of the chemical industry; policies on international issues; environmental justice and ethics; environmental economics, including externalities and public goods; sustainable development; overviews of planning for air quality, water quality, solid waste, pollution prevention, habitat conservation, etc.; and plan implementation, including enforcement, regulation and funding.

PLAN 5351. TECHNIQUES OF ENVIRONMENTAL ASSESSMENT. 3 Hours.

Analysis of impact assessment documents from a variety of projects; study of federal laws and regulations governing the process; state impact assessment laws and regulations; and procedures used in other nations. Students will prepare an environmental assessment for a real-world project. Overviews of environmental site assessment, MIS documents, and environmental auditing will also be given.

PLAN 5352. ENVIRONMENT ASSESSMENT POLICY & PRACTICE. 3 Hours.

Review and analysis of the development of the environmental assessment process with focus on expectations of how environmental assessment will be transformed in the era of climate change. Students evaluate the effects of new laws and regulations and the accelerated growth of environmental policy development at all levels of government, especially among urban areas. The course includes review of selected environmental assessment documents and project case studies.

PLAN 5353. ENVIRONMENTAL LAW. 3 Hours.

This seminar examines the role of environmental law within the political-institutional framework of the American system. Emphasis is on the legal-judicial aspects of environmental regulation. Analyzes the decision of U.S. courts as these affect and interpret environmental laws and regulations for their legality and constitutionality.

PLAN 5354. HOUSING PLANNING, POLICY AND FINANCE. 3 Hours.

Evaluation of the effect of state, local, and federal housing policy on the urban arena. Topics will be selected from federal subsidy programs, tax subsidies, operations of financial intermediaries, and related areas.

PLAN 5356. INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Introduction to GIS and the application of computer graphics systems in the storage, processing, and retrieval of geographic urban and regional information; case examples and related projects and issues of system management.

PLAN 5357. INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Applications of GIS to typical urban and regional geographic information problems and projects. Prerequisite: PLAN 5356.

PLAN 5358. INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND PLANNING. 3 Hours.

Concepts, components, deployments, and implementations of ITS; methods for ITS evaluations; linkage between ITS and traditional transportation planning; and issues related to ITS planning and deployment.

PLAN 5360. COMPUTER METHODS FOR TRANSPORTATION PLANNING. 3 Hours.

Applications of computer software (for example, TransCad, Tranplan) in transportation planning modeling. Theories of residential location choice and travel behavior. Topics may include land-use and travel demand models, trip distribution models, mode choice models, and network equilibrium.

PLAN 5361. PLANNING INTERNSHIP. 3 Hours.

Intended to enhance readiness for professional work through exposure to planning practice in a one semester log internship (300 hrs in the spring or fall semester or 275 hrs in the summer). Integrates work experience and coursework through journaling and reflective practice. Requirements: (1) student secures an internship from a planning related employer and approval from the student's major professor prior to enrolling in the course; (2) the intern must provide performance evaluation by the job supervisor and the intern's evaluation of the internship experience. Enrollment open to students with no previous formal planning experience. Credit not available for previous internship or planning experience. P/F grade.

PLAN 5362. URBAN DIVERSITY. 3 Hours.

Examines the growing spatial and social diversity of cities; how physical as well as socioeconomic urban structures have fostered race, class, and gender inequalities; how urban policies have addressed and can address these issues. Offered as PLAN 5362 and PAPP 5362.

PLAN 5363. LEADERSHIP AND COMMUNICATION SKILLS IN THE PLANNING PROCESS. 3 Hours.

Governance and participation, comprehensive planning and the community planning process, participatory planning, and practical communication skills for planners and administrators: leadership and public meetings, participative decision making, interpersonal communications and conflict management, effective writing and presentations.

PLAN 5364. ECONOMIC BASE AND INDUSTRIAL DEVELOPMENT POLICY. 3 Hours.

Theories and methods of local and regional economic base analyses; techniques for inventorying strengths, weaknesses, opportunities and threats of local capital, labor and land resources; alternative policy responses to industrial development issues arising from economic base analysis.

PLAN 5380. RESEARCH QUESTIONS IN PLANNING. 3 Hours.

Application of research issues, writing, and communication skills in planning. Designed to assist students in preparing their research for master's thesis or professional report.

PLAN 5391. CONFERENCE COURSE. 3 Hours.

Special subjects and issues as arranged by individual students and faculty members. May be repeated for credit.

PLAN 5395. SPECIAL TOPICS IN PLANNING. 3 Hours.

Selected topics in City and Regional Planning. May be repeated for credit.

PLAN 5397. PROFESSIONAL REPORT. 3 Hours.

Preparation of final professional report as a thesis substitute for MCRP degree. Required of all thesis substitute students not enrolled in PLAN 5193.

Prerequisite: PLAN 5380.

PLAN 5398. PLANNING THESIS. 3 Hours.

Graded F/R.

PLAN 5695. TOPICS IN PLANNING. 6 Hours.

Studio, lecture or seminar course to explore and present special topics in city and regional planning. May be repeated for credit as topics change.

Prerequisite: Permission of Graduate Advisor or Program Director.

PLAN 5698. PLANNING THESIS. 6 Hours.

Graded F/R.

PLAN 5998. PLANNING THESIS. 9 Hours.

Graded P/F/R.

PLAN 6161. TEACHING INTERNSHIP. 1 Hour.

Provides exposure to all aspects of course preparation and delivery including, course and syllabus design, student performance assessment, exam preparation, maintaining class records, and grading. Also, lecture and other forms of delivery of instruction. Interns co-teach with a faculty mentor, who provides feedback.

PLAN 6300. ADVANCED URBAN THEORY. 3 Hours.

Covers key theories of urbanization and socioeconomic relations. Emphasis is placed on the development of paradigms in urban theory, from classic texts to important shifts and debates in the late 20th-early 21st centuries. Considers principal theorists from urban disciplines of planning, geography, economics, sociology, and how they structure their arguments about urban form and social relations. Aimed at doctoral students, as well as advanced master's students, both from urban planning/urban affairs as well as from graduate programs outside School of Urban and Public Affairs.

PLAN 6301. RESEARCH FOUNDATIONS AND Ph.D. WORKSHOP. 3 Hours.

Examines fundamentals of research design for linking research questions to evidence, analysis, and research conclusions in urban planning, public administration, and public policy. Designed to assist doctoral students in preparing their research for dissertation. Opportunities to present work in progress, share ideas, and interact with faculty. Also offered as PAPP 6301; credit will be granted only once. Prerequisite: PLAN 5317 or PAPP 5342, PLAN 5346 or PAPP 5344 and PLAN 6346 or PAPP 6346.

PLAN 6303. PLANNING HISTORY, THEORY AND ETHICS. 3 Hours.

Various theories of planning including rational comprehensive, communicative action, social learning, and radical planning. Sets theories within their historical contexts, and examines the social and political details of each era to show the development of diverse planning practices and theories of planning. Evaluates the values embodied in different theories and their relationship to practice and social justice, including planning ethics.

PLAN 6305. SEMINAR IN URBAN PLANNING PROCESSES. 3 Hours.

Final course in urban planning field. Focus on the various political, economic, and social institutions and theoretical approaches in the planning process, and application of these multidisciplinary perspectives in the analysis of specific planning issues.

PLAN 6306. URBAN REVITALIZATION. 3 Hours.

Emphasizes the history, logic, politics, and implementation of urban revitalization projects as well as their physical, social, and economic outcomes.

Examines various urban revitalization projects from coordinated, large-scale ventures to grassroots and informal neighborhood initiatives.

PLAN 6307. THE URBAN ECONOMY. 3 Hours.

Students explore theories that explain local, state, national and international economies in a predominantly urbanized country and world. The course provides an understanding of agglomeration economies that are the foundation of urban genesis, growth and stability or decline. Individual topic areas include transportation, housing, environment, education and employment. An overarching theme is understanding human behavior and decisions in the urban context drawing on the economic theories new urban economics, new economic geography, new institutional economics and others. Offered as PAPP 6307 and PLAN 6307; credit will only be granted for one.

PLAN 6308. METROPOLITAN SUSTAINABILITY AND PLAN MAKING. 3 Hours.

Provides the background for sustainability planning at the city and metropolitan levels including plan making (e.g., comprehensive plans, small area plans, functional plans, etc.). Explores the relationship of environmental sustainability to economic vitality and social equity including planning ethics.

PLAN 6309. TRANSPORTATION/LAND USE MODELING AND POLICY ANALYSIS. 3 Hours.

Overview of transportation/land use with specific transportation models and simulation methods; topics include economic theory of travel demand, land use models, UTPS framework for travel demand estimation, disaggregated travel demand models and abstract mode models.

PLAN 6310. PLANNING, URBAN DEVELOPMENT AND STRUCTURE. 3 Hours.

Planning functional domains from transportation to comprehensive planning and fundamental theories explaining urban structure and development of cities and regions.

PLAN 6311. SPATIAL THEORY AND POLICY: URBAN FORM AND STRUCTURE. 3 Hours.

Examines factors shaping urban form. Includes economic and spatial structures of cities and their implications for planning and policy issues. Outlines location theory, urban growth, density and land price, land use and spatial pattern, multi-centering and sprawl, as well as new traditional and transit oriented developments (NTD & TOD) among others. Broadens understanding of different aspects of cities and urban areas (housing, employment and commercial centers). Reflects on the connections between emergent patterns of growth and evolving transportation network.

PLAN 6313. URBAN GROWTH POLICIES. 3 Hours.

Study of the political, societal and physical policies involved in urban growth management.

PLAN 6315. LAND USE, MANAGEMENT AND DEVELOPMENT. 3 Hours.

Fundamentals of real estate development and land use planning and its intersection with the planning process. Assesses land use, management and development and considers new directions.

PLAN 6317. INTERMEDIATE DATA ANALYSIS. 3 Hours.

Intermediate statistical and research techniques appropriate to Ph.D. level urban and social analysis. Presuming a basic understanding of descriptive and inferential statistics, the course covers multivariate regression, including error analysis and non-linear models, path analysis, Analysis of Variance (ANOVA), logit and probit models, and techniques for data reduction (e.g., factor analysis). Prerequisite: PAPP 5302.

PLAN 6318. TECHNIQUES OF PLANNING ANALYSIS I. 3 Hours.

Analytical techniques used in urban and regional planning. Topics include: census data and geography, introduction to GIS, demographic analysis, cost-benefit analysis, economic base analysis, gravity models, and displaying and communicating data analysis and results in graphic, written, and oral forms.

PLAN 6321. ELEMENTS OF URBAN DESIGN. 3 Hours.

Study of contemporary urban form and environmental design, emphasizing visual-spatial qualities, social needs and economic linkages. Examination of theories, processes, methods and techniques of urban design.

PLAN 6322. ECONOMIC DEVELOPMENT PLANNING AND POLICY. 3 Hours.

A seminar on subnational economic development programs in the U.S. Covers location theory, economic planning, budgeting, incentives, public and private revenue sources, analysis methods such as central place and economic base, intergovernmental efforts, redevelopment, high tech, trade and/or tourism.

PLAN 6324. COMMUNITY DEVELOPMENT. 3 Hours.

Focuses on current problems of community development and neighborhood revitalization. Housing, community assets, the roles of community development corporations and social capital in cities, and community economic development. Federal, state, and local policies vs. grassroots initiatives evaluated for effectiveness on promoting alternatives for community building and organizing. Ph.D. level critical assessment of the central theories and rationales driving community development.

PLAN 6325. TRANSPORTATION POLICIES, PROGRAMS AND HISTORY. 3 Hours.

Transportation and related programs and policies in relation to city development and housing patterns. Interdependencies of land use, building development, and social change are explained as transportation-related.

PLAN 6326. PHYSICAL PLANNING AND URBAN DESIGN. 3 Hours.

Concepts in urban design and physical planning. Provides an understanding of how built environments evolve, and how they can be creatively planned and designed so as to meet social and ecological goals. Special attention to principles and analyses related to the physical planning of neighborhoods and streets, as well as patterns of urban form and public places.

PLAN 6327. GREEN CITIES AND TRANSPORTATION. 3 Hours.

Schools of thought on causes of environmental and transportation problems and 'green cities' as potential solution with emphasis on the planning approaches and public policies tackling environmental and transportation issues. Critical assessment of the roles of planners in shaping the urban landscape and infrastructure.

PLAN 6330. TECHNIQUES OF PLANNING ANALYSIS II. 3 Hours.

Quantitative and qualitative and mixed methods research. Relating planning problem identification and definition with appropriate methods of data gathering and analysis. Analysis and interpretation of qualitative and quantitative data including interview and small group techniques, and basic statistical analysis. Communication of analysis results in graphic, written, and oral forms.

PLAN 6331. GIS WORKSHOP. 3 Hours.

Application of methods and techniques in geographic information systems to the analysis of spatial urban phenomena and spatial decision-making in regional planning and public policy. Research and project-based planning course. Prerequisite: PLAN 6357.

PLAN 6340. GIS AND SUITABILITY ANALYSIS. 3 Hours.

Presents theoretical and practical aspects of the suitability analysis process. Uses Geographic Information System (GIS) analysis and computer models for incorporating environmental and ecological factors in determining land development potential.

PLAN 6345. PLANNING AND REAL ESTATE DEVELOPMENT. 3 Hours.

The goals, strategies, methods, and achievements of major participants in the urban land and building markets are examined. Land owners, speculators, real estate brokers, developers, bankers, lawyers, non-profit builders, and government agencies are studied, as well as such business tools as: market and feasibility analysis, appraisal techniques, proforma analysis, and others.

PLAN 6346. ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS. 3 Hours.

An introduction to selected advanced techniques related to planning analysis. Subjects include advanced applied regression analysis, multivariate logit analysis, and multinomial logistic regression. Applications of projection techniques, land use and transportation models, and methods of regional analysis. Offered as PLAN 6346 and PAPP 6346. Credit will be given only once.

PLAN 6347. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PAPP 6344 and PLAN 6347; credit will be given only once.

PLAN 6350. ENVIRONMENTAL PLANNING. 3 Hours.

Reviews environmental planning and its ecological principles; environmental effects of industrial development; policies on international issues; environmental justice and ethics; environmental economics, including externalities and public goods; sustainable development; overview of planning for air quality, water quality, solid waste, pollution prevention, habitat conservation, etc.; and issues of plan implementation, including enforcement, regulation and funding.

PLAN 6357. INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

GIS applications to typical urban and regional geographic information problems and projects. Prerequisite: PLAN 5356.

PLAN 6358. INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND PLANNING. 3 Hours.

Concepts, components, deployments, and implementations of ITS; methods for ITS evaluations; linkage between ITS and traditional transportation planning; and issues related to ITS planning and deployment.

PLAN 6361. TEACHING INTERNSHIP. 3 Hours.

Provides exposure to all aspects of course preparation and delivery including, course and syllabus design, student performance assessment, exam preparation, maintaining class records, and grading. Also, lecture and other forms of delivery of instruction. Interns co-teach with a faculty mentor, who provides feedback.

PLAN 6399. DISSERTATION. 3 Hours.

Graded R/F only.

PLAN 6691. CONFERENCE COURSE. 6 Hours.

Special subjects and issues as arranged by individual students and faculty members. May be repeated for credit.

PLAN 6699. DISSERTATION. 6 Hours.

Graded R/F/P/W only.

PLAN 6999. DISSERTATION. 9 Hours.

Graded P/F/R.

PLAN 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Interior Design

Bachelor's Degree

- Bachelor of Science in Interior Design (<https://www.uta.edu/cappa/academics/architecture/interior-design/>)

Minor Offered

- Architecture History (p. 140)

Overview

Interior Design at UT Arlington focuses on the commercial, institutional, and large-project scale activities of the profession. The Bachelor of Science in Interior Design is a four-year professional program of studies. It is the only program in the Dallas/Fort Worth area that offers a four-year professional Bachelor of Science in Interior Design within a School of Architecture. In the first two years of study, UT Arlington Interior Design students share a degree program that is almost identical to that of architecture students. As a result, graduates have an architectural approach to Interior Design and are valuable contributors to project teams requiring collaboration across multiple disciplines. The program therefore differs from a non-professional interior decorating program.

Accreditation

The Bachelor of Science in Interior Design leads to the full professional degree and is fully accredited by the Council for Interior Design Accreditation (CIDA) and the National Association of Schools of Art and Design (NASAD). Mission

It is the mission of the Program in Interior Design to prepare students for entry into the interior design profession by supporting and encouraging their roles in the service of the health, safety and welfare of building users, as well as the creation of aesthetic environments. Life-long learning and community engagement are nurtured in all students.

The location of the program in a major design center of the Southwest provides design students with a broad range of learning experiences, including internship and employment opportunities.

Goals of the Program in Interior Design

In support of the Interior Design mission statement, the following are the goals of the program:

Provide a meaningful design studio sequence including current knowledge of codes, appropriate detailing of interior materials, principles of sustainable design, and requirements for meeting the needs of diverse populations.

Improve the internship opportunities available to our students in order to increase their knowledge of the profession and raise awareness of the program of Interior Design among professionals in this region.

Develop interdisciplinary partnerships to increase research opportunities for interior design undergraduates and faculty.

Develop student excellence in oral and written communication.

Encourage life-long learning through community engagement through which the students can put their interior design knowledge into practice.

About Us

The Bachelor of Science in Interior Design is a four-year program (128 credit hours), consisting of two two-year segments: **Basic Studies** and **Major Studies**.

The first two years (**Basic Studies**) is a foundation curriculum taken by all undergraduates at that level in the school. In addition to work in the arts and sciences, Basic Studies includes a series of lecture and studio courses which introduce the student to the concepts, history, skills, and vocabulary of design.

Following the two-year Basic Studies sequence, the student completes two years of **Major Studies**, an intensive series of courses and studios on the theory, history, skill, and practice of interior design. In the third and fourth years (Major Studies), the student concentrates in one of the design disciplines, taking courses and studios of a more advanced and professional nature.

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Advising:

BS INTD Academic Advisor: Kelsey Childress

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Admissions Requirements

BS INTD Program Director: Barbara Marini

Admission to the interior design-intended program is open to all students meeting the general requirements for entrance to the University.

Prospective Students Contact: James Brown, Academic Recruiter

Major Studies: Entrance Requirements

To declare a major (enter 3rd year) in Interior Design and gain permission to enroll in upper-level INTD courses:

- The student will have completed the final architecture-intended or interior design-intended courses and core curriculum.
- Have a minimum of a 2.8 GPA both overall at UT Arlington as well as within the major (first and second year ARCH courses).
- Complete a Major Declaration form available through the School of Architecture

Prior to completing the application in the School of Architecture office, ALL required interior design-intended course work must be completed.

GPA requirements may change based on changes in the curriculum of the program. Qualified students must meet the GPA requirements that are in place at the time they fulfill all other requirements to declare their major.

To declare a major for a fall semester, qualified applicants will submit their request to declare a major in the School of Architecture office at the completion of the spring semester, by the department specified deadline.

Students meeting the qualifications to declare a major during the summer or fall semesters will submit their request to declare a major at the completion of the fall semester, by the department specified deadline, for spring entrance consideration*.

Consideration for fall admission into the major studies programs for qualified summer applicants will be based on space availability.

Coursework taken at other institutions or universities must be noted on the application with accompanying attachments showing the completion of/ or current attendance in the course(s). It is the student's responsibility to ensure that all coursework is transferred to the Office of Admissions at UT Arlington in a timely manner.

Upon entrance into the major studies programs, students will be required to maintain the minimum 2.8 GPAs both overall at UT Arlington and within the major to remain active and proceed within the program.

Programs Cohort

The undergraduate programs in the School of Architecture at the University of Texas at Arlington are organized in a structured cohort format.

What Is a Cohort?

A cohort is a group of students that follows the same set schedule and progresses through a program together. The sequential scheduling of the courses promotes an interactive learning environment and facilitates networking opportunities and career-strengthening relationships.

How Does It Work?

The program consists of a sequence of courses that takes a minimum of eight semesters to complete. The courses are offered in specific semesters (Fall and Spring) that require the students to complete the prior level before proceeding to the next level. If a student gets off-track in the cohort, she/he must wait until the missing course(s) are offered again.

How Are the Courses Sequenced?

The major courses must be taken as follows (*Please note: For every year listed below, 'First Semester' is Fall and 'Second Semester' is Spring*):

Interior Design Students Cohort

How Are the Courses Sequenced?

First Year

Fall Semester	Hours	Spring Semester	Hours
UNIV-AR 1131 or INTD 1101		1 INTD 1342	3
ARCH 1301		3	
ARCH 1341		3	
		7	3

Second Year

Fall Semester	Hours	Spring Semester	Hours
ARCH 2303		3 ARCH 2304	3
ARCH 2551		5 INTD 2343	3
		INTD 2552	5
		8	11

Third Year

Fall Semester	Hours	Spring Semester	Hours
INTD 3321		3 INTD 3322	3
INTD 3323		3 INTD 3357	3
INTD 3338		3 INTD 3361	3
INTD 3553		5 INTD 3554	5
		14	14

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
INTD 4332		3 INTD 4344	3
INTD 4365		3 INTD 4366	3
INTD 4368		3 INTD 4493	4
INTD 4556		5 INTD 4557	5
		14	15

Total Hours: 86

Special Academic Requirements

GPA Requirements: Upon admission to the Major Studies, all declared majors must maintain a minimum GPA of 2.8 both within the major and in the cumulative GPA to continue in the upper level program to satisfy requirements for graduation.

Grade Requirements: A grade of C or higher must be earned in each School of Architecture course used for credit toward an undergraduate degree and minor offered by the school. A grade of C or higher must be earned in all required Math and Physics courses. Grades of P are not acceptable for classes in which a grade of C or higher is required.

Repetition of Courses: Three attempts to achieve a satisfactory grade are permitted for each required course in the School of Architecture. Beyond that number of attempts, the student is denied access to the course in question, or to the sequence of courses for which it is requisite. Enrollment in the course for the time sufficient to receive a grade, including the grade W, is considered an attempt.

Transfer of Credit: The extent of credit toward degree requirements for academic work done elsewhere will be determined by the representatives of the appropriate program. Students applying to transfer credits from studio courses taken elsewhere must present examples of that work for evaluation.

Student Projects: The School of Architecture reserves the right to retain, copyright, use, exhibit, reproduce, and publish any work submitted for course credit. The student is encouraged to develop a portfolio of all work accomplished in advanced courses for future professional and academic uses.

Competence in Oral Presentations

Students obtaining a Bachelor of Science degree in Interior Design demonstrate oral proficiency by taking and passing ARCH 2551 and INTD 2552 DESIGN STUDIO: INTERIOR DESIGN I, or approved equivalents.

COMPETENCE IN COMPUTER USE

Students obtaining a Bachelor of Science degree in Interior Design can demonstrate computer proficiency by:

- Taking and passing ENGL 1301 or ENGL 1302 at UT Arlington in a computer classroom environment or ENGL 3372, ENGL 3374, CSE 1301 (or equivalent), or any other class approved by the Undergraduate Assembly.
- Passing the University computer literacy examination

Suggested Course Sequence

First Year

Fall Semester	Hours	Spring Semester	Hours
UNIV-AR 1131 or INTD 1101		1 INTD 1342	3
ARCH 1301		3 ENGL 1302	3
ARCH 1341		3 HIST 1301	3
ENGL 1301		3 PHYS 1302	3
PHYS 1301		3 POLS 2311	3
POLS 2312		3	
		16	15

Second Year

Fall Semester	Hours	Spring Semester	Hours
ARCH 2303		3 ARCH 2304	3
ARCH 2551		5 INTD 2343	3
HIST 1302		3 INTD 2552	5
MATH 1303		3 MATH 1327	3
Language, Philosophy, & Culture Elective		3 Social & Behavioral Sciences Elective	3
		17	17

Third Year

Fall Semester	Hours	Spring Semester	Hours
INTD 3321		3 INTD 3322	3
INTD 3323		3 INTD 3357	3
INTD 3338		3 INTD 3361	3
INTD 3553		5 INTD 3554	5
Literature Elective		3 Art History Elective	3
		17	17

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
INTD 4332		3 INTD 4344	3
INTD 4365		3 INTD 4366	3
INTD 4368		3 INTD 4493	4
INTD 4556		5 INTD 4557	5
		14	15

Total Hours: 128

Competence in Oral Presentations

Requirements for a Bachelor of Science Degree in Interior Design

Architecture

UNIV-AR 1131 or INTD 1101	STUDENT SUCCESS ACADEMIC SUCCESS SKILLS INTERIOR DESIGN	1
ARCH 1301	INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN	3
ARCH 1341	DESIGN COMMUNICATIONS I	3
ARCH 2303	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I	3
ARCH 2304	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II	3
ARCH 2551	BASIC DESIGN AND DRAWING I	5

Interior Design

INTD 1342	DESIGN COMMUNICATION II	3
INTD 2343	DESIGN COMMUNICATION III	3
INTD 2552	DESIGN STUDIO: INTERIOR DESIGN I	5
INTD 3321	MATERIALS AND RESOURCES	3
INTD 3322	MATERIALS AND TECHNOLOGY	3
INTD 3323	LIGHTING DESIGN	3
INTD 3338	BUILDING CODES AND REGULATIONS	3
INTD 3357	BUILDING INFORMATION MODELING & VISUALIZATION	3
INTD 3553	DESIGN STUDIO: INTERIOR DESIGN II	5

INTD 3554	DESIGN STUDIO: INTERIOR DESIGN III	5
INTD 4332	PROFESSIONAL PRACTICE IN INTERIOR DESIGN	3
INTD 4344	DESIGN COMMUNICATION IV	3
INTD 4365	VR+AR+SR ENVIRONMENTS	3
INTD 4366	HUMAN CENTERED DESIGN	3
INTD 4368	INTERIOR DETAILING	3
INTD 4493	INTERIOR DESIGN INTERNSHIP	4
INTD 4556	DESIGN STUDIO: INTERIOR DESIGN IV	5
INTD 4557	DESIGN STUDIO: INTERIOR DESIGN V	5
Communications		
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
History		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Mathematics		
MATH 1303	TRIGONOMETRY	3
MATH 1327	ARCHITECTURAL CALCULUS WITH ANALYTIC GEOMETRY	3
Natural Science		
PHYS 1301	PHYSICS FOR NON SPECIALISTS I	3
PHYS 1302	PHYSICS FOR NON SPECIALISTS II	3
Art History		
Art history elective, approved		3
Language, Philosophy & Culture		
Designated courses in language, philosophy, and culture studies (https://catalog.uta.edu/academicregulations/degree requirements/generalcorerequirements/)		3
Literature		
English or modern languages literature or other approved substitute		3
Social and Behavior Sciences		
Designated courses in social or cultural anthropology, archaeology, social/political/cultural geography, economics, sociology, classical studies, or linguistics (https://catalog.uta.edu/academicregulations/degree requirements/generalcorerequirements/)		3
Total Hours		128

At least 36 hours must be 3000/4000 level.

- * Acceptance into the major studies (3rd year) is based on space availability.
Plans requirements/classes are subject to change. As needed, students may be changed into the most current plan. Any changes will not impact the students graduation timeline.

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Minors Advising (all minors):

arch.advising@uta.edu (<http://www.uta.edu/cappa/advising/>)

Minor in Architecture History

Minor Director: Dr. Kathryn (Kate) Holliday

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

The school offers numerous courses from which to select the 18 hours required for the Architecture History minor (<https://www.uta.edu/cappa/academics/minors/minor-history.php>).

Students who choose to pursue the minor in History of Architecture must complete our 6 hours of core courses (**ARCH 2303** and **ARCH 2304**).

Upon completion of the two core classes, students must select an additional 12 hours from our other Architecture History courses.

CORE		6
ARCH 2303	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I	3
ARCH 2304	HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II	3
ADDITIONAL 4 ARCH HISTORY COURSES		12
ARCH 3312	HISTORY OF CONTEMPORARY THEORY	3
ARCH 4305	THE CITY OF ROME	3
ARCH 4307	THE LIFE OF CITIES	3
ARCH 4308	HISTORY OF URBAN FORM	3
ARCH 4315	TOPICS IN THE HISTORY OF ARCHITECTURE AND DESIGN (as topic varies) ¹	3
ARCH 4316	MODERN ARCHITECTURE I	3
ARCH 4317	MODERN ARCHITECTURE II	3
ARCH 4353	HISTORY OF LANDSCAPE ARCHITECTURE	3
Total Hours		18

¹ A Special Topics courses whose offerings continually are changing.

Minor in Environmental and Sustainability Studies

Minor Director: Dr. Meghna Tare

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

The University offers a variety courses from which to select the 18 hours required for the Environmental and Sustainability Studies minor (<http://www.uta.edu/cappa/academics/planning-landscape-architecture/environmental-sustainability/>).

Students are required to take one core course, **ESST 2300**: Introduction to Environmental and Sustainability Studies, which surveys topics and methods in interdisciplinary studies of sustainability and the environment. This course should be taken in the freshman or sophomore year.

An additional 15 hours of coursework is to be completed from the list of courses below (or others approved by the ESS advisor). At least one course must be taken in each of the two groups. Students are encouraged to inquire about other courses that might qualify for credit. At least 6 hours must be taken as 3000- or 4000-level courses. Additional courses are expected to be approved each semester, so students are encouraged to consult regularly with the advisor. *Students may be allowed to take additional classes from alternate group with advisor approval.

CORE		3
ESST 2300	INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES	3
or CE 2300	INTRODUCTION TO SUSTAINABLE ENGINEERING	
FIELD OF INTEREST [4 courses] (choose group)		12
Group 1: Liberal Arts, Social Sciences, and Business		
or		
Group 2: Natural Sciences and Engineering		
ALTERNATE GROUP [1 course]		3
Total Hours		18

Minor in Urban and Public Affairs

Minor Director: Dr. Ivonne Audirac

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

The University offers numerous courses from which to select the 18 hours required for a minor.

The Urban Affairs minor (<https://www.uta.edu/cappa/academics/minors/urban-affairs.php>) is for students interested in complementing their academic career with a broader understanding of Urban Affairs, Urban Planning and the Environment, or Public Administration.

Students are required to take two core courses, **PLAN 1301: Intro to Urban Life** and **PLAN 3301: The Metroplex**,

Students pursuing the minor complete the 2 required core courses then select 4 courses (12 hours) from one of the fields of interest.

CORE	6
PLAN 1301 INTRODUCTION TO URBAN LIFE	3
PLAN 3301 THE METROPLEX	3
FIELD OF INTEREST [4 courses] (choose group)	12
Group 1: Public Administration	
or	
Group 2: Urban Affairs	
Total Hours	24

COURSES

INTD 1101. ACADEMIC SUCCESS SKILLS INTERIOR DESIGN. 1 Hour.

This is a required course intended to establish a solid overview of the School of Architecture and the interior design program for all first semester UTA students who intend to declare as an interior design major. Topics for the class include: critical thinking, presentation techniques, internships, attendance of exhibitions and lectures, navigating the advising process, portfolio review and techniques, and utilizing the library and other university resources. Other topics may be discussed. This course may be taken only once for credit.

INTD 1191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Permission of the instructor and the architecture undergraduate advisor required. Restricted to interior design-intended majors.

INTD 1342. DESIGN COMMUNICATION II. 3 Hours.

Introduction to concepts of design and building of interior spaces including ideation, visualization, and creative processes to solve more complex problems. Drawing and communication skills are developed using traditional and digital methods and architectural graphic conventions emphasized. This course is offered as ARCH 1342; credit will be granted only once. Prerequisite: ARCH 1301, ARCH 1341. Restricted to Interior Design-Intended, INTD_UCOL, Architecture-Intended, and ARCH_UCOL majors.

INTD 2343. DESIGN COMMUNICATION III. 3 Hours.

This is an introductory digital design course that develops visual awareness of the digital environment enabling students to express ideas graphically. This survey course focuses on general exposure to computer visualization software from 2D and 3D modeling and rendering, to technical drawings for design and construction documents. Emphasis is placed on the relationship of digital and graphic skills to the communication of ideas in both digital and printed media. This course was previously offered as INTD 3343; credit will only be granted once. Prerequisite: ARCH 2303, ARCH 2551, credit or concurrent enrollment in ARCH 2304. Restricted to Interior Design-Intended, INTD_UCOL, Architecture-Intended, and ARCH_UCOL majors.

INTD 2391. TOPICS IN INTERIOR DESIGN. 3 Hours.

Selected topics in concepts, philosophy, and models of interior design and allied arts of design.

INTD 2552. DESIGN STUDIO: INTERIOR DESIGN I. 5 Hours.

Exploration of the concepts and methods that shape interior spaces. Introduction to information gathering, exploration of three-dimensional spatial relationships and integration of color, light, and materials. Basics of interior construction, building components and professional standards are introduced. Emphasis on concept development, diagramming, space planning and human-centered design as applied to design solutions. This course offered as INTD 2552 and ARCH 2552; credit will not be granted for both. Prerequisite: ARCH 2303, ARCH 2551, credit or concurrent enrollment in ARCH 2304 and INTD 2343. Restricted to Interior Design-intended and Architecture-intended majors.

INTD 3305. HISTORY OF INTERIOR DESIGN. 3 Hours.

This course is a chronological survey that spans from the late nineteenth century to the present and explores a range of scales (micro to macro) from furniture, lighting, fine and decorative arts in the interior, to the related fields of architecture, landscape design, and city planning. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3321. MATERIALS AND RESOURCES. 3 Hours.

Survey of materials and resources in the design of the built environment in terms of aesthetics, function, and well-being. Exploration of construction processes, application, building codes, and life-cycle cost. Emphasis on understanding and specification of materials based on performance criteria and environmental sustainability. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3322. MATERIALS AND TECHNOLOGY. 3 Hours.

A course to investigate and explore the application of new and emerging materials in the context of sustainability, innovation and global perspective. Through the integration of technology, digital fabrication and prototyping, and emerging methodologies students explore new concepts in the use of materials that contribute to design of the built environment and human-centered design. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3323. LIGHTING DESIGN. 3 Hours.

An introduction to lighting technologies, luminaires, and design concepts. Exploration of creative and functional application of light sources relative to the impact on human experience, well-being, and environmental considerations. Course content emphasizes the integrated aspects of architectural lighting in the context of building systems. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3338. BUILDING CODES AND REGULATIONS. 3 Hours.

This course examines laws, codes, and regulatory processes applied to the built environment including Federal, State, and local codes. Students learn the integration of codes, Federal laws, and standards in the design process and apply concepts to design solutions. Awareness of building systems is emphasized as students learn about the codes and standards organizations, communication strategies, and processes that impact the practice of interior design and their role on interdisciplinary teams. This course is offered as INTD 3338 and ARCH 4338; credit will be granted only once. Prerequisite: Credit or concurrent enrollment in INTD 3553. Junior standing in the program. Restricted to Interior Design and Architecture majors.

INTD 3357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

An introduction to Building Information Modeling software to develop interior construction detailing and rendering techniques. The course is an overview of the development of an integrated set of interior construction documents, including plans, elevations, details, and schedules as well as visualization strategies. This course is offered as INTD 3357 and ARCH 4357; credit will only be granted once. Prerequisite: INTD 2343 and Junior standing in program. Restricted to Architecture and Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3361. ENVIRONMENTAL DESIGN & SUSTAINABILITY. 3 Hours.

An exploratory course that considers the impact of design decisions on the environment. Principles of sustainable design are reviewed including theoretical frameworks, concepts, certifications and standards of practice. Environmental stewardship and ethics are introduced as a model for professional practice. Concepts of adaptive re-use, historic preservation, and restoration are introduced. Prerequisite: Junior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3553. DESIGN STUDIO: INTERIOR DESIGN II. 5 Hours.

A studio course in the application of interior design principles to complex problems. Emphasis on concept development, programming, and the integration of building systems as part of the design process. Introduction to research strategies to inform design decisions and global awareness. Advanced presentation skills and use of technology are integrated to communicate the design solution. Prerequisite: Credit or concurrent enrollment in INTD 3321, INTD 3323, and INTD 3338. Junior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3554. DESIGN STUDIO: INTERIOR DESIGN III. 5 Hours.

A studio course in the application of interior design principles to complex problems. Emphasis on concept development, programming, and the integration of building systems as part of the design process. Introduction to research strategies to inform design decisions and global awareness. Advanced presentation skills and use of technology are integrated to communicate the design solution. Prerequisite: INTD 3553 and credit or concurrent enrollment in INTD 3357. Junior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor. Junior or senior standing in the program. Restricted to Interior Design majors.

INTD 4195. SELECTED TOPICS IN INTERIOR DESIGN. 1 Hour.

Studio and lecture course to explore and present selected topics in interior design. May be repeated for credit as topics change. Prerequisite: Permission of the Instructor or the Architecture Undergraduate Advisor. Junior standing in program. Restricted to Interior Design majors.

INTD 4314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture. This course is offered as ARCH 4314 and INTD 4314; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

INTD 4332. PROFESSIONAL PRACTICE IN INTERIOR DESIGN. 3 Hours.

Introduction to business practices and procedures for interior design including ethics, governmental regulations, financial awareness, and project management. Students develop portfolio, resumes, and other marketing materials through individual and teamwork. Exploration of new models for practice and life-long learning in a global market. Prerequisite: Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4344. DESIGN COMMUNICATION IV. 3 Hours.

A digital design course focusing on advanced visual communication skills. The class investigates the digital realm as a tool to develop and communicate ideas graphically, analytically, and conceptually. Application of 3D computer drawing, modeling, lighting, mapping, and rendering to explore concepts and present individual and team-based design solutions. Prerequisite: INTD 4368 and INTD 4556. Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4345. ARCHITECTURAL GRAPHICS. 3 Hours.

Graphic and signage considerations for interior environments. Wayfinding methods will be addressed. Senior standing in the program. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability. Prerequisite: Senior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4365. VR+AR+SR ENVIRONMENTS. 3 Hours.

This course explores the use of immersive technology to develop virtual, augmented and simulated reality environments. Specifically, emphasis will be placed on understanding the differences and opportunities between the three modalities, the software employed and applications for the design and visualization process. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program and permission of the Interior Design Program Director. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4366. HUMAN CENTERED DESIGN. 3 Hours.

This course explores design from the perspective of human interaction with the environment in which they live. A focus on the physical, social, psychological, social, and cultural factors that influence design decisions. is a fundamental premise of this course. Students understand that the design of the built environment is based on the continual motion of life, social systems, and symbiotic human relationships. Human behavioral theories are integrated into the course. Prerequisite: Senior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4368. INTERIOR DETAILING. 3 Hours.

Application of design communication to interior construction detailing using more advanced software. Develop skills in articulating designs and detailing special elements related to the interior and understand installation processes. The course reviews interior construction documents, details, and schedules. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4369. FURNITURE DESIGN AND CONSTRUCTION. 3 Hours.

A studio course in the design, detailing, and construction of furniture. Prerequisite: INTD 3553 and INTD 3555. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4391. CONFERENCE COURSE. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor. Junior or senior standing in the program. Restricted to Interior Design majors.

INTD 4394. DESIGN RESEARCH METHODS AND APPLICATION. 3 Hours.

Research conducted by undergraduate students that contributes to ongoing faculty research within the Interior Design program or the School of Architecture. Research must be conducted under the supervision of a full-time Interior Design or Architecture faculty member. Prerequisite: Senior standing in the program and permission of the Interior Design Program Director. Open to Architecture majors as an elective based on space availability. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4395. SPECIAL TOPICS IN INTERIOR DESIGN. 3 Hours.

This course addresses areas of special interest to Interior Design studies and gives students an opportunity for a more in-depth exploration of selected topics than is possible within the embedded content of the core course requirements. Prerequisite: Junior standing in the program. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability.

INTD 4493. INTERIOR DESIGN INTERNSHIP. 4 Hours.

Workplace or professional experience: internship agreement negotiated between intern and site supervisor requiring program approval. Duties should be challenging, productive, and develop professional skills. documentation of work performed, weekly timesheets and final presentation required. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program and permission of the Interior Design Program Director. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4556. DESIGN STUDIO: INTERIOR DESIGN IV. 5 Hours.

Research for evidence based design decision-making in the context of emerging design practice. Introduction to research methodologies including primary and secondary research to frame design problems. Application of design theories and principles to understand human interaction with the built environment. Emphasis on application of interior knowledge to solve complex design problems. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4557. DESIGN STUDIO: INTERIOR DESIGN V. 5 Hours.

Synthesis of design knowledge to a complex project scenario. Students apply critical and creative thinking to communicate understanding of large scale interior environments; focus on building systems and technology to communicate concepts and solutions. The impact of interior design on human well-being in the context of global issues is explored. Prerequisite: INTD 4368 and INTD 4556. Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4591. CONFERENCE COURSE. 5 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: INTD 3553 and INTD 3555. Senior standing in program. Restricted to Interior Design majors.

INTD 4595. SELECTED TOPICS IN INTERIOR DESIGN. 5 Hours.

Studio and lecture courses to explore and present selected topics in interior design. May be repeated for credit as topics change. Prerequisite: permission of the Instructor or the Architecture Undergraduate Advisor. Senior standing in program. Restricted to Interior Design majors. The course may be repeated up to four times as the topics change.

Landscape Architecture

Master's Degree

- Master of Landscape Architecture (<https://www.uta.edu/academics/schools-colleges/cappa/academics/landscape-architecture/>)

Bachelor's Degree

- Bachelor of Science in Sustainable Urban Design (<https://www.uta.edu/academics/schools-colleges/cappa/academics/landscape-architecture/>)

Overview

The University of Texas at Arlington, Landscape Architecture Program offers the following LAAB-accredited Master of Landscape Architecture degree programs:

- **Path A** (89 credit hours; requires a 4-year bachelors degree)
- **Path B** (59 credit hours; requires a 4-year pre-professional degree in architecture or a 4-year professional UT Arlington interior design degree)

The University of Texas at Arlington, Landscape Architecture Program also offers the following post-professional Master of Landscape Architecture degree program:

- **Path C** (30 credit hours; requires a professional degree in landscape architecture)

Vision Statement

The UT Arlington Master of Landscape Architecture program advances design and planning solutions for environmental resiliency, urban placemaking, quality of life, and well-being. Through interdisciplinary teaching, research, and service activities, the program promotes leading-edge design and planning by capitalizing upon its unique position within the urban lab environment that Dallas/Fort Worth area offers, providing students with skills that are transferable to cities around the globe.

Mission Statement

Students and faculty within the Master of Landscape Architecture program seek to fulfill its vision on various levels, beginning with the program and radiating outward.

Landscape Architecture Program

The program provides a creative and engaging classroom, as well as an experiential learning environment that promotes critical and creative thinking about advanced solutions for current and future urban landscapes. A commitment to continual growth of the profession is manifested in lifetime learning opportunities including continuing education, certificates, and executive programs for working professionals

College of Architecture, Planning and Public Affairs

The Landscape Architecture program encourages collaborative teaching and research within the College of Architecture, Planning and Public Affairs.

University of Texas at Arlington

The Landscape Architecture program encourages collaborative teaching, research and outreach programs across the University with such programs as Engineering, Environmental Sciences, Sociology, Real Estate Development and Business Administration. It also provides distinctive and creative contributions to the realization of the University's Strategic Plan, especially regarding three of the plan's themes:

- Health and the Human Condition – by fostering design for cities of well-being.
- Sustainable Urban Communities – by teaching, developing and transferring knowledge regarding the changes in our natural, cultural and social environments.
- Global Environmental Impact –by attracting and engaging a diverse student body and faculty to study issues and disseminate research regarding urban landscapes and their global environmental impact.

Community Outreach

The Landscape Architecture program acts as a bridge between academia and industry by providing a hub for service learning opportunities that benefit a wide range of community partners. We do this by capitalizing upon the broad and diverse expertise of faculty research, and by integrating creative and thoughtful design that addresses the culture, nature, and people within a rapidly growing metropolitan environment to help create viable, sustainable, and resilient urban communities.

Our Values

Excellence in our education programs – We value excellence and seek the highest standards in teaching by engaging students to develop creative and critical thinking, an appreciation of lifetime learning, and the professional skills necessary to address issues of landscape architecture, urban design, sustainability, and quality of life.

Diversity – We value and promote diversity in our students, faculty, design and planning practices, and see diversity as one of the strengths of our program.

Research – We value and promote original research and scholarly activities that apply the diverse expertise of faculty students to addressing complex urban issues.

Collaboration – We value collaboration within our students, our MLA faculty, CAPPa, and across the University, as well as with our current and developing business, government and nonprofit community partners.

Service to our community – We value service as a key element of structured experiential learning that results in creative solutions to urban landscape, urban design, sustainability, and city building challenges, with the goal of fostering quality of life and well-being.

Accreditation

The Landscape Architecture Program is fully accredited by the Landscape Architecture Accreditation Board. Graduates from the Landscape Architecture Program are qualified to sit for the Landscape Architecture Registration Exam which, when successfully passed, qualifies individuals to practice as landscape architects in the State of Texas.

Graduate Teaching/Research Assistantships

To be considered for a Graduate Teaching or Research Assistantship, the candidate must be admitted without provisional conditions. In order to be eligible for teaching assistantships, students whose native language is not English, must complete extramural training in English as approved by the Landscape Architecture Program and the Graduate School.

Fellowships and Scholarships

To be considered for fellowships or scholarships in the Landscape Architecture Program the candidate must have a favorable review in most of the evaluation criteria. Fellowships and scholarships in landscape architecture are limited and very competitive. Generally, candidates must be new students coming to UT Arlington, must have a GPA of 3.0 in their last 60 undergraduate credit hours and any graduate hours, and must be enrolled in a minimum of 9 hours in both long semesters to retain their fellowships or scholarships.

Advising

MLA Academic Advisor: Ana-Maria Peredo-Manor

BS SUD Academic Advisor: Kelsey Childress

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Master's Admissions Requirements

MLA Program Director: Diane Jones Allen, D. Eng, ASLA, PLA

Prospective Students Contact: James Brown, Academic Recruiter

Applicants must meet the general requirements of the Office of Graduate Studies. A personal interview with the Director, Graduate Advisor or members of the landscape architecture faculty is strongly recommended. Three letters of recommendation are required and it is suggested that at least two of the letters come from former educators and/or academic contact. Letters of recommendation and personal essay should be sent directly to the CAPPa College Recruiter (cappa.advising@uta.edu) via email or postal service, CAPPa RECRUITER, Box 19108, Arlington TX 76019. Applicants also are required to submit scores from the Graduate Record Exam (GRE). Also required is a grade point average (GPA) of 3.00 as calculated by the Office of Graduate Studies.

Selected applicants holding first professional degrees in landscape architecture, or in some cases degrees related to landscape architecture (such as architecture, engineering, environmental design, horticulture, interior design, planning, and the like) are required to submit portfolios reflecting the applicants' professional and/or academic experiences and interests. Portfolios are assessed according to proficiency in design, presentation and layout, technical skills, and content, similar to criteria used in design studios.

Applicants who have a weakness in one of the criteria for admission can enhance their credentials with strengths in the remaining criteria.

Applicants can be admitted according to four conditions: Unconditional; Provisional; Probationary; and, Deferred. Applicants who do not meet the criteria of one of these conditions will be denied admission to the Program.

Unconditional Admission

Applicants must possess a bachelor's degree from an accredited college or university. Transcripts from all previous college or university work, along with scores from the Graduate Record Exam (GRE), and three letters of recommendation are required of all applicants. In addition, applicants should have a minimum Grade Point Average (GPA) of 3.0, as calculated by the Office of Graduate Studies. Applicants holding the first professional degree in landscape architecture, or related fields, must submit a portfolio. Applicants should contact the Landscape Architecture Graduate Advisor (ampmanor@uta.edu) or Program Director regarding this requirement.

Provisional Admission

Those who have submitted their applications forms, but whose packets are incomplete, can be admitted provisionally if their GPA meets minimum requirements, and if the Program and the Office of Graduate Studies have received official transcripts. In this case, incomplete materials could include letters of recommendation, GRE scores, and/or portfolios.

Probationary Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, GRE scores, and GPA), can be admitted on probation, with the condition that they make no less than a B in the first 12 hours of coursework in landscape architecture. Such students must complete no fewer than 9 credits during the semester in which they are on probation.

Deferred Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, GRE scores, and GPA), and/or who have not submitted all of the materials required for unconditional admission, can have their applications deferred for one semester, until outstanding requirements and criteria are met.

International Student Admission

International applicants must meet the Degree Requirements (letters of recommendation, GRE scores, and GPA), and must be admitted in one of the admission categories described above. In addition, applicants whose native language is not English must have a demonstrated speaking ability in English. They also must meet the Program's minimum required score of 575 on the paper exam, or an equivalent score on the computer based- or internet-based tests, on the Test of English as a Foreign Language (TOEFL). International applicants who do not meet the Program's minimum TOEFL score, must complete extramural training in English, as approved by the Program and the Office of Graduate Studies.

Graduate Teaching/Research Assistantships

To be considered for a Graduate Teaching or Research Assistantship, the candidate must be admitted without provisional conditions. In order to be eligible for teaching assistantships, students whose native language is not English, must complete extramural training in English as approved by the Program and the Office of Graduate Studies or a score of 23 on the TOEFL speaking.

Fellowships and Scholarships

To be considered for fellowships or scholarships in the Program the candidate must be admitted without provisional conditions and have a favorable review in most of the evaluation criteria. Fellowships and scholarships in landscape architecture are limited and very competitive. Generally, candidates must be new students coming to UT Arlington, must have a GPA of 3.0 in their last 60 undergraduate credit hours and any graduate hours, and must be enrolled in a minimum of 9 hours in both long semesters to retain their fellowships or scholarships. For further information and to apply for scholarships visit: <http://www.uta.edu/cappa/resources/scholarships/index.php> (<http://www.uta.edu/cappa/resources/scholarships/>)

Landscape architecture master's design thesis option

The Master's Design Thesis option requires the student to conduct independent research, but also design investigations to demonstrate their capacity for rigorous original thinking. The design thesis, as does the written thesis, will include a research proposal, a written research portion and also design products (analysis and design drawings) that meet the highest standards of academic excellence and contribute significantly to the discipline and profession. Students will take research methods, masters comp/thesis prep., and thesis.

CAPPA Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Landscape Architecture Degree Requirements

First Professional Degree Program

The core curriculum for the Program in Landscape Architecture prepares students holding a college degree in a field other than landscape architecture or a related design discipline to complete the requirements for the first professional degree in landscape architecture. The core curriculum also provides students with the basic equivalent of a bachelor's degree in landscape architecture. For full-time students with degrees from other non-design disciplines, the core usually takes three semesters to complete. For all students, electives must be concentrated in areas of interest which support the student's thesis and/or the student's professional objectives.

An approved degree plan must be submitted no later than the start of the student's second semester of graduate work.

Each student will be counseled, based upon interests and background, to develop an appropriate degree plan.

The following coursework is a suggestion to meet the Program's mission for the Thesis (LARC 5698) and the Design Thesis (LARC 5693) options:

Path A Students

First Year

	Fall Semester	Hours	Spring Semester	Hours
	LARC 5320		3 LARC 5331	3
	LARC 5330		3 LARC 5350	3
	LARC 5661		6 LARC 5662	6
	12		12	

Second Year

Summer Session	Hours	Fall Semester	Hours	Spring Semester	Hours
LARC 5668		6 LARC 5301		3 LARC 5342	3
		LARC 5341		3 LARC 5380	3
		LARC 5663		6 LARC 5664	6
		LARC 53xx Larc Elective		3	
	6		15		12

Third Year

	Fall Semester	Hours	Spring Semester	Hours
	LARC 5397		3 LARC 5312	3
	LARC 5665		6 LARC 5340	3
	LARC 53xx Larc Elective		3 LARC 53xx Larc Elective	3
			LARC 53xx Larc Elective	3
	12		12	

Fourth Year

	Fall Semester	Hours
	LARC 5294	2
	LARC 5698	6
	8	

Total Hours: 89

- After completing 45 credit hours, the first professional degree student is evaluated by means of an academic review and portfolio review by the Graduate Studies Committee. The committee identifies areas of strength and weakness in the student's performance and recommends appropriate action.
Upon completion of the three core semesters, the student is required to develop an area of specialization or primary interest. The student must consult with faculty advisors to complete this step, which includes a preliminary agreement between student and faculty advisors regarding the specialization or primary interest and the appropriate research method to support it. If a student is interested in Advanced Landscape Architecture, for example, a probable program of study could look like the following terms.
- The Program in Landscape Architecture will not allow a student to take LARC 5693 more than 4 times before a "Fail" grade is assigned and the student has to be reinstated in order to complete their degree.

Students pursuing other primary areas of interest also must consult with appropriate faculty advisors for approval.

Advanced Standing

Students from backgrounds other than landscape architecture or its related fields must complete the 89 credits required in the curriculum. Students with degrees and/or professional experience in fields related to landscape architecture (such as architecture, engineering, environmental design, horticulture,

interior design, planning and the like) may apply for advanced standing, allowing them to enter the academic phase (second year) of the curriculum. Advanced standing in these cases requires a minimum of 59 total credit hours for graduation.

Students with first professional degrees in landscape architecture also may apply for advanced standing, allowing them to enter the research (third year) phase of the curriculum. Advanced standing in these cases requires a minimum of 30 total credit hours for graduation.

Minimum Program for Advanced Standing

(For students from fields of study related to landscape architecture)

Path B Students

First Year					
Summer Semester	Hours	Fall Semester	Hours	Spring Semester	Hours
LARC 5368	3	LARC 5312	3	LARC 5331	3
		LARC 5320	3	LARC 5380	3
		LARC 5330	3	LARC 5382	3
		LARC 5663	6	LARC 5664	6
	3		15		15
Second Year					
		Fall Semester	Hours	Spring Semester	Hours
		LARC 5340		3 LARC 5294	2
		LARC 5397		3 LARC 5698	6
		LARC 5665		6 Study in Specialization	3
		Study in Specialization		3	
	15		11		
Total Hours: 59					

Minimum Program for Advanced Standing

(For students with first professional degrees in landscape architecture from LAAB accredited schools)

Path C Students

First Year				
Fall Semester	Hours	Spring Semester	Hours	
LARC 5380		3 LARC 5294		2
LARC 5397		3 LARC 5302		3
LARC 5665		6 LARC 5698		6
Specialization Option Course		3 Specialization Option Course		4
		15		15
Total Hours: 30				

COURSES

LARC 4191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Departmental permission.

LARC 4300. INTRODUCTION TO LANDSCAPE ARCHITECTURE. 3 Hours.

An orientation to this environmental-design profession. Landscape architecture applies a blending of art with knowledge of natural processes and historical, cultural, and social dynamics to design richly supportive and beautiful outdoor places. Open to all students.

LARC 4301. SITE PLANNING AND DEVELOPMENT PROCESSES. 3 Hours.

Presents the processes and practices of site planning and development, including site inventory, analysis, and assessment of potential building sites. Students examine the natural, cultural, and social systems that affect design decisions, as well as the language and literature of landscape architecture. Prerequisite: 3.0 or higher GPA and department consent.

LARC 4325. URBAN SKETCHING. 3 Hours.

This course employs freehand, on-location sketching as a means for exploring and understanding the rich visual language of the urban environment. Lectures will introduce timeless urban design principles and field sketching techniques, which will be further developed through on-location sketching in the city. The course would be of interest to students of art, architecture, landscape architecture, planning, art and related fields. Some background in sketching through art or design coursework is recommended. Prerequisite: 3.0 or higher GPA and department consent.

LARC 4330. PLANT IDENTIFICATION AND ECOLOGY. 3 Hours.

Examines the design characteristics and horticultural requirements of a broad palette of plants adapted to the North Texas region. Field trips are required to learn the plants at both ornamental gardens and local ecological communities. Prerequisite: 3.0 or higher GPA and department consent.

LARC 4351. ADVANCED COMPUTER AIDED DESIGN. 3 Hours.

Focus is on a methodology for designing and illustrating with computer graphics that is very compatible with the design and production workflow of most landscape architecture offices. All work is done in an AutoCAD environment using AutoCAD for modeling and Lumion for rendering still images, interactive panoramas, and both viewpoint and key-frame animations. Photoshop is used for the creation of texture maps, image manipulation and photo-montage. Emphasis is on working intuitively and creatively. Prerequisite: ARCH 3343 or INTD 3343; 3.0 or higher GPA and department consent.

LARC 4391. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor and the Landscape Architecture Program Director.

LARC 4395. SELECTED TOPICS IN LANDSCAPE ARCHITECTURE. 3 Hours.

Studio and lecture courses to explore and present selected topics in landscape architecture and design. May be repeated for credit as topics change. Prerequisite: Permission of the Landscape Architecture Program Director.

LARC 4695. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 6 Hours.

Studio and lecture courses to explore and present selected topics in landscape architecture and design. Not repeatable for credit. Prerequisite: Permission of the Landscape Architecture Program Director.

LARC 5191. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 1 Hour.

Special subjects and issues in landscape architecture that may be studied independently under faculty supervision. May be repeated for credit.

LARC 5294. MASTERS COMPREHENSIVE EXAMINATION. 2 Hours.

Must be taken concurrently with Thesis. Directed study, consultation, and comprehensive examination of coursework, leading to and including the thesis. Oral presentation required. Required of all Master of Landscape Architecture students in the semester in which they plan to graduate. Prerequisite: LARC 5397.

LARC 5300. INTRODUCTION TO LANDSCAPE ARCHITECTURE. 3 Hours.

An orientation to this environmental-design profession. Landscape architecture applies a blending of art with knowledge of natural processes and historical, cultural, and social dynamics to design richly supportive and beautiful outdoor places. Open to all students.

LARC 5301. SITE PLANNING AND DEVELOPMENT PROCESSES. 3 Hours.

Presents the processes and practices of site planning and development, including site inventory, analysis, and assessment of potential building sites. Students examine the natural, cultural, and social systems that affect design decisions, as well as the language and literature of landscape architecture.

LARC 5302. LAND DEVELOPMENT PLANNING. 3 Hours.

The process of land development planning for landscape architects. Detailed expansion of LARC 5301. Uses case studies in land development planning to instruct students in the environmental, economic, legal, and visual issues associated with the land planning process.

LARC 5312. HISTORY AND THEORY OF LANDSCAPE ARCHITECTURE. 3 Hours.

Traces landscape planning and design from pre-history through Egyptian, Greek, Roman, Islamic and Medieval gardens to Italian, French, and English landscape approaches, culminating in the mid-19th century. Relates landscape design to societal, cultural, technological and belief systems of each period. Culminates in the contemporary history of the profession from Andrew Jackson Downing to the present day. The growth and development of the profession, professional education, the environmental movement, large scale regional land planning and significant landscape architectural projects of the past century and a half.

LARC 5320. COMMUNICATIONS FOR LANDSCAPE ARCHITECTS. 3 Hours.

Primary class for the development of graphic and communication skills in landscape architecture. Provides a method for transferring conceptual ideas into legible graphic presentations. Should be taken concurrently with LARC 5661 Design Studio I.

LARC 5321. ADVANCED COMMUNICATIONS. 3 Hours.

Focuses on the symbolic and representational computer graphics as well as communication and presentation techniques typically used in landscape architecture profession. Building on the graphic thinking, production, and communications skills covered in LARC 5320 and further expanding those basics to digital technologies and media. It also introduces students to fundamental concepts and principles of design and graphic composition in the digital environment. Prerequisite: LARC 5320.

LARC 5323. STUDIO TEACHING. 3 Hours.**LARC 5324. LANDSCAPE ARCHITECTURE AND ENVIRONMENTAL ART SEMINAR. 3 Hours.**

Siting and creating works of art; analysis of the creative processes of the two different-yet-related disciplines; case studies of built works. Communication of ideas through environmental media.

LARC 5325. URBAN SKETCHING. 3 Hours.

This course employs freehand, on-location sketching as a means for exploring and understanding the rich visual language of the urban environment. Lectures will introduce timeless urban design principles and field sketching techniques, which will be further developed through on-location sketching in the city. The course would be of interest to students of art, architecture, landscape architecture, planning, art and related fields. Some background in sketching through art or design coursework is recommended.

LARC 5326. DESIGN AND HUMAN BEHAVIOR. 3 Hours.

This course is an introduction to a range of viewpoints, concepts and characteristics of human behavior which should be taken into consideration when designing the urban environment. Cultural, social and psychological factors will be considered. Various theories and methods of environmental assessment and design will be studied that are based on an understanding of mutually supportive relationships between human beings and their physical environment. Field study will be employed to exercise theories and techniques explored.

LARC 5330. PLANT IDENTIFICATION AND ECOLOGY. 3 Hours.

Examines the design characteristics and horticultural requirements of a broad palette of plants adapted to the North Texas region. Field trips are required to learn the plants at both ornamental gardens and local ecological communities.

LARC 5331. PLANTING DESIGN. 3 Hours.

Design applications of plant material. Students apply the design problem-solving approach to the detailed aspects of planting design and complete a progressively-more-difficult series of problems to practice techniques and methods of plant manipulation that encompass both the aesthetic, programmatic, environmental, and ecological objectives of planting design. Prerequisites: LARC 5330; LARC 5661; LARC 5662.

LARC 5340. PROFESSIONAL PRACTICE. 3 Hours.

Ethical, legal, and administrative aspects of the public, private, and academic spectrums of practice in landscape architecture.

LARC 5341. LANDSCAPE TECHNOLOGY I. 3 Hours.

Surveying, site grading, storm water management, vertical and horizontal curves and an overview of the construction documentation process employed by landscape architects.

LARC 5342. LANDSCAPE TECHNOLOGY II. 3 Hours.

Examines hardscape materials and methods typical to the practice of landscape architecture, through readings, examinations, design detail exercises, and the creation of a complete set of construction documents. Construction site tours are required with area industry professionals. Prerequisites: LARC 5341.

LARC 5344. PARK AND RECREATION DESIGN AND PLANNING. 3 Hours.

History, data collection, program formulation, and design principles for public and private park and recreation systems and sites. Includes management objectives, operations and maintenance, and public input as planning components.

LARC 5350. LANDSCAPE ARCHITECTURE COMPUTER APPLICATIONS. 3 Hours.

Examines various computer applications currently used in office practice. Computer applications used for office management, site analysis, design development, construction documentation, and cost estimating. Introduction to computer aided design applications and the underlying theories of application.

LARC 5351. ADVANCED COMPUTER AIDED DESIGN. 3 Hours.

Focus is on a methodology for designing and illustrating with computer graphics that is very compatible with the design and production workflow of most landscape architecture offices. All work is done in an AutoCAD environment using AutoCAD for modeling and Lumion for rendering still images, interactive panoramas, and both viewpoint and key-frame animations. Photoshop is used for the creation of texture maps, image manipulation and photo-montage. Emphasis is on working intuitively and creatively. Prerequisite: LARC 5350.

LARC 5368. DESIGN PRACTICUM. 3 Hours.

An internship program which includes approved work done in a landscape architect's office or one of the related design fields. The purpose of the practicum is to provide students with practical design experience. Students may enroll in LARC 5368 for half-time employment or LARC 5668 for full time employment.

LARC 5380. RESEARCH METHODS IN LANDSCAPE ARCHITECTURE. 3 Hours.

Theories of practical research and methods of applying them as they relate to landscape architecture. Includes research program development, data collection and analysis, thesis proposal writing, and research tools and techniques. Emphasis is on qualitative methods. Prerequisites: LARC 5661, LARC 5662.

LARC 5382. URBAN DESIGN SEMINAR. 3 Hours.

The Seminar establishes a basic critical understanding, and a critique of urban design by reviewing its past, present and the future as an academic field and an area of practice. The seminar introduces urban design as a transdisciplinary specialization and professional endeavor that encompasses landscape architecture, architecture, city planning, and real estate to shape and influence the built environment primarily within urban context. Students actively present and lead informed discussions on topics such as urban form, urban landscapes, land-use patterns, population density, circulation, legibility, public art, environmental behavior and urban/rural interchange. Field trips are required.

LARC 5391. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 3 Hours.

Special subjects and issues in landscape architecture that may be studied independently under faculty supervision. May be repeated for credit.

LARC 5395. SELECTED TOPICS IN LANDSCAPE ARCHITECTURE. 3 Hours.

Selected studio or lecture course offerings in specific areas of expertise or interest. Course allows the program the flexibility to address the ever-changing needs of students and the profession by offering courses beyond the scope of the core curriculum. May be repeated for credit.

LARC 5397. THESIS PREP. 3 Hours.

Preparation for landscape architecture thesis (design or written) on design, technology, history or professional principles. Students work closely with a landscape architecture faculty advisor and thesis committee to complete the proposal for a written or design thesis and begin thesis work. Prerequisite: LARC 5380.

LARC 5398. THESIS. 3 Hours.

Independent research and presentation of findings under the direction of a supervising committee. The findings of the thesis should extend the boundaries of the professional discipline by either presenting new and unique ideas or information, or by interpreting existing knowledge from a different perspective. Prerequisite: LARC 5397.

LARC 5623. STUDIO TEACHING PRACTICUM. 6 Hours.

Students spend one semester as a teaching assistant in the studio sequence under the supervision of the assigned faculty member. They will observe the methods employed in the studio and prepare a comprehensive evaluation of the studio in conjunction with the instructor. The students will oversee one short studio project and evaluate its success or failure based on the criteria learned in LARC 5323 and the goals and objectives of the test project. Prerequisite: LARC 5323.

LARC 5660. ENRICHMENT DESIGN STUDIO. 6 Hours.

Review of the principles and processes of design presented in Design Studios I, II, and III. Provides an opportunity for students with weak design and graphic skills to improve those skills to meet requirements for Design Studio IV. Course can use design competitions as projects, for advanced students who have completed the studio sequence. May be repeated for credit as specific topics vary. Prerequisite: LARC 5661 and LARC 5662.

LARC 5661. DESIGN STUDIO I. 6 Hours.

A design course for students with no background in landscape architecture or design. Outlines the site planning and site design decision-making process. Focuses on providing students with the verbal, intellectual, and graphic tools necessary to successfully tackle a design problem and bring it to a schematic level of completion. It is highly recommended that this course be taken concurrently with LARC 5320.

LARC 5662. DESIGN STUDIO II. 6 Hours.

A continuation of LARC 5661. Basic design principles and their application to three-dimensional spaces. Examines how humans occupy exterior space and combines this information with the principles of design to create garden scale models. Models are used as a medium for design expression. Landscape character, design simulation, landscape media, landscape context, and human spatial experience are included.

LARC 5663. DESIGN STUDIO III: SITE PLANNING. 6 Hours.

Features the process of solving complicated site planning and site design problems. Each phase of the site planning process is examined in detail by undertaking one or more studio problems that involve resolution of issues related to existing site conditions, program development, conceptual design, design development, and design detailing.

LARC 5664. DESIGN STUDIO IV: ENVIRONMENTAL PLANNING. 6 Hours.

Studio IV is designed to provide the fundamental concepts and mechanisms underlying natural processes, and environmental planning and design. It addresses the influence of both natural and human factors on landscape planning and landscape architectural design within the context of sustainability. The course expands the regional planning and design to the environment as a large scale ecological unit, independent of political boundaries, through the use of Geographic Information System (GIS) and Geodesign framework. Prerequisite: LARC 5341, LARC 5661, LARC 5662, and LARC 5663.

LARC 5665. DESIGN STUDIO V: THE URBAN LANDSCAPE. 6 Hours.

The studio uses both real and hypothetical projects as well as competitions as design problems which require in depth understanding of behavioral, social, environmental, and economic conditions in relation to landscape architecture and urban design. Basic design and planning principles acquired in earlier studios are reiterated, and solutions to new problems on complex urban projects are introduced that benefit from interactions with architects, planners, urban designers, and developers. Prerequisite: LARC 5341, LARC 5342, LARC 5661, LARC 5662, LARC 5663, and LARC 5664.

LARC 5668. DESIGN PRACTICUM. 6 Hours.

An internship program which includes approved work done in a landscape architect's office or one of the related design fields. The purpose of the practicum is to provide students with practical design experience. Students may enroll in LARC 5368 for half-time employment or LARC 5668 for full time employment.

LARC 5691. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 6 Hours.

Special subjects and issues in landscape architecture that may be studied independently under faculty supervision. May be repeated for credit.

LARC 5693. MASTERS DESIGN THESIS. 6 Hours.

Independent research and design/planning investigations, under the direction of a supervising committee, that demonstrate rigorous original thinking. Topics can explore material in a new light or engage research and design practices in ways that strengthen and define the final masters design thesis in relationship to the field. Prerequisite: LARC 5397.

LARC 5698. THESIS. 6 Hours.

Independent research and presentation of findings under the direction of a supervising committee. The findings of the thesis should extend the boundaries of the professional discipline by either presenting new and unique ideas or information, or by interpreting existing knowledge from a different perspective. Prerequisite: LARC 5397.

LARC 5998. THESIS. 9 Hours.

Independent research and presentation of findings under the direction of a supervising committee. The findings of the thesis should extend the boundaries of the professional discipline by either presenting new and unique ideas or information, or by interpreting existing knowledge from a different perspective. Prerequisite: LARC 5397.

Public Administration

Master's Degrees

- Accelerated Online Master of Public Administration (<https://www.uta.edu/cappa/academics/public-affairs/master-public-administration/>)
- Public Administration, M.P.A. (<https://www.uta.edu/cappa/academics/public-affairs/master-public-administration/>)

Doctorate Degree

- Ph.D. Public Administration and Public Policy (<https://www.uta.edu/cappa/academics/public-affairs/phd-puad.php>)

Certificates

- Public Budgeting and Financial Management Certificate (<https://www.uta.edu/cappa/academics/certificate-programs/>)
- Urban Non-Profit Management Certificate (<https://www.uta.edu/cappa/academics/certificate-programs/>)

Minor Offered

- Urban Affairs (<https://www.uta.edu/cappa/academics/minors/urban-affairs.php>)

Master's in Public Administration (MPA)

Public Administration is concerned with the formulation, analysis, negotiation, and implementation of democratically responsible collective action. With an interdisciplinary focus, this program gives special emphasis to the urban community and the special challenges of public managers who serve in urban areas. The curriculum is designed to develop leadership capacity, understanding of the political, social, and economic characteristics of today's urban environment and the ability to apply current theories of management and analysis to difficult management issues. The program is meant as preparation for those entering management careers in government for the first time or as career development for those already employed who are seeking upward mobility in public management.

The MPA degree at the School of Urban and Public Affairs is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA), and the curriculum conforms to NASPAA standards.

Those seeking admission to the MPA program can choose between two program options:

1. courses taught on campus primarily during the evening hours; and
2. courses taught online.

Applicants who choose the on-campus option may plan their courses to include the requirements of certificate programs such as Urban Nonprofit Management or Public Budgeting and Financial Management. A description of the various certificate offerings can be found in the Urban and Public Affairs section of the catalog.

A hallmark of the MPA program is its distinguished faculty that combines extensive academic and field experience in public administration with a wide range of related backgrounds. Augmenting the permanent faculty are several adjunct professors with impressive credentials in the public management field such as Bob Hart, City Manager of Kennedale, Texas; Richard Greene, Regional Director of EPA and former Mayor of Arlington, Texas.

Mission

The mission of the Master's of Public Administration program is to strengthen public decision making and the delivery of public services in a globalized and diverse society by educating students to lead and manage organizations at all levels of government and nonprofit institutions ethically, democratically, and effectively.

For specific goals and objectives, see the UTA MPA website [mpa.uta.edu](http://www.uta.edu/cappa/academics/public-affairs/public-administration/master-public-administration/) (<http://www.uta.edu/cappa/academics/public-affairs/public-administration/master-public-administration/>).

Ph.D. in Public Administration and Public Policy Program (PAPP)

PAPP Program Director: Dr. Karabi Bezboruah

Students are prepared for academic careers, positions in research institutions and upper administrative positions in public and non-profit organizations. The PAPP Ph.D. courses address the social sciences, public policy and public administration literatures critical to the integrative approach of the program. Research methods courses include an intermediate quantitative methods course, an advanced quantitative methods course and a qualitative methods course. Students select a three hour elective aligned with their research interests. Students are assigned an initial adviser based primarily on their research interests and add two additional supervising committee members by the end of their first semester to help guide them through their course of study.

A full-time student can expect to complete the required courses in no more than two academic years. Upon completing all courses (39 hours), students sit for their written comprehensive examination. The comprehensive examination is an integrative exam that blends public policy issues with public administration. Students are permitted to pursue the degree as a part time student. This is typically accomplished by completing two courses per semester. Students are required to enroll fall and spring semesters per academic year to be considered an ongoing student.

Students who complete a Masters in Public Administration or a Masters in Public Policy degree may be eligible to waive some coursework and are encouraged to meet with their advisory committee chair after admission to review their degree plan.

Advising

MPA Academic Advisor: Karolyn Field

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Admission Requirements

MPA Program Director: Dr. David Coursey

Factors in admission decisions are the same for the on campus and online programs.

Prospective Students Contact: James Brown, Academic Recruiter

The MPA program takes a holistic approach to the application review process. Each applicant's file is reviewed individually with equal consideration given to the quantitative and qualitative aspects of the student's records. A complete application includes:

- Graduate Record Exam (GRE) score: Writing (Exceptions: Outstanding UT Arlington graduates may qualify for GRE waiver providing they meet certain requirements. See "Waiving the GRE" below)
- Undergraduate Grade Point Average (GPA): The undergraduate GPA based on the last 60 hours of course work as calculated by the Graduate Admissions from the official transcript.
- Graduate Record Exam (GRE) scores: Verbal and Quantitative (Exceptions: Outstanding UT Arlington graduates may qualify for GRE waiver providing they meet certain requirements)
- Letters of Recommendation attesting to the applicant's potential to do Master's-level work and complete the program. Letters for Master's programs should be from professors or supervisors at work.
- Essay by applicant approximately one double-spaced page in length (approximately 250 words). The Essay is considered both for its content and quality of writing. The Essay should address the following questions: 1. Why do you want to earn a Master's degree in the program for which you are applying? 2. What relevant background and experience do you bring to the program? The essay can also include other concerns you'd like to bring to the attention of the Graduate Advisor or Master's Admissions Committee.
- Non-native English speakers only: TOEFL or IELTS scores (Exceptions: An applicant holding either a Bachelor's or a Master's degree from a regionally accredited U.S. college or university is not required to submit a TOEFL, TOEFL iBT, or IELTS score for admission purposes.)

Types of Admission

1. Unconditional Admission:

Applicants who meet all the following requirements will be considered for unconditional admission:

- a. Minimum Writing GRE score of 4.0 (may be waived under certain conditions - see "Waiving the GRE" below)
- b. Minimum Undergraduate GPA of 3.0 based on the last 60 hours of course work as calculated by UTA Graduate Admissions.
- c. A preferred minimum Verbal GRE score of 450 (Revised GRE Test: 150), and minimum Quantitative GRE of 450 (Revised GRE Test: 141), and a minimum combined Verbal and Quantitative score of 1,000 (Revised GRE Test Combined: 291) (may be waived under certain conditions - see "Waiving the GRE" below)
- d. Outstanding letters of recommendation
- e. Strong, well-written personal essay
- f. Non-native English speakers only: TOEFL scores of at least 550 (paper-based), 213 (computer-based), or 79 (iBT) with sectional scores that meet or exceed 22 Writing, 21 Speaking, 20 Reading, and 16 Listening; or, IELTS score of at least 6.5.

2. Probationary Admission:

Applicants who do not meet all requirements for Unconditional admission will be considered for Probationary admission on the basis of the strength of all the listed admission factors. Test scores will not constitute the sole or primary basis for ending consideration of an applicant. Under Probationary admission, special course requirements or other conditions may be imposed by the CAPP Master's Admissions Committee. Applicants who meet all the standards for Unconditional admission except for deficiency in Writing GRE score will be considered for Probationary Admission conditional on completing an approved Writing course in their first semester.

3. Other types of admission decisions pertaining to Master's applicants:

- a. **Deferred:** Applicants who are unable to supply required application materials, or who must complete additional preparatory work before their admissibility can be determined, may be deferred until records are complete.

- b. **Provisional:** Applicants who are unable to supply all required documentation prior to the admission deadline but who otherwise appear to meet admission requirements may be granted Provisional admission pending submission of complete and satisfactory credentials before the end of the semester in which they have registered in a Provisional status.
- c. **Denied:** Applicants who fail to meet more than one of the admission requirements and for whom the CAPPA Master's Admission Committee finds there is insufficient basis to justify any other kind of admission will be Denied admission. As the admission process is competitive, applicants meeting basic admission requirements who are less well qualified than other applicants may also be denied admission

Waiving the GRE

The MPA program waives the requirement that an applicant take the GRE under **any** of the following conditions:

- A 3.25 or higher undergraduate GPA based on the last 60 hours of course work AND at least three years professional non-profit or public service work experience (as judged by the MPA admission committee. Applicants should submit a supporting resume or other relevant documentation to the MPA Graduate Advisor)
- A completed graduate degree from an accredited program in a related field such as, but not exclusively, political science, economics, urban planning, social work, criminal justice, and sociology OR a 3.0 or better higher after 12 hours of coursework in the accredited graduate degree program.
- A completed UTA B.A. or B.S. with 3.0 or higher GPA
- An equivalent GMAT or LSAT score from an exam taken within the last two years preceding the time of application.

Scholarships and Fellowships

- Graduate students with a GPA of 3.0 or better who are enrolled in six hours or more are eligible to apply for competitive scholarships and fellowships.
- Scholarships and fellowships for Master's and Doctoral students will be competitively awarded based on consideration of the all admission criteria assessed by their admitting programs.

CAPPA Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Degree Requirements

Campus Degree Requirements and Courses

The campus program consists of 39 or 42 total hours, which includes 10 required core courses and 9 hours in a selected emphasis area (2 required emphasis area courses and 1 elective). PAPP 5360 PUBLIC AND NON-PROFIT MANAGEMENT INTERNSHIP is a 3 credit hour internship course; however this can be waived with at least 1 year of professional experience working in the public sector. Details on internship waiver requests are available on the MPA program website (mpa.uta.edu (<http://www.uta.edu/cappa/academics/public-affairs/public-administration/master-public-administration/>)).

Upon successfully being admitted into the MPA program, students will choose an emphasis area and degree plan. Most all classes are offered as one session per week on Monday through Thursday during evening times (6:00-8:50pm or 7-9:50pm).

Core Courses (30 hours)		30
PAPP 5302	FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS	3
PAPP 5309	LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING	3
PAPP 5320	PUBLIC AND NON-PROFIT ORGANIZATION THEORY	3
PAPP 5326	PUBLIC BUDGETING	3
PAPP 5329	FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5345	EVALUATION RESEARCH	3
PAPP 5350	INTRODUCTION TO PUBLIC ADMINISTRATION	3
PAPP 5351	HUMAN RESOURCE MANAGEMENT IN GOVERNMENT AND NON-PROFITS	3

PAPP 5358	ETHICS IN THE PUBLIC SERVICE	3
PAPP 5399	PUBLIC ADMINISTRATION CAPSTONE	3

Emphasis Area (9 hours) 9

Select on Emphasis Area (see descriptions below):

Public Budgeting and Financial Management ²	
Local Government Management ²	
Urban Nonprofit Agency Management ²	
Strategic Human Resources Management ²	

Internship (3 hours) 3

PAPP 5360	PUBLIC AND NON-PROFIT MANAGEMENT INTERNSHIP	3
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¹ Students select an emphasis area and take a total of three courses: two required courses plus one selective from the respective list or any other course with the approval of the Emphasis Coordinator or Program Director.

² Emphasis Areas

³ Internship can be waived with at least 1 year of professional experience working in the public sector. Details on internship waiver requests are available on the MPA program website ([mpa.uta.edu \(http://www.uta.edu/mpa/\)](http://www.uta.edu/mpa/)).

Emphasis Area 1: Public Budgeting and Financial Management

Objectives-upon completion of this emphasis track, students should be able to:

1. Review, recommend, and interpret operating and capital budget requests taking political, economic, and decision-making processes into account; and
2. Assist the budget officer and other higher-level public officials in performing comprehensive financial analyses and developing financial and budgetary recommendations.

Required Courses (6 hours) 6

PAPP 5324	URBAN PUBLIC FINANCE	3
PAPP 5332	PUBLIC CAPITAL BUDGETING	3

Selective Courses (3 hours) 3

Select one of the following or a course approved by the Emphasis Coordinator or Program Director

PAPP 5306	THE URBAN ECONOMY	3
PAPP 5321	URBAN MANAGEMENT	3
PAPP 5333	GOVERNMENTAL AND NONPROFIT ACCOUNTING	3
PAPP 5341	PROFESSIONAL REPORT WRITING	3
PAPP 5342	INTERMEDIATE DATA ANALYSIS	3
PAPP 5346	BIG DATA AND PUBLIC POLICY ANALYSIS	3
PAPP 5348	COST BENEFIT ANALYSIS	3

Emphasis Area 2: Local Government Management

Objectives-upon completion of this emphasis track, students should be able to:

1. Demonstrate proficiency in the use of applied analytic tools such as program evaluation, policy analysis, cost-benefit analysis, and other management decision-making tools to aid the public manager make more informed decisions;
2. Assist public managers and other higher-level public officials to understand, analyze, and recommend appropriate solutions to complex public policy issues.

Required Courses (6 hours) 6

PAPP 5312	ECONOMIC POLICY	3
PAPP 5355	NONPROFIT ORGANIZATIONS IN PUBLIC POLICY	3

Selective courses (3 hours) 3

Select one of the following or a course approved by the Emphasis Coordinator or Program Director

PAPP 5306	THE URBAN ECONOMY	3
PAPP 5321	URBAN MANAGEMENT	3
PAPP 5324	URBAN PUBLIC FINANCE	3
PAPP 5325	ADMINISTRATIVE LAW	3
PAPP 5341	PROFESSIONAL REPORT WRITING	3

PAPP 5352	CONFLICT RESOLUTION IN THE PUBLIC AND NONPROFIT MANAGEMENT	3
PAPP 5357	STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5368	PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS	3

Emphasis Area 3: Urban Nonprofit Agency Management

Objectives-upon completion of this emphasis track, students should be able to:

1. Understand the different management areas and techniques within the nonprofit organization, including institutional management, leadership, fund-raising, financial administration, human resources coordination, and planning and performance measurements.
2. Understand the role of nonprofits as community institutions with an outward focus, including the political, economic, and inter-organizational environment, as well as marketing, legal, and government policy issues.

Required Courses (6 hours)		6
PAPP 5354	NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP	3
PAPP 5355	NONPROFIT ORGANIZATIONS IN PUBLIC POLICY	3
Selective Courses (3 hours)		3

Select one of the following or a course approved by the Emphasis Coordinator or Program Director

PAPP 5311	PUBLIC POLICY FORMATION AND ANALYSIS	3
PAPP 5313	COMMUNITY DEVELOPMENT	3
PAPP 5321	URBAN MANAGEMENT	3
PAPP 5325	ADMINISTRATIVE LAW	3
PAPP 5341	PROFESSIONAL REPORT WRITING	3
PAPP 5346	BIG DATA AND PUBLIC POLICY ANALYSIS	3
PAPP 5348	COST BENEFIT ANALYSIS	3
PAPP 5357	STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5367	STRATEGIC PUBLIC AND NONPROFIT HUMAN RESOURCES MANAGEMENT	3
PAPP 5368	PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS	3

Emphasis Area 4: Strategic Human Resources Management

Objectives-upon completion of this emphasis track, students should be able to:

1. Demonstrate an understanding of public human resource policies, programs, procedures, and legal issues relevant to the field; and
2. Demonstrate knowledge of techniques employed in designing performance appraisals, recruiting and selecting employees, and developing rewards systems.

Required Courses (6 hours)		6
PAPP 5367	STRATEGIC PUBLIC AND NONPROFIT HUMAN RESOURCES MANAGEMENT	3
PAPP 5368	PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS	3
Selective Courses (3 hours)		3

Select one of the following or a course approved by the Emphasis Coordinator or Program Director

PAPP 5325	ADMINISTRATIVE LAW	3
PAPP 5341	PROFESSIONAL REPORT WRITING	3
PAPP 5342	INTERMEDIATE DATA ANALYSIS	3
PAPP 5346	BIG DATA AND PUBLIC POLICY ANALYSIS	3
PAPP 5352	CONFLICT RESOLUTION IN THE PUBLIC AND NONPROFIT MANAGEMENT	3
PAPP 5357	STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES	3

Online Degree Requirements and Courses

The online program consists of 39 required core hours, a 3 hour capstone, plus a 3 hour internship. Internships may be waived under the same conditions as the on campus program. Students may choose between PAPP 5332 PUBLIC CAPITAL BUDGETING and PAPP 5354 NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP but all other courses are required.

The program is designed for students to take two courses a term (Fall, Spring, Summer) in succession (one course in first half of term, another in second half of term) except in Summer where the two courses have staggered starting dates and PAPP 5399 PUBLIC ADMINISTRATION CAPSTONE, which is a full semester course. It is possible to take more than two courses per term but is not advised. The curriculum is offered in a lockstep cohort format. Unlike the on campus program, there are no emphasis areas. However, is possible to complete one of two certificates (Public Budgeting and Financial

Management or Urban Nonprofit Management) as part of the coursework. An independent study, PAPP 5395 CONFERENCE COURSE IN URBAN AFFAIRS, can be substituted for one of courses with registration approval of the Program Director.

Core Courses		39
PAPP 5302	FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS	3
PAPP 5309	LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING	3
PAPP 5320	PUBLIC AND NON-PROFIT ORGANIZATION THEORY	3
PAPP 5326	PUBLIC BUDGETING	3
PAPP 5329	FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5332	PUBLIC CAPITAL BUDGETING	3
PAPP 5345	EVALUATION RESEARCH	3
PAPP 5350	INTRODUCTION TO PUBLIC ADMINISTRATION	3
PAPP 5351	HUMAN RESOURCE MANAGEMENT IN GOVERNMENT AND NON-PROFITS	3
PAPP 5354	NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP	3
PAPP 5355	NONPROFIT ORGANIZATIONS IN PUBLIC POLICY	3
PAPP 5358	ETHICS IN THE PUBLIC SERVICE	3
PAPP 5368	PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS	3
Capstone		3
PAPP 5399	PUBLIC ADMINISTRATION CAPSTONE	3
Internship		3
PAPP 5360	PUBLIC AND NON-PROFIT MANAGEMENT INTERNSHIP	3

- 1 Core Courses
- 2 Capstone
- 3 Internship can be waived with at least 1 year of professional experience working in the public sector. Details on internship waiver requests are available on the MPA program website ([mpa.uta.edu \(http://www.uta.edu/mpa/\)](http://www.uta.edu/mpa/)).

Dual Degree Programs

Students in public administration may participate in one of five dual degree programs whereby they can earn a Master of Public Administration and one of the following:

1. Master of Arts in Urban Affairs
2. Master of City and Regional Planning,
3. Master of Science in Social Work,
4. Master of Science in Nursing,
5. Master of Arts in Criminal Justice, or
6. Master's of Sociology.

By participating in a dual degree program, students can apply a number of semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately. The number of hours which may be jointly applied ranges from nine to 18 hours, subject to the approval of Graduate Advisors from both programs. To participate in the dual degree program, students must make separate application to each program and must submit a separate Program of Work for each degree. Those interested in the dual degree program should consult the appropriate Graduate Advisor(s) for further information on course requirements. See also the statement of Dual Degree Programs in the general information section of this catalog.

Advising

PAPP Academic Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Ph.D. in Public Administration and Public Policy Program (PAPP)

PAPP Program Director: Dr. Karabi Bezboruah

Prospective Students Contact: James Brown, Academic Recruiter

The PAPP Ph.D. has eight required core courses, four required research courses, three hours in an elective area, and a minimum of nine dissertation credit hours. The eight core courses address the social sciences, public policy and public administration literatures critical to the integrative approach

of the program. The methods courses include an intermediate quantitative methods course, an advanced quantitative methods course and a qualitative methods course. The three hours in an elective are chosen tailored to the student's research interests. Students are assigned an initial adviser based primarily on their research interests and add two additional supervising committee members by the end of their first semester to help guide them through their course of study.

A full-time student can expect to complete the required courses in no more than two academic years. Upon completing all courses (39 hours), students sit for their written comprehensive examination. The comprehensive examination is an integrative exam that blends public policy issues with public administration.

Students who completed a Master's in Public Administration or a Master's in Public Policy degree may be eligible to waive some coursework and are encouraged to meet with their advisory committee chair after admission to review their degree plan.

Application Requirements and Deadlines

Along with the Office of Graduate Studies application requirements, a complete application includes:

1. Official transcripts from colleges and universities attended. Students who obtained their master's degree at UT Arlington are not required to submit separate copies of transcripts as their information will be available to the CAPPa advisors online. Information about submitting transcripts is available in the University Catalog; and
2. Official test score reports for the Graduate Record Exam (GRE) and, for international applicants, the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). Information about submitting official test scores is available from the University Catalog. The ETS code for UTA is 6013; and
3. Three Letters of Recommendation. Letters should attest to the applicant's ability to do doctoral-level work and successfully complete the dissertation. Letters from references who hold a Ph.D. degree are strongly preferred; and
4. Essay by applicant (minimum 500 words, maximum 1000 words). The essay is considered both for its content and writing quality. The essay should discuss: (1) tentative research topic, (2) how your undergraduate and graduate studies have prepared you for doctoral study in Public Administration and Public Policy; (3) identify your potential research area and Public Affairs faculty whose area relates to your research interests; and (4) the reasons for wanting to earn the doctoral degree.
5. Samples of applicant's written work (e.g., thesis, publication, professional report) that demonstrates graduate level English writing proficiency as compared to the writing proficiency of students who have successfully completed the program.

Official transcripts and test scores must be sent directly to the Office of Graduate Studies by the institution and ETS respectively.

Letters of recommendation and the personal essay should be sent directly to the CAPPa Academic Recruiter (<https://www.uta.edu/cappa/admissions/>) via email or the postal service, CAPPa ACADEMIC RECRUITER, Box 19108, Arlington TX 76019.

It is the applicant's responsibility to ensure all application materials are received by the priority deadline of February 1st. Incomplete applications or applications received after the deadline may be deferred.

CAPPa primarily admits doctoral students for the Ph.D. in Public Administration and Public Policy for fall semester. Spring admissions are rare and there are no summer admissions.

Applicants who wish to be considered for graduate teaching/ research assistant positions or other financial assistance, must submit their applications by their first week in February for full consideration. Only complete applications (including GRE scores and letters) will be considered for financial assistance. Students must also complete the university application for financial aid in the Mav ScholarShop (<http://www.uta.edu/fao/scholarships/>).

Admissions Criteria

Applicants may be admitted unconditionally with a graduate GPA of 3.6, a Verbal GRE score of at least 153 (500 if taken before August 1, 2011 and a Quantitative GRE score of at least 144 (500 if taken before August 1, 2011). International applicants are required to have a score of 213 or higher on the TOEFL (550 or higher on the written TOEFL; 79 or higher on TOEFL iBT). Strength of letters of recommendation and quality of personal statement and master's degree field of study are also considered.

or

Applicants may be admitted unconditionally with a graduate GPA of 3.7, a Verbal GRE score of at least 153 (500 if taken before August 1, 2011 and a Quantitative GRE score of at least 140 (500 if taken before August 1, 2011). International applicants are required to have a score of 213 or higher on the TOEFL (550 or higher on the written TOEFL; 79 or higher on TOEFL iBT). Strength of letters of recommendation and quality of personal statement and Master's degree field of study are also considered.

The admissions committee may defer the admission decision when a component of the application is incomplete. It may also admit a student provisionally when an applicant is unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements.

Probationary Admission

Applicants not admitted unconditionally may be considered for admission on probation based on factors mentioned above as well as multilingual proficiency, first generation graduate student and applicant's community service experience. Applicants with a 3.0 graduate GPA or better and based on the strength of admission requirements (personal statement, letters of recommendation and scores on standardized tests). Under Probationary Admission, special course requirements or other conditions may be imposed by the Admissions Committee (e.g., applicants who meet all the standards for Unconditional Admission, except for required Writing GRE score, will be considered for Probationary Admission conditioned on completing an approved writing course).

Foreign applicants with low TOEFL or IELTS scores may be accepted probationary on the condition of successfully completing the Pathway Admission Program. More information about that program may be found at <https://catalog.uta.edu/academicregulations/admissions/graduate> (<https://catalog.uta.edu/academicregulations/admissions/graduate/>).

Deferred Admission

Applicants who are unable to supply required application materials, or who must complete additional preparatory work before their admissibility can be determined, may be deferred until records are complete.

Provisional Admission

Applicants who are unable to supply all required documentation prior to the admission deadline, but who otherwise appear to meet admission requirements may be granted Provisional Admission pending submission of complete and satisfactory credentials before the end of the semester in which they have registered in a provisional status.

Denied Admission

Applicants who fail to meet more than one of the admission requirements and for whom the PAPP PhD Admission Committee finds there is insufficient basis to justify any other kind of admission. GRE performance will not be the sole factor leading to a decision to deny admission. As the admission process is competitive, applicants meeting basic admission requirements who are less well qualified than other applicants may also be denied admission.

Continuous Enrollment And Readmission

UTA Continuous Enrollment Policy requires students to remain enrolled throughout the duration of their studies. PAPP students must comply with this policy by enrolling in at least three or six credit hours each fall and spring semester, depending on the stage in their program of studies. Enrollment in summer sessions is not required.

Students who are unable to continue their Ph.D. studies due to legitimate reasons can petition a leave of absence by following the university policies at <https://www.uta.edu/records/graduate/leave-of-absence-loa.php>. Students who are granted a leave of absence are subject to the university's policy on readmission.

Readmission

Students who have been absent without approval of leave of absence, but wish to resume their graduate work, will need to follow the university's readmission policy published at <http://catalog.uta.edu/academicregulations/admissions/graduate/>

Students who have been absent from the program for four or more long semesters will, in addition to the university policies, be subject to the program's admission criteria and the program's new procedures, guidelines, curriculum and degree requirements existing **at the time of the readmission application**. PAPP readmission policy and application instructions can be obtained from the UPPP Graduate Advisor: Barbara Saenz

CAPPA Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Ph.D. students who do not complete dissertation proposal within two years of passing comprehensive exam will accrue 2 deficiency points.

Ph.D. students who do not complete all requirements for the Doctoral degree within four years after passing the comprehensive examination will accrue 1 deficiency point per year beyond the four year mark.

Doctoral Degree Requirements

Curriculum and Degree Requirements

Required Core Courses (24 hours)

PAPP 6315	PUBLIC ADMINISTRATION THEORY	3
PAPP 6320	ADVANCED ORGANIZATION THEORY	3
PAPP 6305	ADVANCED THEORIES OF URBAN SOCIETY	3
PAPP 6307	THE URBAN ECONOMY	3
PAPP 6309	INTERGOVERNMENTAL RELATIONS IN THE ADMINISTRATION AND PUBLIC POLICY	3
PAPP 6311	ADVANCED PUBLIC POLICY FORMATION AND ANALYSIS	3
PAPP 6326	PUBLIC BUDGETING & FINANCE	3
PAPP 6349	DECISION MAKING AND PUBLIC POLICY ANALYSIS	3

Required Research Courses (12 hours)

PAPP 5344	QUALITATIVE METHODS	3
PAPP 5342	INTERMEDIATE DATA ANALYSIS	3
PAPP 6301	THEORETICAL FOUNDATIONS AND PH.D. WORKSHOP	3
PLAN 6346	ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS	3

Selected Elective (3 hours)

Dissertation (minimum 9 hours)	9
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Total Hours	48
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PAPP Students

First Year

Summer Session	Hours	First Semester	Hours	Second Semester	Hours
Elective Course	3	PAPP 5342	3	PAPP 6311	3
PAPP 5309	3	PAPP 6305	3	PAPP 6315	3
		PAPP 6320	3	PAPP 6346	3
	6		9		9

Second Year

	First Semester	Hours	Second Semester	Hours
	PAPP 5344	3	PAPP 6301	3
	PAPP 6307	3	PAPP 6326	3
	PAPP 6309	3	PAPP 6349	3
	9		9	

Third Year

	First Semester	Hours	Second Semester	Hours
	PAPP 6399, 6699, or 6999	3-9	PAPP 6399, 6699, or 6999	3-9
	3-9		3-9	

Fourth Year

	First Semester	Hours
	PAPP 6399, 6699, or 7399 ²	3-6
	3-6	

Total Hours: 51-66

¹ Elective Course must be determined in consultation with your program/advisory chair and/or committee.

² Student must complete 9hrs of Dissertation and/or enroll in PAPP 7399 (Final Dissertation) which must be taken in the final graduating semester.

Organization

Notes on Curriculum and Degree Requirements

Students with the approval of their adviser may select substituted methods courses for the "required research courses." Listed "Selected Emphasis" courses are examples of possible classes. "

Comprehensive Exam and Dissertation

A Ph.D. student who fails to pass a comprehensive examination is allowed to retake the examination once. In this case, the exam must be retaken the following semester (excluding Summer semester). If the student fails to pass the examination a second time, the student is not permitted to continue in the doctoral program.

Upon successful completion of the written comprehensive exam students form a three-member faculty committee and prepare their dissertation proposal. Given the research topic and preparedness of the student, the faculty committee may recommend that the student take additional courses that contribute to the student's dissertation. The student will defend a dissertation proposal before her/his committee.

Successful completion of the dissertation proposal advances the student to the status of candidacy (ABD). The student continues to work closely with her/his dissertation committee to the completion of the dissertation.

Dissertation Proposal

Upon successful completion of the written comprehensive examination, students will work in preparation of their dissertation proposal. This preparation may include independent study or structured courses and is guided by the student's Dissertation Committee. Students must also work closely with their dissertation supervisor and committee to develop their dissertation proposal. A formal oral proposal defense must be held, and the proposal must be formally approved by the dissertation committee before the student may continue to complete the dissertation. Guidelines for the dissertation proposal are available in the Ph.D. Student Handbook.

Dissertation

The dissertation represents the culmination of the student's academic efforts and so is expected to demonstrate original and independent research activity and be a significant contribution to knowledge.

Upon the successful defense of their dissertation proposal, the student is required to submit an application to the UT Arlington's Institutional Review Board if their research involves human subjects. Detailed information on the application process is available at: UTA's Human Subjects Research (<http://www.uta.edu/research/administration/departments/rs/human-subjects-irb/>)

Doctoral students must enroll in a minimum of 3 dissertation hours (PAPP 6399 DISSERTATION) every long semester (Fall & Spring). The student must accumulate a minimum of nine dissertation hours to graduate. Once the student's committee has reviewed the completed dissertation and agree that the student is ready to defend, the student enrolls in PAPP 7399 DOCTORAL DEGREE COMPLETION / in the term designated as their completion term. Students may designate only one term as the completion term. Doctoral students who do not graduate at the end of their completion term will receive a grade of R, W or F and must enroll in a minimum of 6 hours of dissertation research (PAPP 6699 DISSERTATION) every term until graduation.

The Office of Graduate Studies offers Dissertation Seminars each semester and encourages all Dissertation students to attend.

The dissertation defense is a public oral examination open to all members (faculty, students and invited guests) of the University community. Questioning of the candidate will be directed by the student's dissertation committee. All members of the student's committee must be present at the defense. Although the defense is concerned primarily with the dissertation research and its interpretation, the examining committee may explore the student's knowledge of areas relevant to the core of the dissertation problem.

The dissertation defense may result in a decision that the candidate has:

1. passed unconditionally;
2. passed conditionally with remedial work specified by the committee;
3. failed, with permission to be re-examined after a specified period; or
4. failed and dismissed from the program.

The dissertation must be approved unanimously by the student's dissertation supervising committee.

Graduate Certificates

Prospective Students Contact: James Brown, Academic Recruiter

CERTIFICATE IN URBAN NONPROFIT MANAGEMENT

Certificate Advisor: Karolyn Field

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Certificate Coordinator: Dr. Karabi Bezboruah

The Urban Nonprofit Management Certificate is a 15 credit hours certificate which provides in-depth management training to nonprofit managers, staff, board members and volunteers to strengthen their management skills, administrative systems, and service delivery programs.

The Urban Nonprofit Management Certificate at The University of Texas at Arlington prepares students who are working in or are considering management careers in nonprofit organizations. The courses in this program address pertinent topics in entrepreneurship, leadership and management of the trillion dollar nonprofit sector that includes education, research, healthcare, art, culture, religion, social and human services, advocacy, legal services, international organizations, foundations, and mutual benefit professional and trade associations. Students from any department or discipline may elect to complete the certificate program. Upon completion, students will be prepared to assume key roles in any nonprofit institution.

The certificate requires completion of PAPP 5354 NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP or and PAPP 5355 NONPROFIT ORGANIZATIONS IN PUBLIC POLICY or as well as three additional courses to be selected by the student with approval of the Urban Nonprofit Management certificate program adviser.

Required (6 hours)		6
PAPP 5354	NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP	3
PAPP 5355	NONPROFIT ORGANIZATIONS IN PUBLIC POLICY	3
Selectives (9 hours)		9
Select three courses from the following list of courses:		
Public Administration		
PAPP 5302	FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS	3
PAPP 5303	THE METROPLEX: SURVEY OF URBAN AFFAIRS, PLANNING, ADMINISTRATION	3
PAPP 5313	COMMUNITY DEVELOPMENT	3
PAPP 5329	FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5345	EVALUATION RESEARCH	3
PAPP 5348	COST BENEFIT ANALYSIS	3
PAPP 5351	HUMAN RESOURCE MANAGEMENT IN GOVERNMENT AND NON-PROFITS	3
PAPP 5352	CONFLICT RESOLUTION IN THE PUBLIC AND NONPROFIT MANAGEMENT	3
PAPP 5392	TOPICS IN URBAN MANAGEMENT	3
Planning		
PLAN 5319	AGENCIES OF PLANNING AND ADMINISTRATION	3
Business		
MARK 5311	MARKETING	3
Social Work		
SOCW 5303	FOUNDATIONS OF SOCIAL POLICY AND SERVICES	3
Total Hours		15

Students who are already enrolled in a graduate degree program at U.T. Arlington, especially the campus or online MPA, need only declare their intent to enroll by submitting the appropriate application form to Dr. Karabi Bezboruah (bezborua@uta.edu), the Urban Nonprofit Management Certificate Advisor. No prerequisite requirements are essential for these students.

Students who desire only to enroll in the Urban Nonprofit Management Certificate program but NOT in a graduate degree program may apply for admission to UT Arlington as a special student or "non-degree seeking" student. An undergraduate degree and grade point average of 3.0 shall be required. A GRE (graduate record examination) score and letters of recommendation are not necessary for admission to the Urban Nonprofit Management Certificate program. Any student that later seeks a graduate degree in a UT Arlington college or school may apply nine hours of coursework toward that degree within six years of completion and award of the Urban Nonprofit Management Certificate and by petition to the Graduate School through her or his prospective academic department. The acceptance or waiver of the remaining six hours taken as part of the requirements for the award of the Urban Nonprofit Management Certificate is at the discretion of each department.

Graduate students in any degree program at UT Arlington may register for Urban Nonprofit Management courses using standard registration procedures. It should be noted that class slots in the two core courses would be reserved for all of those Urban Nonprofit Management Certificate program participants who are accepted. Urban Nonprofit Management program students who are enrolled in other academic schools or colleges must obtain written course approval from their respective graduate advisors.

Professionals who desire to enroll in any or both of the core courses for continuing education hours may do so as special students. If at a later date these students decide to apply for the Urban Nonprofit Management Certificate program, the hours already taken as continuing education will be applied (within six years of completion of the courses) to the certificate program requirements.

CERTIFICATE IN PUBLIC BUDGETING AND FINANCIAL MANAGEMENT

Certificate Advisor: Karolyn Field

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Certificate Coordinator: Dr. Alejandro Rodriguez

Sound fiscal management at all levels of government is essential for meeting the demands of an increasingly expensive and complex service-delivery need. The purpose of this 15 credit hours graduate certificate is provide students interested in public sector affairs and local government officials (budgeters, planners, finance analysts, and elected officials) with the skills to enable them to effectively support local government financial decision-making. Participants should expect to attain a comprehensive understanding of public budgeting and financial management practices and theories including knowledge of the various government revenue sources, major expenditures, and borrowing mechanisms used to finance long-life capital assets.

Students wishing to enroll only in the Graduate Certificate in Public Budgeting and Financial Management (certificate) but NOT to a graduate degree program may apply for admission to UT Arlington as a non-degree seeking student. A Bachelor's degree with a GPA of 2.8 in the last 60 hours of undergraduate coursework is required for admission through the Graduate School. Students with GPAs lower than 2.8 may be recommended for admission by Alejandro Rodriguez, Ph.D., the Certificate Adviser, based on the following admission enhancing factors:

1. the applicant's work experience and level of responsibility;
2. undergraduate degree in economics, financial management, accounting, or other closely related field; and
3. two letters of recommendation.

Students already enrolled in a Master's degree program, especially the campus and online MPA, at UT Arlington may enroll by submitting the appropriate application form to Dr. Alejandro Rodriguez and his or her academic graduate adviser. Students who have completed a Master's degree may apply for admission to UT Arlington as a non-degree seeking student. In either case, a minimum GPA of 3.0 in Master's degree work is required.

Participants must satisfactorily complete three required core courses and two elective courses from an approved list of elective courses, or by permission of the program adviser. Students shall be awarded the Graduate Certificate for Public Budgeting and Financial Management by the School of Urban and Public Affairs and the Graduate School upon satisfactory completion of the certificate requirements and a grade point average of 3.0.

Required (9 hours)		9
PAPP 5326	PUBLIC BUDGETING	3
PAPP 5329	FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5332	PUBLIC CAPITAL BUDGETING	3
Selectives (6 hours)		6
Select two of the following:		
PAPP 5302	FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS	3
PAPP 5306	THE URBAN ECONOMY	3
PAPP 5310	URBAN POLICY AND THE LAW	3
PAPP 5312	ECONOMIC POLICY	3
PAPP 5321	URBAN MANAGEMENT	3
PAPP 5324	URBAN PUBLIC FINANCE	3
PAPP 5345	EVALUATION RESEARCH	3
Total Hours		15

Students who later seek graduate degrees at UT Arlington may apply 12 hours of certificate coursework within six years of completion and award of the certificate, with approval of the appropriate Graduate Studies Committee and the Dean of the Graduate School. Non-degree seeking students in the certificate program desiring to seek a degree must meet all admission requirements of the degree program.

COURSES

PAPP 4307. URBAN GEOGRAPHY. 3 Hours.

Emphasizes real aspects associated with urban physical environments and social, behavioral and financial processes that shape these environments.

PAPP 5160. URBAN MANAGEMENT/PLANNING INTERNSHIP. 1 Hour.

Intended to enhance readiness for professional work through exposure to planning practice in a one semester log internship (100 hrs in the spring or fall semester or 75 hrs in the summer). Integrates work experience and coursework through journaling and reflective practice. Requirements: (1) student secures an internship from a planning related employer and approval from the student's major professor prior to enrolling in the course; (2) the intern must provide performance evaluation by the job supervisor and the intern's evaluation of the internship experience. Enrollment open to students with no previous formal planning experience. Credit not available for previous internship or planning experience. P/F grade.

PAPP 5300. FOUNDATION OF URBAN THEORY. 3 Hours.

Social theories that explain the life cycle of urban communities as they develop, expand, and are sustained or decay are presented and contrasted. Special consideration is given to role of social policy. Topics such as poverty, race, neighborhoods, and environment are addressed.

PAPP 5301. FOUNDATIONS OF URBAN POLITICS AND ECONOMICS. 3 Hours.

Examines the major political and economic institutions and processes in urban communities and their effect on urban policy.

PAPP 5302. FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS. 3 Hours.

An introduction to research methodologies, both quantitative and qualitative, and statistical techniques useful in the analysis of urban trends and administrative programs.

PAPP 5303. THE METROPLEX: SURVEY OF URBAN AFFAIRS, PLANNING, ADMINISTRATION. 3 Hours.

The Metroplex provides an ideal laboratory for study with more than 100 cities and other governmental units, thousands of neighborhoods and business enterprises, major concentration of minorities and dozens of ethnic groups. An in-depth orientation on urban dynamics utilizing senior faculty members, governmental and community leaders, and current research reports and studies.

PAPP 5304. URBAN POLITICS. 3 Hours.

Examination of the city as a political system, including the impact of urbanization and fragmentation on policies; input dimensions, including voting patterns and interest group development; decision-making structures, especially types of community power structures and the impact of the reform movement on structural processes. Also offered as POLS 5305; credit will be granted only once.

PAPP 5305. THEORIES OF URBAN SOCIETY. 3 Hours.

Several theoretical perspectives of the community and community organization examined. Special emphasis given to theories from human ecology, organization and stratification, and social welfare.

PAPP 5306. THE URBAN ECONOMY. 3 Hours.

Internal dynamics of the growth and development of the urban system and its relation to the national economy. National and urban economic policy, urban growth and land use, market imperfections, urban financial issues, and the environmental implications of urban growth studied through lecture, game simulation and policy debates.

PAPP 5307. URBAN GEOGRAPHY. 3 Hours.

Emphasizes real aspects associated with urban physical environments and social, behavioral and financial processes that shape these environments.

PAPP 5308. URBAN HISTORY. 3 Hours.

Extensive reading primarily in the history of the urbanization and metropolitanization of the people of the United States. Historical methods as exemplified in the works of leading historians and analyzed; examples of the scholarship of selected historians and treatises on selected cities, regions, and urban institutions studied.

PAPP 5309. LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING. 3 Hours.

Critical analysis of the implications of federalism, and the changing nature of intergovernmental relations on state and local management, administration, planning, and policy making.

PAPP 5310. URBAN POLICY AND THE LAW. 3 Hours.

Critical analysis of federal government and selected state and local government policies and programs designed to influence the course of change and the future development of cities and urban areas. The role of "private" governments in affecting policy explored.

PAPP 5311. PUBLIC POLICY FORMATION AND ANALYSIS. 3 Hours.

The course covers the policy process, policy formulation and provides an introduction to the tools and techniques of policy analysis, using multiple theoretical and analytical perspectives. The primary focus is on U.S. policy, with an emphasis on state and local policy issues. The course aims to provide students with a foundation in the theory, process, and tools of policy analysis, so that they are able to think critically about applied public policy problems and the role of policy analysts. Students will also gain practical skills in the development and presentation of policy analysis and recommendations.

PAPP 5312. ECONOMIC POLICY. 3 Hours.

Examines structure of the U.S. economic system and its impact on welfare of consumers, workers, and industry; public policy efforts to provide for management of critical economic variables are evaluated for effectiveness and equity as they impact different interest groups.

PAPP 5313. COMMUNITY DEVELOPMENT. 3 Hours.

Focuses on current problems of community development and neighborhood revitalization. Housing, community assets, the roles of community development corporations and social capital in cities, and community economic development will be analyzed. Federal, state, and local policies, with grassroots initiatives evaluated for effectiveness on promoting alternatives for community building and organizing. Also offered as PLAN 5324; credit will be granted only once.

PAPP 5314. HEALTH POLICY. 3 Hours.

Current health policy and programs, examination of historical development, economic and legal aspects, interest groups and health constituencies.

PAPP 5315. URBAN EDUCATION POLICY. 3 Hours.

Examines current education policy and programs, including public school districts, charter schools, and vouchers; economic and political aspects; role of adult education programs in improving human capital.

PAPP 5316. HUMAN SERVICES. 3 Hours.

Social welfare institutions: private and public; needs assessment, resource allocation, procedures, city/state/federal/private policy review; highlights of current system demands and changes. Offered as PLAN 5316 and PAPP 5344; credit will be granted only once.

PAPP 5317. ENVIRONMENTAL POLICY. 3 Hours.

Focuses on the physical environmental dimensions of urbanization including such factors as pollution, waste disposal, and land use; stresses the role of economic, social, and political institutions as these affect environmental quality of the city. Offered as PLAN 5342 and PAPP 5317; credit will be granted only once.

PAPP 5318. SOCIAL WELFARE POLICY. 3 Hours.

Examines recent welfare reform measures (federal, state, and local levels), the political issues behind them, and their influence on urban life. A central topic will be the impact of a changing society on social welfare policy needs, including analyses of labor force participation and family structure.

PAPP 5319. URBAN PROBLEMS. 3 Hours.

Specific urban problems examined in depth, traced to their historical origins to see how they or similar problems have been dealt with in other times and places. Students will then propose possible solutions to the problems in their contemporary form. Offered as PLAN 5347 and PAPP 5319.

PAPP 5320. PUBLIC AND NON-PROFIT ORGANIZATION THEORY. 3 Hours.

Historical evolution of administrative theory including classical, sociological and social-psychological dimensions; decision-making theory; implications of public interest theory for public and non-profit management; basic concepts of organization development and impact on public administration paradigms; new public administration; and future of public and nonprofit urban organization. Also offered as CRCJ 5309 and POLS 5303; credit will be granted only once.

PAPP 5321. URBAN MANAGEMENT. 3 Hours.

Focuses through lectures, readings, and exercises on major administrative process: personnel and policy development and analysis; management styles and key contemporary management problems explored through presentations by prominent local practitioners.

PAPP 5322. POLITICS AND POLICY IN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Development of theory of bureaucracy; bureaucracy as social issue; ethics and morality in public and non-profit bureaucracy; mobilization of special interest support; power differentials in urban agencies; policy process in bureaucracy; new bureaucratic structures and processes for urban policy making.

PAPP 5323. MANAGING CHANGE IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Current theories and concepts of public and non-profit organizational change with particular emphasis on organization development and action research; theoretical roots of contemporary change literature traced through readings and discussion of classical organization theory, public administration including New Public Administration decision making, public interest, phenomenology, learning theory and general systems. Prerequisite: Basic organizational theory course or permission of instructor.

PAPP 5324. URBAN PUBLIC FINANCE. 3 Hours.

Local urban governments increasingly rely less and less on support from the state and federal governments. Many local governments rely heavily on a limited number of taxes and fees to finance services. This course explores the variety of revenue sources and fiscal problems of cities and local governments in metropolitan areas. This includes the topics of tax burden and tax equity. The second half of the course focuses on the unique challenges of financing the diversity of activities that cities in particular support, e.g. housing, transportation, economic and community development and human services. Offered as PAPP 5324 and PLAN 5329; credit will be granted only once.

PAPP 5325. ADMINISTRATIVE LAW. 3 Hours.

Examines scope and role of administrative regulation of and by governmental agencies; explores constitutional principles which limit administrative power and administrative law which governs classical areas of conflict between administrative agencies and their constituencies; rule-making, judicial review and informal regulatory processes of importance to public officials.

PAPP 5326. PUBLIC BUDGETING. 3 Hours.

This course introduces students to the principles and practices used by federal, state, and local governments to acquire and spend revenues within the context of American democracy, capitalism, federalism, and economics. The primary objective of this course is to provide students with the practical skills and theoretical knowledge to enable them to be effective participants in the budgeting process and critical consumers and producers of research relevant to public budgeting. Offered as PLAN 5328 and PAPP 5326. Credit will be granted only once.

PAPP 5327. COMPARATIVE ADMINISTRATION AND POLICY. 3 Hours.

Extensive, multidisciplinary exposure to concepts and models of administration in developed and modernizing countries; role of the military, bureaucracy and traditional elites in development; practices and concepts of strategies for effective change.

PAPP 5328. SMALL CITY MANAGEMENT. 3 Hours.

This course will focus on problems peculiar to small cities, including administrative law; personnel, planning; public works, public safety; human services; budget and finance; public relations and parks and recreation.

PAPP 5329. FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Overview of the principles of finance as they apply to the public and non-profit services, financial reporting for state and local governments and non-profit organizations and evaluation.

PAPP 5330. COMMUNITY AND NEIGHBORHOOD ORGANIZATION. 3 Hours.

Structure and processes in the analysis and development of community and neighborhood organizations; special emphasis given to poverty and minority communities and neighborhoods.

PAPP 5331. LAND USE PLANNING AND THE LAW. 3 Hours.

Explores the law of land use in the context of the American legal, economic, and political systems. Examines leading court decisions and precedents for their background, content, and applicability to contemporary land use. Offered as PLAN 5316 and PAPP 5331. Credit will be granted only once.

PAPP 5332. PUBLIC CAPITAL BUDGETING. 3 Hours.

Examines governmental capital budgeting processes with a focus on understanding the significance of capital improvement planning, public facility investment, and project evaluation to sound infrastructure financing and regional economic growth. Governments purchase or construct long-lasting physical assets or facilities financed mostly through borrowing. This course aims to understand the rationale for public capital budgeting and debt instruments used to finance capital investment in the political context of public budgeting in America.

PAPP 5333. GOVERNMENTAL AND NONPROFIT ACCOUNTING. 3 Hours.

This course is designed as an introduction to governmental and nonprofit accounting. The course reviews major fund accounting principles, accounting for budgetary, revenue, and expenditure funds, accounting for general capital assets and long-term liabilities, accounting for fiduciary and proprietary funds, auditing practices, and financial reporting unique to government and non-profit organizations.

PAPP 5334. MANAGEMENT OF ECONOMIC DEVELOPMENT. 3 Hours.

This course focuses on the knowledge, organization, politics, issues, techniques and processes of local economic development. Emphasis is placed on contemporary issues and trends in the rich, dynamic laboratory of local economic development in Texas. Learning objectives include: 1) comprehension of basic techniques and issues such as strategic planning, leadership strategies, financial options and evaluation; 2) increased knowledge of the positive potential of thoughtful economic development for local environmental, infrastructure, and revenue challenges; and 3) enhanced professional development through individual and classroom exposure to successful practitioners.

PAPP 5341. PROFESSIONAL REPORT WRITING. 3 Hours.

The course aims to build professional writing skills. It reviews memo and report writing including grammatical construction, identifying and writing for a targeted audience, and writing in a clear, concise, and professional style. Also offered as PLAN 5335; credit will be granted for only one.

PAPP 5342. INTERMEDIATE DATA ANALYSIS. 3 Hours.

An intermediate level examination of statistical and research techniques appropriate to urban and social analysis. Presuming a basic understanding of descriptive and inferential statistics, the course covers multivariate regression, including error analysis and non-linear models, path analysis, ANOVA, logit and probit models, and techniques for data reduction (e.g., factor analysis). Offered as PAPP 5342 and PLAN 5317; credit will be granted only once. Prerequisite: PAPP 5302.

PAPP 5343. APPLIED URBAN ANALYSIS. 3 Hours.

Group and individual projects to develop research studies or strategies, data reports for local government, agency or citizen group; techniques appropriate to task utilized. P/F only.

PAPP 5344. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PLAN 5346 and PAPP 5344; credit will be given only once.

PAPP 5345. EVALUATION RESEARCH. 3 Hours.

Methodological issues in evaluating public programs; identification of variables, indicators and analyses formats presented. Prerequisite: PAPP 5302.

PAPP 5346. BIG DATA AND PUBLIC POLICY ANALYSIS. 3 Hours.

An examination of the data competencies and quantitative techniques necessary for policy analysis, with a special emphasis on big data and policy analysis. Increasingly, the rise and aggregation of what is commonly referred to as "big data" has raised many questions about the potential of this data for informing public policy as well as the tools and techniques appropriate for analysis. This course focuses on questions as to what constitutes big data, what sources of big data have relevance for public policy analysis, and concerns related to generalizability, reliability and validity. The course presumes a basic understanding of the basic statistical and research techniques taught in PAPP 5302 and PAPP 5342 (or equivalents from other departments). It builds on this foundation to analyze the tools and techniques appropriate for big data analysis in the field of public policy. The purpose of the course is to prepare students to understand what constitutes big data and evaluate the potential and limitations of its use in policy analysis. Students will be responsible for analyzing a source of big data, evaluating its research potential, and communicating the results of the analysis in a professional manner.

PAPP 5347. DEMOGRAPHIC METHODS. 3 Hours.

Examination of sources of data-census, vital statistics, special surveys, reports, special studies; techniques of analysis with particular emphasis on growth and projection models, interpretation of findings as a major policy area in urban analysis.

PAPP 5348. COST BENEFIT ANALYSIS. 3 Hours.

Reviews theory of cost-benefit and cost-effective analyses; explores the research, measurement and methodological requirements for the assessments of costs and benefits. It is recommended that students have completed at least one graduate course in research and one graduate class in public finance.

PAPP 5349. RESEARCH DESIGN IN PUBLIC POLICY. 3 Hours.

Application of research issues, writing, and communication skills in public policy. Designed to assist students in preparing their research for master's thesis or project report. Also offered as PLAN 5380. Credit can only be granted once.

PAPP 5350. INTRODUCTION TO PUBLIC ADMINISTRATION. 3 Hours.

This is a graduate level introductory course designed to give students an understanding of public administration as a field of academic inquiry and professional practice within the context of American federalism, democratic values, institutional dynamics, and bureaucratic politics. In addition to contextually defining public administration, the course addresses government reform, intergovernmental relations, public ethics, organizational dynamics and behavior, personnel issues, budgeting, and e-governance.

PAPP 5351. HUMAN RESOURCE MANAGEMENT IN GOVERNMENT AND NON-PROFITS. 3 Hours.

The purpose of this course is to familiarize students with key functions of government and non-profit personnel systems, discuss various theoretical approaches and techniques, and understand the major legal requirements of public and non-profit personnel management. The course examines the structure, role, and evolution of the Civil Service, current personnel policies, and personnel management tasks such as examination, recruitment, position classification, and collective bargaining.

PAPP 5352. CONFLICT RESOLUTION IN THE PUBLIC AND NONPROFIT MANAGEMENT. 3 Hours.

Labor management at all levels of government and non-profits, ability to work together to solve problems. Emphasis on collective and interest based bargaining, mediation, labor management partnership. Simulation exercises teach dynamics of bargaining, negotiation, problem solving, and small group dynamics.

PAPP 5353. REFORM AND INNOVATION IN URBAN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Designed to acquaint students with urban governance and non-profit reform and innovation. Course will explore how reformed government differs from traditional bureaucracy by contrasting it with entrepreneurial government and other innovations. Examines some of the areas most in need of reform, including service delivery, organizational capacity, and fiscal decentralization.

PAPP 5354. NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP. 3 Hours.

This course prepares students to be entrepreneurs, innovators and change leaders by using social entrepreneurship perspective to examine leadership and management practices of nonprofit organizations. Through hands-on experiential training, developing skills in needs assessment, and formulating interventions for social change, students develop a blueprint of a nonprofit organization that takes an innovative approach for sustainable solutions of social problems.

PAPP 5355. NONPROFIT ORGANIZATIONS IN PUBLIC POLICY. 3 Hours.

This course examines non-profits as community institutions with an outward focus: the political, economic, and inter-organizational environment, fund-raising and financial management, community relations and needs assessment, the role of the volunteers, boards and community leaders, marketing, and legal and government issues.

PAPP 5356. ENTREPRENEURSHIP IN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Public and non-profit entrepreneurship involves the use of public powers, and partnerships with individuals, firms and other organizations, to achieve public purposes. The focus will be on creative management techniques and methods employed in managing the public and non-profit sectors.

PAPP 5357. STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Readings and case studies of strategic planning and management in the public and non-profit sectors; application of principles to an actual situation, involving stakeholder identification, environmental scanning, and formulation of mission statements, goals, and strategies. Offered as PLAN 5312 and PAPP 5357. Credit will be granted only once.

PAPP 5358. ETHICS IN THE PUBLIC SERVICE. 3 Hours.

This course examines public service theoretical ethics literature to provide a basis for each student to both reflect upon and expand their comprehension of the values and processes of ethical decision making. Beyond theoretical works, it addresses the application and evaluation of theory against the professional, workaday reality of case studies, ethical codes and other relevant materials. Three major learning objectives are: 1) achievement of a solid understanding of the dominant theoretical perspectives in the public service ethics literature; 2) competency in the development of guidelines and procedures that encourage ethical behavior, and 3) enhancement of the reach and resiliency of each member's personal commitment to public service ethics.

PAPP 5359. ORGANIZATIONAL DIAGNOSIS. 3 Hours.

This class deals with tools and techniques necessary to manage public organizations. The learning objectives include ability to conduct an organizational diagnostic; and familiarity with group procedures and facilitation techniques involved in organizational change.

PAPP 5360. PUBLIC AND NON-PROFIT MANAGEMENT INTERNSHIP. 3 Hours.

Designed to integrate work experience and coursework through a series of brief work-related assignments; presentations by local planning and management practitioners and class discussions and exercises. Enrollment is open to both pre-entry and in-career students. Formal internship placements with agency mentors will be arranged. P/F only.

PAPP 5361. INTERNATIONAL ORGANIZATIONS. 3 Hours.

The course focuses on the rise of governmental and nongovernmental organizations in geopolitics, international development, and environmental management. It analyzes their institutional histories, their organizational structures and cultures, and their role as institutional policy actors in the global diffusion of policy initiatives and managerial knowledge and practices.

PAPP 5362. URBAN DIVERSITY. 3 Hours.

Examines the growing spatial and social diversity of cities; how physical as well as socioeconomic urban structures have fostered race, class, and gender inequalities; how urban policies have addressed and can address these issues. Offered as PLAN 5362 and PAPP 5362.

PAPP 5363. CIVIL RIGHTS AND URBAN MINORITIES. 3 Hours.

Examines the changes in and growth of the civil rights of minorities in the United States from the close of the Civil War to the present. This is accomplished through the study of court decisions, legislation, and the civil rights movement in the 1950s and 1960s, as seen through the eyes of contemporary writers, including William Faulkner, Alice Walker, and Alex Haley.

PAPP 5364. URBAN POLITICAL ECONOMY. 3 Hours.

Examines the theoretical bases of economic paradigms and the different economic policies that logically flow from them. Comparison is made between the orthodox, or neoclassical, model of economics and alternative heterodox models, including comparing the growth and development of the urban system, land use patterns, and economic policy debates. Consideration will be given to how and why the neoclassical model remains the dominant model for economic policy in Western, capitalist countries.

PAPP 5365. FOUNDATIONS OF ENVIRONMENTAL POLICY. 3 Hours.

Explores how environmental controversy is rooted in conflict between a number of schools of environmental policy thought with divergent perspectives on issues such as how to define progress, how to balance the needs of economy and ecosystem, how to cope with environmental complexity, and what role science should play in environmental affairs. Also offered as PLAN 5343; credit will be granted only once.

PAPP 5366. US IMMIGRATION POLICIES AND PLANNING FOR IMMIGRANTS. 3 Hours.

A seminar course where weekly readings would include: perspectives on international migration theory; the evolution of US immigration policy and national security; theories and urban issues related to immigrant assimilation and incorporation; urban ethnic economies and ethnic enclaves; segregation and housing of immigrants; globalization and immigrant labor networks; governance issues with providing education and other public services to immigrants and their children; and social work issues regarding generational conflict in immigrant families.

PAPP 5367. STRATEGIC PUBLIC AND NONPROFIT HUMAN RESOURCES MANAGEMENT. 3 Hours.

This course is designed to acquaint students with the theory and practice of strategically developing, utilizing, and aligning human resources so that maximum contribution from each member of an organization is used toward the attainment of strategic long-range goals and objectives. Topics include HR strategy, diversity, leadership, selection, training and development, compensation, classification, performance appraisal, and future practices for public and non-profit organizations.

PAPP 5368. PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS. 3 Hours.

The course examines the rights and obligations of employers and employees. It does this by examining the legal background pertinent to public and nonprofit management. Topics addressed include employee selection, promotion and discipline, anti-discrimination legislation, gender and family issues legislation, environmental, safety and health issues, whistleblower legislation, immigration law, worker's compensation, labor law, and drug and alcohol issues.

PAPP 5390. TOPICS IN URBAN THEORY. 3 Hours.

Different topics explored on an intensive basis, especially recent theoretical approaches. May be repeated for credit as topic changes.

PAPP 5391. TOPICS IN URBAN POLICY. 3 Hours.

Different topics and approaches in analysis of urban problems. May be repeated for credit as topic changes.

PAPP 5392. TOPICS IN URBAN MANAGEMENT. 3 Hours.

Selected topics on current management problems including small city management, community-neighborhood relations, citizen involvement programs and techniques, personal and professional effectiveness as a total person, intergovernmental strategies and styles, public-private sector collaboration and co-planning, privatization, and other alternatives to economic service delivery. May be repeated as topic changes.

PAPP 5394. SPECIAL TOPICS IN URBAN RESEARCH. 3 Hours.

Different topics each semester concentrate on a variety of methodological techniques and research strategies, such as demographic research and survey techniques. May be repeated for credit as topic changes.

PAPP 5395. CONFERENCE COURSE IN URBAN AFFAIRS. 3 Hours.

Reading and research in a specialized area of urban affairs under the direction of a member of the graduate faculty.

PAPP 5396. PROJECT REPORT. 3 Hours.

Student prepares report focusing on specific policy or professional issue, utilizing appropriate research techniques; subject area and design of project report with consent of instructor. Graded P/F/R only.

PAPP 5397. RESEARCH REPORT. 3 Hours.

Student prepares report comparable to a journal article focusing on research issue, utilizing appropriate theory and research techniques; subject area and design of research report with consent of instructor. Graded P/F/R only. Prerequisite: PAPP 5342.

PAPP 5398. THESIS. 3 Hours.

A thesis conforming to University and departmental requirements may be prepared by graduate students in urban affairs. Graded F, R.

PAPP 5399. PUBLIC ADMINISTRATION CAPSTONE. 3 Hours.

This integrative applied research course assesses the student's ability to analyze, synthesize, and formulate cogent recommendations to solve a real public sector problem. Students will write the capstone paper using concepts drawn from the MPA core curriculum, their chosen emphasis track, and the student's professional public work experience. Students are required to successfully defend their capstone paper before a Public Administration Forum consisting of CAPPA faculty, students, and other interested parties. Prerequisite: Completion of all other course work required for the MPA degree, including core courses and emphasis area courses, unless an exception is approved by the MPA advisor.

PAPP 5698. THESIS. 6 Hours.

A thesis conforming to University and departmental requirements may be prepared by graduate students in urban affairs. Graded P/F/R.

PAPP 6301. THEORETICAL FOUNDATIONS AND PH.D. WORKSHOP. 3 Hours.

Explores the development and function of theoretical models and frameworks. Examines the major theories from the social sciences designed for framing urban planning or administration issues and public policy. Designed to assist doctoral students in preparing their dissertation research. Opportunities to present work in progress, share ideas, and interact with faculty. Also offered as PLAN 6301; credit will be granted only once. Prerequisite: PLAN 5346; and PLAN 5317 or PAPP 5342.

PAPP 6305. ADVANCED THEORIES OF URBAN SOCIETY. 3 Hours.

Advanced theoretical perspectives of the community and community organization are examined. Special emphasis given to theories from human ecology, organization and stratification, and social welfare.

PAPP 6306. SEMINAR IN PUBLIC ADMINISTRATION. 3 Hours.

Final course in the public administration field, focuses on review and integration of the theories and principles of public administration.

PAPP 6307. THE URBAN ECONOMY. 3 Hours.

Students explore theories that explain local, state, national and international economies in a predominantly urbanized country and world. The course provides an understanding of agglomeration economies that are the foundation of urban genesis, growth and stability or decline. Individual topic areas include transportation, housing, environment, education and employment. An overarching theme is understanding human behavior and decisions in the urban context drawing on the economic theories new urban economics, new economic geography, new institutional economics and others. Offered as PAPP 6307 and PLAN 6307; credit will only be granted for one.

PAPP 6309. INTERGOVERNMENTAL RELATIONS IN THE ADMINISTRATION AND PUBLIC POLICY. 3 Hours.

The course explores the constitutional, political and fiscal relationships among the federal, state and local levels of government. How the relationships impact the administration of urban public policy is of primary focus.

PAPP 6310. MONETARY AND FISCAL POLICY: THE FEDERAL ROLE. 3 Hours.

Examination of the role of the federal government in maintaining economic stability, ensuring full employment and controlling inflation; exploration of liberal interventionist, conservative and radical theories of state economic management to assess the various policy alternatives and the importance of interest groups.

PAPP 6311. ADVANCED PUBLIC POLICY FORMATION AND ANALYSIS. 3 Hours.

The course covers policy process, policy formulation and policy analysis, using multiple theoretical and analytical perspectives. The primary focus is on U.S. policy, with an emphasis on state and local policy issues. The course aims to provide students with advanced knowledge in the theory, process, and tools of policy analysis essential in critiquing and researching public policy. Students will also gain advanced skills in the development and presentation of policy analysis and recommendations.

PAPP 6314. SEMINAR IN POLICY PROCESSES. 3 Hours.

The course focuses on the political, economic, and sociological institutions in the policy process, including various theoretical approaches, and application of these multidisciplinary perspectives in the analysis of specific policy issues.

PAPP 6315. PUBLIC ADMINISTRATION THEORY. 3 Hours.

This course is designed to critically examine public administration theory through the lenses of various governance models that have been proposed beginning with Weber's "ideal"; bureaucratic model through Osborne and Gaebler's market model to Fox and Miller's postmodern discourse model. The course begins by examining each governance model's stated or implied assumptions (about man, government, state, etc.) Second, the course considers the political philosophy and conceptual pillars on which the models are theoretically founded. Finally, the course examines the ideas of what constitutes a state as it might be relevant to a particular model and public administration.

PAPP 6316. SEMINAR IN PUBLIC ADMINISTRATION. 3 Hours.

Final course in the public administration field, focuses on review and integration of the theories that explain the structure, growth and change of public administration.

PAPP 6320. ADVANCED ORGANIZATION THEORY. 3 Hours.

The purpose of this advanced seminar is to examine the role of public agencies as organs of the State. It focuses on federal, urban, and nonprofit organizations. Learning objectives include understanding of interpretive, critical, and postmodern critiques of State's institutions; and application of power, knowledge, and gender lenses to the analysis of organizational practices, culture, and policy actions. Prerequisite: PAPP 5320 or PAPP 5323.

PAPP 6326. PUBLIC BUDGETING & FINANCE. 3 Hours.

The primary objective of this seminar is to provide students with the theoretical underpinnings of budgeting and financial management in the public sector. Students will engage in in-depth discussions of public budgeting and financial management topics drawn from economics, decision-making models, urban politics, federalism, and others to be able to have a sound understanding of how fiscal decisions affect public administration and policy.

PAPP 6340. RESEARCH DESIGN. 3 Hours.

Advanced course especially for Ph.D. students; covers logic of research design and problems of structure. Emphasis on empirical and quantitative studies.

PAPP 6344. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PAPP 6344 and PLAN 6347; credit will be given only once.

PAPP 6346. ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS. 3 Hours.

An introduction to selected advanced techniques related to planning analysis. Subjects include advanced applied regression analysis, multivariate logit analysis, and multinomial logistic regression. Applications of projection techniques, land use and transportation models, and methods of regional analysis. Offered as PLAN 6346 and PAPP 6346. Credit will be given only once.

PAPP 6349. DECISION MAKING AND PUBLIC POLICY ANALYSIS. 3 Hours.

This course explores the theoretical, practical, and topical connections between public policy and public administration through a decision-making lens. The objectives of the course are to enable students to identify, critique, and connect the theoretical and meta-theoretical assumptions of decision-making models to models of public policy analysis and public administration. Course objectives will be pursued through readings, seminar discussions, and research-based assignments that focus on the intersection between decision-making, public policy, and public administration.

PAPP 6399. DISSERTATION. 3 Hours.

Graded F/R only.

PAPP 6699. DISSERTATION. 6 Hours.

Graded F/R/P/W only.

PAPP 6999. DISSERTATION. 9 Hours.

Graded P/F/R.

PAPP 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Public Policy

Master's Degree

- Public Policy, M.P.P. (<https://www.uta.edu/cappa/academics/public-affairs/master-public-policy/>)

Doctorate Degree

- Ph.D. Public Administration and Public Policy (<https://www.uta.edu/cappa/academics/public-affairs/phd-puad.php>)

Certificates

- Public Budgeting and Financial Management Certificate (<https://www.uta.edu/cappa/academics/certificate-programs/>)
- Urban Non-Profit Management Certificate (<https://www.uta.edu/cappa/academics/certificate-programs/>)

Minor Offered

- Urban Affairs (<https://www.uta.edu/cappa/academics/minors/urban-affairs.php>)

Master in Public Policy

The Master of Public Policy (MPP) prepares students for challenging careers in the development, implementation and evaluation of public policies that require both the comprehension of complex urban issues and the application of tangible solutions. The degree places heavy emphasis on empirical methods essential in the public policy analysis. The program is organized around select public policy issues that focus on the economic/community development, environmental or healthcare challenges in the urban milieu. Students also have the option of designing an emphasis in an area of their own design, with the approval of the program director.

Because urban issues are complex, the program is interdisciplinary in character, curriculum content, and faculty. It provides a stimulating and inclusive environment for intellectual curiosity, rigorous inquiry and creativity and for developing new knowledge and putting it to work in the service of environmentally and economically sustainable healthy urban communities to ultimately improve the quality of life. It is designed to attract candidates that have technical expertise but desire to advance their knowledge of the dynamics of public policy in twenty-first century metropolitan regions.

Students develop the knowledge and methodological skills needed to analyze, question, challenge and shape urban policy. They draw on a core of economics, political science and sociology to analyze and interpret multiple types of data in order to critically evaluate problems and provide alternative courses of action.

PhD in Public Administration and Public Policy

Students are prepared for academic careers, positions in research institutions and upper administrative positions in public and non-profit organizations. The PAPP Ph.D. courses address the social sciences, public policy and public administration literatures critical to the integrative approach of the program. Research methods courses include an intermediate quantitative methods course, an advanced quantitative methods course and a qualitative methods course. Students select a three hour elective aligned with their research interests. Students are assigned an initial adviser based primarily on their research interests and add two additional supervising committee members by the end of their first semester to help guide them through their course of study.

A full-time student can expect to complete the required courses in no more than two academic years. Upon completing all courses (39 hours), students sit for their written comprehensive examination. The comprehensive examination is an integrative exam that blends public policy issues with public administration. Students are permitted to pursue the degree as a part time student. This is typically accomplished by completing two courses per semester. Students are required to enroll fall and spring semesters per academic year to be considered an ongoing student.

Students who complete a Masters in Public Administration or a Masters in Public Policy degree may be eligible to waive some coursework and are encouraged to meet with their advisory committee chair after admission to review their degree plan.

Advising

MPP Graduate Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Admission Requirements

MPP Program Director: Dr. Rod Hissong

Prospective Students Contact: James Brown, Academic Recruiter

The Masters in Public Policy (MPP) program takes a holistic approach to the application review process. Each applicant's file is reviewed individually with equal consideration given to the quantitative and qualitative aspects of the student's record. A complete application includes:

- Graduate Record Exam (GRE) score: Writing (Exceptions: Outstanding UT Arlington graduates may qualify for GRE waiver providing they meet certain requirements)
- Undergraduate Grade Point Average (GPA): The undergraduate GPA based on the last 60 hours of course work as calculated by the Graduate School from the official transcript.
- Graduate Record Exam (GRE) scores: Verbal and Quantitative (Exceptions: Outstanding UT Arlington graduates may qualify for GRE waiver providing they meet certain requirements)
- Letters of Recommendation attesting to the applicant's potential to do Master's-level work and complete the program. Letters for Master's programs should be from professors or supervisors at work (download Letter of Recommendation form). Letters of recommendation should be sent directly to the CAPP College Recruiter (cappa.advising@uta.edu) via email or postal service, CAPP RECRUITER, Box 19108, Arlington TX 76019.
- Essay by applicant approximately one double-spaced page in length (approximately 250 words). The Essay is considered both for its content and quality of writing. The Essay should address the following questions: 1. Why do you want to earn a Master's degree in the program for which you are applying? 2. What relevant background and experience do you bring to the program? The essay can also include other concerns you'd like to bring to the attention of the Graduate Advisor or Master's Admissions Committee.
- Non-native English speakers only: TOEFL or IELTS scores (Exceptions: An applicant holding either a Bachelor's or a Master's degree from a regionally accredited U.S. college or university is not required to submit a TOEFL, TOEFL iBT, or IELTS score for admission purposes.)

Waiver

1. Submission of GRE scores may be waived for applicants to CAPP master's programs who hold a bachelor's degree from UTA with a 3.0 or higher GPA in their last 60 hours as calculated by the Graduate School.
2. Submissions of TOEFL or IELTS scores may be waived for applicants to CAPP master's programs who hold a Bachelor's or Master's degree from a regionally accredited U.S. college or university.

Types of Admission

Unconditional Admission

1. Applicants who meet all the following requirements will be considered for unconditional admission: a preferred minimum Writing GRE score of 4.0
2. Minimum Undergraduate GPA of 3.0
3. A preferred minimum Verbal GRE score of 450 (Revised GRE Test: 150), and preferred minimum Quantitative GRE of 450 (Revised GRE Test: 141), and a preferred minimum combined Verbal and Quantitative score of 1,000 (Revised Test Combined 291)
4. Outstanding letters of recommendation
5. Strong, well-written personal essay
6. Non-native English speakers only: TOEFL scores of at least 550 (paper-based), 213 (computer-based), or 79 (iBT) with sectional scores that meet or exceed 22 Writing, 21 Speaking, 20 Reading, and 16 Listening; or, IELTS score of at least 6.5.

Probationary Admission

Applicants who do not meet all requirements for Unconditional admission will be considered for Probationary admission on the basis of the strength of all the listed admission factors. Test scores will not constitute the sole or primary basis for ending consideration of an applicant. Under Probationary admission, special course requirements or other conditions may be imposed by the CAPP Master's Admissions Committee. Applicants who meet all the standards for Unconditional admission except for deficiency in Writing GRE score will be considered for Probationary Admission conditional on completing an approved Writing course in their first semester.

Other types of admission decisions pertaining to Master's applicants:

1. **Deferred:** Applicants who are unable to supply required application materials, or who must complete additional preparatory work before their admissibility can be determined, may be deferred until records are complete.
2. **Provisional:** Applicants who are unable to supply all required documentation prior to the admission deadline but who otherwise appear to meet admission requirements may be granted Provisional admission pending submission of complete and satisfactory credentials before the start of classes in which they have registered in a Provisional status.
3. **Denied:** Applicants who fail to meet more than one of the admission requirements and for whom the CAPP Master's Admission Committee finds there is insufficient basis to justify any other kind of admission will be Denied admission. As the admission process is competitive, applicants meeting basic admission requirements who are less well qualified than other applicants may also be denied admission.

Scholarship/Fellowship Criteria

- Graduate students with a GPA of 3.0 or better who are enrolled in six hours or more are eligible to apply for competitive scholarships and fellowships.

- Scholarships and fellowships for Master's and Doctoral students will be competitively awarded based on consideration of the all admission criteria assessed by their admitting programs.

CAPPA Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Degree Requirements and Courses

CURRICULUM AN DEGREE REQUIREMENTS			39-42
Required Core Courses			15
PAPP 5305	THEORIES OF URBAN SOCIETY		3
PAPP 5306	THE URBAN ECONOMY		3
PAPP 5309	LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING		3
PAPP 5311	PUBLIC POLICY FORMATION AND ANALYSIS		3
PAPP 5324	URBAN PUBLIC FINANCE		3
Required Research and Analysis Courses			12
PAPP 5302	FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS		3
PAPP 5342	INTERMEDIATE DATA ANALYSIS		3
PAPP 5346	BIG DATA AND PUBLIC POLICY ANALYSIS		3
or PAPP 5345	EVALUATION RESEARCH		
PAPP 5349	RESEARCH DESIGN IN PUBLIC POLICY		3
REQUIRED POLICY EMPHASIS AREA COURSES:			
Healthcare Policy			
PAPP 5314	HEALTH POLICY		3
Student chooses 6 additional hours from CAPPA or any UTA graduate Program. MPP Director approval is required			6
Economic/Community Development Policy			
PAPP 5312	ECONOMIC POLICY		3
Student chooses 6 additional hours from CAPPA or any UTA graduate Program. MPP Director approval is required			6
Environmental Policy			
PAPP 5365	FOUNDATIONS OF ENVIRONMENTAL POLICY		3
Student chooses 6 additional hours from CAPPA or any UTA graduate Program. MPP director approval is required			6
Criminal Justice Policy			
Student chooses nine hours of approved courses from the Criminal Justice Graduate Program			
Professional Report			3
PAPP 5396	PROJECT REPORT		3
Thesis Option			6
PAPP 5698	THESIS		6

Public Policy Students

First Year

Summer Session	Hours	First Semester	Hours	Second Semester	Hours
53XX Emphasis Elective ¹		3 PAPP 5302		3 PAPP 5309	3
		PAPP 5305		3 PAPP 5345	3
		PAPP 5306		3 PAPP 5314	3
	3		9		9

Second Year

Summer Session	Hours	First Semester	Hours	Second Semester	Hours
PAPP 5396		3 PAPP 5324		3 PAPP 5349	3
		PAPP 5342		3 PAPP 5311	3
		53XX Emphasis Elective ¹		3	
		3		9	6

Total Hours: 39

- 1 Electives as approved by the Graduate Advisor or MPP Director.
- 2 Core Course
- 3 Research and Analysis Course

Public Policy Program: The College of Architecture, Planning and Public Affairs at the University of Texas at Arlington offers a Masters in Public Policy (MPP) that prepares students for public policy and professionals for careers and career-advancement in the development, implementation and evaluation of urban policies that require both comprehension of complex issues yet application of tangible solutions.

Program Curriculum: The curriculum is comprised of five core courses that address the social context from which public policy emanates. These courses demonstrate the role of economics, politics and society in identifying urban social issues and developing policies to address them. Four required research and analysis courses prepare the student with the requisite techniques for evaluating the need for and the effect of public policy. The courses range from introductory statistics to cost benefit analysis. The next portion of the curriculum, nine hours, depends upon the student's interests in one of the three policy areas of Healthcare Policy, Environmental Policy or Economic Policy. Students complete the mandatory course for the emphasis area in the College of Architecture, Planning and Public Affairs and six additional hours from within CAPPA or from a department elsewhere on the UTA campus. The student has the option to complete their degree with a three-hour professional report or a six-hour master's thesis.

Dual Degree Program

Students in Public Policy may participate in a dual degree program whereby they can earn a Master's in Public Policy and a Master's of Science in Social Work, Master's in City and Regional Planning, a Master's in Public Administration, a Master's in Economic Data Analytics or a Master's in Criminal Justice. By participating in a dual degree program, students can apply a number of semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately. The number of hours which may be jointly applied ranges from nine to 18 hours, subject to the approval of Graduate Advisors from both programs. To participate in the dual degree program, students must make separate application to each program and must submit a separate Program of Work for each degree. Those interested in the dual degree program should consult the appropriate Graduate Advisor(s) for further information on course requirements. See also the statement on "Dual Degree Programs" in the general admission section of this catalog.

Advising

PAPP Academic Advisor: Barbara Saenz

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Ph.D. in Public Administration and Public Policy Program (PAPP)

PAPP Program Director: Dr. Karabi Bezboruah

Prospective Students Contact: James Brown, Academic Recruiter

The PAPP Ph.D. has eight required core courses, four required research courses, three hours in an elective area, and a minimum of nine dissertation credit hours. The eight core courses address the social sciences, public policy and public administration literatures critical to the integrative approach of the program. The methods courses include an intermediate quantitative methods course, an advanced quantitative methods course and a qualitative methods course. The three hours in an elective are chosen tailored to the student's research interests. Students are assigned an initial adviser based primarily on their research interests and add two additional supervising committee members by the end of their first semester to help guide them through their course of study.

A full-time student can expect to complete the required courses in no more than two academic years. Upon completing all courses (39 hours), students sit for their written comprehensive examination. The comprehensive examination is an integrative exam that blends public policy issues with public administration.

Students who completed a Masters in Public Administration or a Masters in Public Policy degree may be eligible to waive some coursework and are encouraged to meet with their advisory committee chair after admission to review their degree plan.

Application Requirements and Deadlines

Along with the Graduate School application requirements, a complete application includes:

1. Official transcripts from colleges and universities attended. Students that obtained their masters degree at UT Arlington are not required to submit separate copies of transcripts as their information will be available to the CAPPAs advisors online. Information about submitting transcripts is available in the Graduate Catalog; and
2. Official test score reports for the Graduate Record Exam (GRE) and, for international applicants, the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). Information about submitting official test scores is available from the Graduate Catalog. The ETS code for UTA is 6013; and
3. Three Letters of Recommendation. Letters should attest to the applicant's ability to do doctoral-level work and successfully complete the dissertation. Letters must be from references who hold a Ph.D. degree; and
4. An essay from the applicant that discusses the student's research agenda, identifies the faculty with whom the student will work, and states the reasons for pursuing a doctoral degree. The essay should be approximately 250 words. The essay is considered both for its content and writing quality.

Official transcripts and test scores must be sent directly to Graduate Admissions by the institution and ETS respectively. Letters of recommendation and personal essay should be sent directly to the CAPPAs College Recruiter (cappa.advising@uta.edu) via email or postal service, CAPPAs RECRUITER, Box 19108, Arlington TX 76019. It is the applicant's responsibility to ensure all application materials are received by the priority deadline of February 1. Incomplete applications or applications received after the deadline may be deferred.

CAPPAs primarily admits doctoral students for the Ph.D. in Public Administration and Public Policy for fall semester. Spring admissions are rare and there are no summer admissions.

Applicants who wish to be considered for graduate teaching assistant positions or other financial assistance, must submit their applications by their first week in February for full consideration. Only complete applications (including GRE scores and letters) will be considered for financial assistance. Students must also complete the university application for financial aid in mav ScholarShop (<http://www.uta.edu/fao/scholarships/>).

Admissions Criteria

Applicants may be admitted unconditionally with a graduate GPA of 3.6, a Verbal GRE score of at least 153 (500 if taken before August 1, 2011 and a Quantitative GRE score of at least 144 (500 if taken before August 1, 2011). International applicants are required to have a score of 213 or higher on the TOEFL (550 or higher on the written TOEFL; 79 or higher on TOEFL iBT). Strength of letters of recommendation and quality of personal statement and Master's degree field of study are also considered.

or

Applicants may be admitted unconditionally with a graduate GPA of 3.7, a Verbal GRE score of at least 153 (500 if taken before August 1, 2011 and a Quantitative GRE score of at least 140 (500 if taken before August 1, 2011). International applicants are required to have a score of 213 or higher on the TOEFL (550 or higher on the written TOEFL; 79 or higher on TOEFL iBT). Strength of letters of recommendation and quality of personal statement and Master's degree field of study are also considered.

Applicants not admitted unconditionally may be considered for admission on probation based on factors mentioned above as well as multilingual proficiency, first generation graduate student and applicant's community service experience. The doctoral admissions committee will set the probationary conditions.

The admissions committee may defer the admission decision when a component of the application is incomplete. It may also admit a student provisionally when an applicant is unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements.

CAPPAs Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPAs will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Ph.D. students who do not complete dissertation proposal within two years of passing comprehensive exam will accrue 2 deficiency points.

Ph.D. students who do not complete all requirements for the Doctoral degree within four years after passing the comprehensive examination will accrue 1 deficiency point per year beyond the four year mark.

Doctoral Degree Requirements

Curriculum and Degree Requirements

Required Core Courses (24 hours)

PAPP 6315	PUBLIC ADMINISTRATION THEORY	3
PAPP 6307	THE URBAN ECONOMY	3
PAPP 6305	ADVANCED THEORIES OF URBAN SOCIETY	3
PAPP 6309	INTERGOVERNMENTAL RELATIONS IN THE ADMINISTRATION AND PUBLIC POLICY	3
PAPP 6311	ADVANCED PUBLIC POLICY FORMATION AND ANALYSIS	3
PAPP 6320	ADVANCED ORGANIZATION THEORY	3
PAPP 6326	PUBLIC BUDGETING & FINANCE	3
PAPP 6349	DECISION MAKING AND PUBLIC POLICY ANALYSIS	3

Required Research Courses (12 hours)

PAPP 5344	QUALITATIVE METHODS	3
PAPP 5342	INTERMEDIATE DATA ANALYSIS	3
PAPP 6301	THEORETICAL FOUNDATIONS AND PH.D. WORKSHOP	3
PLAN 6346	ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS	3

Selected Elective (3 hours)

Dissertation (minimum 9 hours)	9
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Total Hours	48
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PAPP Students

First Year

Summer Session	Hours	First Semester	Hours	Second Semester	Hours
Elective Course	3	PAPP 5342	3	PAPP 6311	3
PAPP 5309	3	PAPP 6305	3	PAPP 6315	3
		PAPP 6320	3	PAPP 6346	3
	6		9		9

Second Year

	First Semester	Hours	Second Semester	Hours
	PAPP 5344	3	PAPP 6301	3
	PAPP 6307	3	PAPP 6326	3
	PAPP 6309	3	PAPP 6349	3
	9		9	

Third Year

	First Semester	Hours	Second Semester	Hours
	PAPP 6399, 6699, or 6999	3-9	PAPP 6399, 6699, or 6999	3-9
	3-9		3-9	

Fourth Year

	First Semester	Hours
	PAPP 6399, 6699, or 7399 ²	3-6
	3-6	

Total Hours: 51-66

¹ Elective Course must be determined in consultation with your program/advisory chair and/or committee.

² Student must complete 9hrs of Dissertation and/or enroll in PAPP 7399 (Final Dissertation) which must be taken in the final graduating semester.

Organization

Notes on Curriculum and Degree Requirements

Students with the approval of their adviser may select substituted methods courses for the "required research courses." Listed "Selected Emphasis" courses are examples of possible classes. "

Comprehensive Exam and Dissertation

A Ph.D. student who fails to pass a comprehensive examination is allowed to retake the examination once. In this case, the exam must be retaken the following semester (excluding Summer semester). If the student fails to pass the examination a second time, the student is not permitted to continue in the doctoral program.

Upon successful completion of the written comprehensive exam students form a three-member faculty committee and prepare their dissertation proposal. Given the research topic and preparedness of the student, the faculty committee may recommend that the student take additional courses that contribute to the student's dissertation. The student will defend a dissertation proposal before her/his committee.

Successful completion of the dissertation proposal advances the student to the status of candidacy (ABD). The student continues to work closely with her/his dissertation committee to the completion of the dissertation.

Dissertation Proposal

Upon successful completion of the written comprehensive examination, students will work in preparation of their dissertation proposal. This preparation may include independent study or structured courses and is guided by the student's Dissertation Committee. Students must also work closely with their dissertation supervisor and committee to develop their dissertation proposal. A formal oral proposal defense must be held, and the proposal must be formally approved by the dissertation committee before the student may continue to complete the dissertation. Guidelines for the dissertation proposal are available in the Ph.D. Student Handbook.

Dissertation

The dissertation represents the culmination of the student's academic efforts and so is expected to demonstrate original and independent research activity and be a significant contribution to knowledge.

Upon the successful defense of their dissertation proposal, the student is required to submit an application to the UT Arlington's Institutional Review Board if their research involves human subjects. Detailed information on the application process is available at: UTA's Human Subjects Research (<http://www.uta.edu/research/administration/departments/rs/human-subjects-irb/>)

Doctoral students must enroll in a minimum of 3 dissertation hours (PAPP 6399 DISSERTATION) every long semester (Fall & Spring). The student must accumulate a minimum of nine dissertation hours to graduate. Once the student's committee has reviewed the completed dissertation and agree that the student is ready to defend, the student enrolls in PAPP 7399 DOCTORAL DEGREE COMPLETION / in the term designated as their completion term. Students may designate only one term as the completion term. Doctoral students who do not graduate at the end of their completion term will receive a grade of R, W or F and must enroll in a minimum of 6 hours of dissertation research (PAPP 6699 DISSERTATION) every term until graduation.

The Office of Graduate Studies offers Dissertation Seminars each semester and encourages all Dissertation students to attend.

The dissertation defense is a public oral examination open to all members (faculty, students and invited guests) of the University community. Questioning of the candidate will be directed by the student's dissertation committee. All members of the student's committee must be present at the defense. Although the defense is concerned primarily with the dissertation research and its interpretation, the examining committee may explore the student's knowledge of areas relevant to the core of the dissertation problem.

The dissertation defense may result in a decision that the candidate has:

1. passed unconditionally;
2. passed conditionally with remedial work specified by the committee;
3. failed, with permission to be re-examined after a specified period; or
4. failed and dismissed from the program.

The dissertation must be approved unanimously by the student's dissertation supervising committee.

Graduate Certificates

Prospective Students Contact: James Brown, Academic Recruiter

Certificate in Urban Nonprofit Management

Certificate Advisor: Karolyn Field

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Certificate Coordinator: Dr. Karabi Bezboruah

The Urban Nonprofit Management Certificate is a 15 credit hours certificate which provides in-depth management training to nonprofit managers, staff, board members and volunteers to strengthen their management skills, administrative systems, and service delivery programs.

The Urban Nonprofit Management Certificate at The University of Texas at Arlington prepares students who are working in or are considering management careers in nonprofit organizations. The courses in this program address pertinent topics in entrepreneurship, leadership and management of the trillion dollar nonprofit sector that includes education, research, healthcare, art, culture, religion, social and human services, advocacy, legal services, international organizations, foundations, and mutual benefit professional and trade associations. Students from any department or discipline may elect to complete the certificate program. Upon completion, students will be prepared to assume key roles in any nonprofit institution.

The certificate requires completion of PAPP 5354 NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP or and PAPP 5355 NONPROFIT ORGANIZATIONS IN PUBLIC POLICY or as well as three additional courses to be selected by the student with approval of the Urban Nonprofit Management certificate program adviser.

Required (6 hours)		6
PAPP 5354	NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP	3
PAPP 5355	NONPROFIT ORGANIZATIONS IN PUBLIC POLICY	3
Selectives (9 hours)		9
Select three courses from the following list of courses:		
PAPP 5302	FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS	3
PAPP 5309	LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING	3
PAPP 5311	PUBLIC POLICY FORMATION AND ANALYSIS	3
PAPP 5313	COMMUNITY DEVELOPMENT	3
PAPP 5325	ADMINISTRATIVE LAW	3
PAPP 5329	FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5345	EVALUATION RESEARCH	3
PAPP 5346	BIG DATA AND PUBLIC POLICY ANALYSIS	3
PAPP 5348	COST BENEFIT ANALYSIS	3
PAPP 5351	HUMAN RESOURCE MANAGEMENT IN GOVERNMENT AND NON-PROFITS	3
PAPP 5352	CONFLICT RESOLUTION IN THE PUBLIC AND NONPROFIT MANAGEMENT	3
PAPP 5357	STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5367	STRATEGIC PUBLIC AND NONPROFIT HUMAN RESOURCES MANAGEMENT	3
PAPP 5368	PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS	3

Students who are already enrolled in a graduate degree program at U.T. Arlington, especially the campus or online MPA, need only declare their intent to enroll by submitting the appropriate application form to Dr. Karabi Bezboruah (bezborua@uta.edu), the Urban Nonprofit Management Certificate Advisor. No prerequisite requirements are essential for these students.

Students who desire only to enroll in the Urban Nonprofit Management Certificate program but NOT in a graduate degree program may apply for admission to UT Arlington as a special student or "non-degree seeking" student. An undergraduate degree and grade point average of 3.0 shall be required. A GRE (graduate record examination) score and letters of recommendation are not necessary for admission to the Urban Nonprofit Management Certificate program. Any student that later seeks a graduate degree in a UT Arlington college or school may apply nine hours of coursework toward that degree within six years of completion and award of the Urban Nonprofit Management Certificate and by petition to the Graduate School through her or his prospective academic department. The acceptance or waiver of the remaining six hours taken as part of the requirements for the award of the Urban Nonprofit Management Certificate is at the discretion of each department.

Graduate students in any degree program at UT Arlington may register for Urban Nonprofit Management courses using standard registration procedures. It should be noted that class slots in the two core courses would be reserved for all of those Urban Nonprofit Management Certificate program participants who are accepted. Urban Nonprofit Management program students who are enrolled in other academic schools or colleges must obtain written course approval from their respective graduate advisors.

Professionals who desire to enroll in any or both of the core courses for continuing education hours may do so as special students. If at a later date these students decide to apply for the Urban Nonprofit Management Certificate program, the hours already taken as continuing education will be applied (within six years of completion of the courses) to the certificate program requirements.

Certificate in Public Budgeting and Financial Management

Certificate Advisor: Karolyn Field (kfield@uta.edu)

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson (cappa.advising@uta.edu)

Certificate Coordinator: Dr. Alejandro Rodriguez (aro@uta.edu)

Sound fiscal management at all levels of government is essential for meeting the demands of an increasingly expensive and complex service-delivery need. The purpose of this 15 credit hours graduate certificate is provide students interested in public sector affairs and local government officials

(budgeters, planners, finance analysts, and elected officials) with the skills to enable them to effectively support local government financial decision-making. Participants should expect to attain a comprehensive understanding of public budgeting and financial management practices and theories including knowledge of the various government revenue sources, major expenditures, and borrowing mechanisms used to finance long-life capital assets.

Students wishing to enroll only in the Graduate Certificate in Public Budgeting and Financial Management (certificate) but NOT to a graduate degree program may apply for admission to UT Arlington as a non-degree seeking student. A Bachelor's degree with a GPA of 2.8 in the last 60 hours of undergraduate coursework is required for admission through the Graduate School. Students with GPAs lower than 2.8 may be recommended for admission by Alejandro Rodriguez, Ph.D., the Certificate Adviser, based on the following admission enhancing factors:

1. the applicant's work experience and level of responsibility;
2. undergraduate degree in economics, financial management, accounting, or other closely related field; and
3. two letters of recommendation.

Students already enrolled in a Master's degree program, especially the campus and online MPA, at UT Arlington may enroll by submitting the appropriate application form to Dr. Alejandro Rodriguez (aro@uta.edu) and his or her academic graduate adviser. Students who have completed a Master's degree may apply for admission to UT Arlington as a non-degree seeking student. In either case, a minimum GPA of 3.0 in Master's degree work is required.

Participants must satisfactorily complete three required core courses and two elective courses from an approved list of elective courses, or by permission of the program adviser. Students shall be awarded the Graduate Certificate for Public Budgeting and Financial Management by the School of Urban and Public Affairs and the Graduate School upon satisfactory completion of the certificate requirements and a grade point average of 3.0.

Required (9 hours)		9
PAPP 5326	PUBLIC BUDGETING	3
PAPP 5329	FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES	3
PAPP 5332	PUBLIC CAPITAL BUDGETING	3
Selectives (6 hours)		6
Select two of the following:		
PAPP 5302	FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS	3
PAPP 5306	THE URBAN ECONOMY	3
PAPP 5312	ECONOMIC POLICY	3
PAPP 5321	URBAN MANAGEMENT	3
PAPP 5324	URBAN PUBLIC FINANCE	3
PAPP 5333	GOVERNMENTAL AND NONPROFIT ACCOUNTING	3
PAPP 5345	EVALUATION RESEARCH	3

Students who later seek graduate degrees at UT Arlington may apply 12 hours of certificate coursework within six years of completion and award of the certificate, with approval of the appropriate Graduate Studies Committee and the Dean of the Graduate School. Non-degree seeking students in the certificate program desiring to seek a degree must meet all admission requirements of the degree program.

COURSES

PAPP 4307. URBAN GEOGRAPHY. 3 Hours.

Emphasizes real aspects associated with urban physical environments and social, behavioral and financial processes that shape these environments.

PAPP 5160. URBAN MANAGEMENT/PLANNING INTERNSHIP. 1 Hour.

Intended to enhance readiness for professional work through exposure to planning practice in a one semester log internship (100 hrs in the spring or fall semester or 75 hrs in the summer). Integrates work experience and coursework through journaling and reflective practice. Requirements: (1) student secures an internship from a planning related employer and approval from the student's major professor prior to enrolling in the course; (2) the intern must provide performance evaluation by the job supervisor and the intern's evaluation of the internship experience. Enrollment open to students with no previous formal planning experience. Credit not available for previous internship or planning experience. P/F grade.

PAPP 5300. FOUNDATION OF URBAN THEORY. 3 Hours.

Social theories that explain the life cycle of urban communities as they develop, expand, and are sustained or decay are presented and contrasted. Special consideration is given to role of social policy. Topics such as poverty, race, neighborhoods, and environment are addressed.

PAPP 5301. FOUNDATIONS OF URBAN POLITICS AND ECONOMICS. 3 Hours.

Examines the major political and economic institutions and processes in urban communities and their effect on urban policy.

PAPP 5302. FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS. 3 Hours.

An introduction to research methodologies, both quantitative and qualitative, and statistical techniques useful in the analysis of urban trends and administrative programs.

PAPP 5303. THE METROPLEX: SURVEY OF URBAN AFFAIRS, PLANNING, ADMINISTRATION. 3 Hours.

The Metroplex provides an ideal laboratory for study with more than 100 cities and other governmental units, thousands of neighborhoods and business enterprises, major concentration of minorities and dozens of ethnic groups. An in-depth orientation on urban dynamics utilizing senior faculty members, governmental and community leaders, and current research reports and studies.

PAPP 5304. URBAN POLITICS. 3 Hours.

Examination of the city as a political system, including the impact of urbanization and fragmentation on policies; input dimensions, including voting patterns and interest group development; decision-making structures, especially types of community power structures and the impact of the reform movement on structural processes. Also offered as POLS 5305; credit will be granted only once.

PAPP 5305. THEORIES OF URBAN SOCIETY. 3 Hours.

Several theoretical perspectives of the community and community organization examined. Special emphasis given to theories from human ecology, organization and stratification, and social welfare.

PAPP 5306. THE URBAN ECONOMY. 3 Hours.

Internal dynamics of the growth and development of the urban system and its relation to the national economy. National and urban economic policy, urban growth and land use, market imperfections, urban financial issues, and the environmental implications of urban growth studied through lecture, game simulation and policy debates.

PAPP 5307. URBAN GEOGRAPHY. 3 Hours.

Emphasizes real aspects associated with urban physical environments and social, behavioral and financial processes that shape these environments.

PAPP 5308. URBAN HISTORY. 3 Hours.

Extensive reading primarily in the history of the urbanization and metropolitanization of the people of the United States. Historical methods as exemplified in the works of leading historians and analyzed; examples of the scholarship of selected historians and treatises on selected cities, regions, and urban institutions studied.

PAPP 5309. LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING. 3 Hours.

Critical analysis of the implications of federalism, and the changing nature of intergovernmental relations on state and local management, administration, planning, and policy making.

PAPP 5310. URBAN POLICY AND THE LAW. 3 Hours.

Critical analysis of federal government and selected state and local government policies and programs designed to influence the course of change and the future development of cities and urban areas. The role of "private" governments in affecting policy explored.

PAPP 5311. PUBLIC POLICY FORMATION AND ANALYSIS. 3 Hours.

The course covers the policy process, policy formulation and provides an introduction to the tools and techniques of policy analysis, using multiple theoretical and analytical perspectives. The primary focus is on U.S. policy, with an emphasis on state and local policy issues. The course aims to provide students with a foundation in the theory, process, and tools of policy analysis, so that they are able to think critically about applied public policy problems and the role of policy analysts. Students will also gain practical skills in the development and presentation of policy analysis and recommendations.

PAPP 5312. ECONOMIC POLICY. 3 Hours.

Examines structure of the U.S. economic system and its impact on welfare of consumers, workers, and industry; public policy efforts to provide for management of critical economic variables are evaluated for effectiveness and equity as they impact different interest groups.

PAPP 5313. COMMUNITY DEVELOPMENT. 3 Hours.

Focuses on current problems of community development and neighborhood revitalization. Housing, community assets, the roles of community development corporations and social capital in cities, and community economic development will be analyzed. Federal, state, and local policies, with grassroots initiatives evaluated for effectiveness on promoting alternatives for community building and organizing. Also offered as PLAN 5324; credit will be granted only once.

PAPP 5314. HEALTH POLICY. 3 Hours.

Current health policy and programs, examination of historical development, economic and legal aspects, interest groups and health constituencies.

PAPP 5315. URBAN EDUCATION POLICY. 3 Hours.

Examines current education policy and programs, including public school districts, charter schools, and vouchers; economic and political aspects; role of adult education programs in improving human capital.

PAPP 5316. HUMAN SERVICES. 3 Hours.

Social welfare institutions: private and public; needs assessment, resource allocation, procedures, city/state/federal/private policy review; highlights of current system demands and changes. Offered as PLAN 5316 and PAPP 5344; credit will be granted only once.

PAPP 5317. ENVIRONMENTAL POLICY. 3 Hours.

Focuses on the physical environmental dimensions of urbanization including such factors as pollution, waste disposal, and land use; stresses the role of economic, social, and political institutions as these affect environmental quality of the city. Offered as PLAN 5342 and PAPP 5317; credit will be granted only once.

PAPP 5318. SOCIAL WELFARE POLICY. 3 Hours.

Examines recent welfare reform measures (federal, state, and local levels), the political issues behind them, and their influence on urban life. A central topic will be the impact of a changing society on social welfare policy needs, including analyses of labor force participation and family structure.

PAPP 5319. URBAN PROBLEMS. 3 Hours.

Specific urban problems examined in depth, traced to their historical origins to see how they or similar problems have been dealt with in other times and places. Students will then propose possible solutions to the problems in their contemporary form. Offered as PLAN 5347 and PAPP 5319.

PAPP 5320. PUBLIC AND NON-PROFIT ORGANIZATION THEORY. 3 Hours.

Historical evolution of administrative theory including classical, sociological and social-psychological dimensions; decision-making theory; implications of public interest theory for public and non-profit management; basic concepts of organization development and impact on public administration paradigms; new public administration; and future of public and nonprofit urban organization. Also offered as CRCJ 5309 and POLS 5303; credit will be granted only once.

PAPP 5321. URBAN MANAGEMENT. 3 Hours.

Focuses through lectures, readings, and exercises on major administrative process: personnel and policy development and analysis; management styles and key contemporary management problems explored through presentations by prominent local practitioners.

PAPP 5322. POLITICS AND POLICY IN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Development of theory of bureaucracy; bureaucracy as social issue; ethics and morality in public and non-profit bureaucracy; mobilization of special interest support; power differentials in urban agencies; policy process in bureaucracy; new bureaucratic structures and processes for urban policy making.

PAPP 5323. MANAGING CHANGE IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Current theories and concepts of public and non-profit organizational change with particular emphasis on organization development and action research; theoretical roots of contemporary change literature traced through readings and discussion of classical organization theory, public administration including New Public Administration decision making, public interest, phenomenology, learning theory and general systems. Prerequisite: Basic organizational theory course or permission of instructor.

PAPP 5324. URBAN PUBLIC FINANCE. 3 Hours.

Local urban governments increasingly rely less and less on support from the state and federal governments. Many local governments rely heavily on a limited number of taxes and fees to finance services. This course explores the variety of revenue sources and fiscal problems of cities and local governments in metropolitan areas. This includes the topics of tax burden and tax equity. The second half of the course focuses on the unique challenges of financing the diversity of activities that cities in particular support, e.g. housing, transportation, economic and community development and human services. Offered as PAPP 5324 and PLAN 5329; credit will be granted only once.

PAPP 5325. ADMINISTRATIVE LAW. 3 Hours.

Examines scope and role of administrative regulation of and by governmental agencies; explores constitutional principles which limit administrative power and administrative law which governs classical areas of conflict between administrative agencies and their constituencies; rule-making, judicial review and informal regulatory processes of importance to public officials.

PAPP 5326. PUBLIC BUDGETING. 3 Hours.

This course introduces students to the principles and practices used by federal, state, and local governments to acquire and spend revenues within the context of American democracy, capitalism, federalism, and economics. The primary objective of this course is to provide students with the practical skills and theoretical knowledge to enable them to be effective participants in the budgeting process and critical consumers and producers of research relevant to public budgeting. Offered as PLAN 5328 and PAPP 5326. Credit will be granted only once.

PAPP 5327. COMPARATIVE ADMINISTRATION AND POLICY. 3 Hours.

Extensive, multidisciplinary exposure to concepts and models of administration in developed and modernizing countries; role of the military, bureaucracy and traditional elites in development; practices and concepts of strategies for effective change.

PAPP 5328. SMALL CITY MANAGEMENT. 3 Hours.

This course will focus on problems peculiar to small cities, including administrative law; personnel, planning; public works, public safety; human services; budget and finance; public relations and parks and recreation.

PAPP 5329. FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Overview of the principles of finance as they apply to the public and non-profit services, financial reporting for state and local governments and non-profit organizations and evaluation.

PAPP 5330. COMMUNITY AND NEIGHBORHOOD ORGANIZATION. 3 Hours.

Structure and processes in the analysis and development of community and neighborhood organizations; special emphasis given to poverty and minority communities and neighborhoods.

PAPP 5331. LAND USE PLANNING AND THE LAW. 3 Hours.

Explores the law of land use in the context of the American legal, economic, and political systems. Examines leading court decisions and precedents for their background, content, and applicability to contemporary land use. Offered as PLAN 5316 and PAPP 5331. Credit will be granted only once.

PAPP 5332. PUBLIC CAPITAL BUDGETING. 3 Hours.

Examines governmental capital budgeting processes with a focus on understanding the significance of capital improvement planning, public facility investment, and project evaluation to sound infrastructure financing and regional economic growth. Governments purchase or construct long-lasting physical assets or facilities financed mostly through borrowing. This course aims to understand the rationale for public capital budgeting and debt instruments used to finance capital investment in the political context of public budgeting in America.

PAPP 5333. GOVERNMENTAL AND NONPROFIT ACCOUNTING. 3 Hours.

This course is designed as an introduction to governmental and nonprofit accounting. The course reviews major fund accounting principles, accounting for budgetary, revenue, and expenditure funds, accounting for general capital assets and long-term liabilities, accounting for fiduciary and proprietary funds, auditing practices, and financial reporting unique to government and non-profit organizations.

PAPP 5334. MANAGEMENT OF ECONOMIC DEVELOPMENT. 3 Hours.

This course focuses on the knowledge, organization, politics, issues, techniques and processes of local economic development. Emphasis is placed on contemporary issues and trends in the rich, dynamic laboratory of local economic development in Texas. Learning objectives include: 1) comprehension of basic techniques and issues such as strategic planning, leadership strategies, financial options and evaluation; 2) increased knowledge of the positive potential of thoughtful economic development for local environmental, infrastructure, and revenue challenges; and 3) enhanced professional development through individual and classroom exposure to successful practitioners.

PAPP 5341. PROFESSIONAL REPORT WRITING. 3 Hours.

The course aims to build professional writing skills. It reviews memo and report writing including grammatical construction, identifying and writing for a targeted audience, and writing in a clear, concise, and professional style. Also offered as PLAN 5335; credit will be granted for only one.

PAPP 5342. INTERMEDIATE DATA ANALYSIS. 3 Hours.

An intermediate level examination of statistical and research techniques appropriate to urban and social analysis. Presuming a basic understanding of descriptive and inferential statistics, the course covers multivariate regression, including error analysis and non-linear models, path analysis, ANOVA, logit and probit models, and techniques for data reduction (e.g., factor analysis). Offered as PAPP 5342 and PLAN 5317; credit will be granted only once. Prerequisite: PAPP 5302.

PAPP 5343. APPLIED URBAN ANALYSIS. 3 Hours.

Group and individual projects to develop research studies or strategies, data reports for local government, agency or citizen group; techniques appropriate to task utilized. P/F only.

PAPP 5344. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PLAN 5346 and PAPP 5344; credit will be given only once.

PAPP 5345. EVALUATION RESEARCH. 3 Hours.

Methodological issues in evaluating public programs; identification of variables, indicators and analyses formats presented. Prerequisite: PAPP 5302.

PAPP 5346. BIG DATA AND PUBLIC POLICY ANALYSIS. 3 Hours.

An examination of the data competencies and quantitative techniques necessary for policy analysis, with a special emphasis on big data and policy analysis. Increasingly, the rise and aggregation of what is commonly referred to as "big data" has raised many questions about the potential of this data for informing public policy as well as the tools and techniques appropriate for analysis. This course focuses on questions as to what constitutes big data, what sources of big data have relevance for public policy analysis, and concerns related to generalizability, reliability and validity. The course presumes a basic understanding of the basic statistical and research techniques taught in PAPP 5302 and PAPP 5342 (or equivalents from other departments). It builds on this foundation to analyze the tools and techniques appropriate for big data analysis in the field of public policy. The purpose of the course is to prepare students to understand what constitutes big data and evaluate the potential and limitations of its use in policy analysis. Students will be responsible for analyzing a source of big data, evaluating its research potential, and communicating the results of the analysis in a professional manner.

PAPP 5347. DEMOGRAPHIC METHODS. 3 Hours.

Examination of sources of data-census, vital statistics, special surveys, reports, special studies; techniques of analysis with particular emphasis on growth and projection models, interpretation of findings as a major policy area in urban analysis.

PAPP 5348. COST BENEFIT ANALYSIS. 3 Hours.

Reviews theory of cost-benefit and cost-effective analyses; explores the research, measurement and methodological requirements for the assessments of costs and benefits. It is recommended that students have completed at least one graduate course in research and one graduate class in public finance.

PAPP 5349. RESEARCH DESIGN IN PUBLIC POLICY. 3 Hours.

Application of research issues, writing, and communication skills in public policy. Designed to assist students in preparing their research for master's thesis or project report. Also offered as PLAN 5380. Credit can only be granted once.

PAPP 5350. INTRODUCTION TO PUBLIC ADMINISTRATION. 3 Hours.

This is a graduate level introductory course designed to give students an understanding of public administration as a field of academic inquiry and professional practice within the context of American federalism, democratic values, institutional dynamics, and bureaucratic politics. In addition to contextually defining public administration, the course addresses government reform, intergovernmental relations, public ethics, organizational dynamics and behavior, personnel issues, budgeting, and e-governance.

PAPP 5351. HUMAN RESOURCE MANAGEMENT IN GOVERNMENT AND NON-PROFITS. 3 Hours.

The purpose of this course is to familiarize students with key functions of government and non-profit personnel systems, discuss various theoretical approaches and techniques, and understand the major legal requirements of public and non-profit personnel management. The course examines the structure, role, and evolution of the Civil Service, current personnel policies, and personnel management tasks such as examination, recruitment, position classification, and collective bargaining.

PAPP 5352. CONFLICT RESOLUTION IN THE PUBLIC AND NONPROFIT MANAGEMENT. 3 Hours.

Labor management at all levels of government and non-profits, ability to work together to solve problems. Emphasis on collective and interest based bargaining, mediation, labor management partnership. Simulation exercises teach dynamics of bargaining, negotiation, problem solving, and small group dynamics.

PAPP 5353. REFORM AND INNOVATION IN URBAN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Designed to acquaint students with urban governance and non-profit reform and innovation. Course will explore how reformed government differs from traditional bureaucracy by contrasting it with entrepreneurial government and other innovations. Examines some of the areas most in need of reform, including service delivery, organizational capacity, and fiscal decentralization.

PAPP 5354. NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP. 3 Hours.

This course prepares students to be entrepreneurs, innovators and change leaders by using social entrepreneurship perspective to examine leadership and management practices of nonprofit organizations. Through hands-on experiential training, developing skills in needs assessment, and formulating interventions for social change, students develop a blueprint of a nonprofit organization that takes an innovative approach for sustainable solutions of social problems.

PAPP 5355. NONPROFIT ORGANIZATIONS IN PUBLIC POLICY. 3 Hours.

This course examines non-profits as community institutions with an outward focus: the political, economic, and inter-organizational environment, fund-raising and financial management, community relations and needs assessment, the role of the volunteers, boards and community leaders, marketing, and legal and government issues.

PAPP 5356. ENTREPRENEURSHIP IN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Public and non-profit entrepreneurship involves the use of public powers, and partnerships with individuals, firms and other organizations, to achieve public purposes. The focus will be on creative management techniques and methods employed in managing the public and non-profit sectors.

PAPP 5357. STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Readings and case studies of strategic planning and management in the public and non-profit sectors; application of principles to an actual situation, involving stakeholder identification, environmental scanning, and formulation of mission statements, goals, and strategies. Offered as PLAN 5312 and PAPP 5357. Credit will be granted only once.

PAPP 5358. ETHICS IN THE PUBLIC SERVICE. 3 Hours.

This course examines public service theoretical ethics literature to provide a basis for each student to both reflect upon and expand their comprehension of the values and processes of ethical decision making. Beyond theoretical works, it addresses the application and evaluation of theory against the professional, workaday reality of case studies, ethical codes and other relevant materials. Three major learning objectives are: 1) achievement of a solid understanding of the dominant theoretical perspectives in the public service ethics literature; 2) competency in the development of guidelines and procedures that encourage ethical behavior, and 3) enhancement of the reach and resiliency of each member's personal commitment to public service ethics.

PAPP 5359. ORGANIZATIONAL DIAGNOSIS. 3 Hours.

This class deals with tools and techniques necessary to manage public organizations. The learning objectives include ability to conduct an organizational diagnostic; and familiarity with group procedures and facilitation techniques involved in organizational change.

PAPP 5360. PUBLIC AND NON-PROFIT MANAGEMENT INTERNSHIP. 3 Hours.

Designed to integrate work experience and coursework through a series of brief work-related assignments; presentations by local planning and management practitioners and class discussions and exercises. Enrollment is open to both pre-entry and in-career students. Formal internship placements with agency mentors will be arranged. P/F only.

PAPP 5361. INTERNATIONAL ORGANIZATIONS. 3 Hours.

The course focuses on the rise of governmental and nongovernmental organizations in geopolitics, international development, and environmental management. It analyzes their institutional histories, their organizational structures and cultures, and their role as institutional policy actors in the global diffusion of policy initiatives and managerial knowledge and practices.

PAPP 5362. URBAN DIVERSITY. 3 Hours.

Examines the growing spatial and social diversity of cities; how physical as well as socioeconomic urban structures have fostered race, class, and gender inequalities; how urban policies have addressed and can address these issues. Offered as PLAN 5362 and PAPP 5362.

PAPP 5363. CIVIL RIGHTS AND URBAN MINORITIES. 3 Hours.

Examines the changes in and growth of the civil rights of minorities in the United States from the close of the Civil War to the present. This is accomplished through the study of court decisions, legislation, and the civil rights movement in the 1950s and 1960s, as seen through the eyes of contemporary writers, including William Faulkner, Alice Walker, and Alex Haley.

PAPP 5364. URBAN POLITICAL ECONOMY. 3 Hours.

Examines the theoretical bases of economic paradigms and the different economic policies that logically flow from them. Comparison is made between the orthodox, or neoclassical, model of economics and alternative heterodox models, including comparing the growth and development of the urban system, land use patterns, and economic policy debates. Consideration will be given to how and why the neoclassical model remains the dominant model for economic policy in Western, capitalist countries.

PAPP 5365. FOUNDATIONS OF ENVIRONMENTAL POLICY. 3 Hours.

Explores how environmental controversy is rooted in conflict between a number of schools of environmental policy thought with divergent perspectives on issues such as how to define progress, how to balance the needs of economy and ecosystem, how to cope with environmental complexity, and what role science should play in environmental affairs. Also offered as PLAN 5343; credit will be granted only once.

PAPP 5366. US IMMIGRATION POLICIES AND PLANNING FOR IMMIGRANTS. 3 Hours.

A seminar course where weekly readings would include: perspectives on international migration theory; the evolution of US immigration policy and national security; theories and urban issues related to immigrant assimilation and incorporation; urban ethnic economies and ethnic enclaves; segregation and housing of immigrants; globalization and immigrant labor networks; governance issues with providing education and other public services to immigrants and their children; and social work issues regarding generational conflict in immigrant families.

PAPP 5367. STRATEGIC PUBLIC AND NONPROFIT HUMAN RESOURCES MANAGEMENT. 3 Hours.

This course is designed to acquaint students with the theory and practice of strategically developing, utilizing, and aligning human resources so that maximum contribution from each member of an organization is used toward the attainment of strategic long-range goals and objectives. Topics include HR strategy, diversity, leadership, selection, training and development, compensation, classification, performance appraisal, and future practices for public and non-profit organizations.

PAPP 5368. PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS. 3 Hours.

The course examines the rights and obligations of employers and employees. It does this by examining the legal background pertinent to public and nonprofit management. Topics addressed include employee selection, promotion and discipline, anti-discrimination legislation, gender and family issues legislation, environmental, safety and health issues, whistleblower legislation, immigration law, worker's compensation, labor law, and drug and alcohol issues.

PAPP 5390. TOPICS IN URBAN THEORY. 3 Hours.

Different topics explored on an intensive basis, especially recent theoretical approaches. May be repeated for credit as topic changes.

PAPP 5391. TOPICS IN URBAN POLICY. 3 Hours.

Different topics and approaches in analysis of urban problems. May be repeated for credit as topic changes.

PAPP 5392. TOPICS IN URBAN MANAGEMENT. 3 Hours.

Selected topics on current management problems including small city management, community-neighborhood relations, citizen involvement programs and techniques, personal and professional effectiveness as a total person, intergovernmental strategies and styles, public-private sector collaboration and co-planning, privatization, and other alternatives to economic service delivery. May be repeated as topic changes.

PAPP 5394. SPECIAL TOPICS IN URBAN RESEARCH. 3 Hours.

Different topics each semester concentrate on a variety of methodological techniques and research strategies, such as demographic research and survey techniques. May be repeated for credit as topic changes.

PAPP 5395. CONFERENCE COURSE IN URBAN AFFAIRS. 3 Hours.

Reading and research in a specialized area of urban affairs under the direction of a member of the graduate faculty.

PAPP 5396. PROJECT REPORT. 3 Hours.

Student prepares report focusing on specific policy or professional issue, utilizing appropriate research techniques; subject area and design of project report with consent of instructor. Graded P/F/R only.

PAPP 5397. RESEARCH REPORT. 3 Hours.

Student prepares report comparable to a journal article focusing on research issue, utilizing appropriate theory and research techniques; subject area and design of research report with consent of instructor. Graded P/F/R only. Prerequisite: PAPP 5342.

PAPP 5398. THESIS. 3 Hours.

A thesis conforming to University and departmental requirements may be prepared by graduate students in urban affairs. Graded F, R.

PAPP 5399. PUBLIC ADMINISTRATION CAPSTONE. 3 Hours.

This integrative applied research course assesses the student's ability to analyze, synthesize, and formulate cogent recommendations to solve a real public sector problem. Students will write the capstone paper using concepts drawn from the MPA core curriculum, their chosen emphasis track, and the student's professional public work experience. Students are required to successfully defend their capstone paper before a Public Administration Forum consisting of CAPPA faculty, students, and other interested parties. Prerequisite: Completion of all other course work required for the MPA degree, including core courses and emphasis area courses, unless an exception is approved by the MPA advisor.

PAPP 5698. THESIS. 6 Hours.

A thesis conforming to University and departmental requirements may be prepared by graduate students in urban affairs. Graded P/F/R.

PAPP 6301. THEORETICAL FOUNDATIONS AND PH.D. WORKSHOP. 3 Hours.

Explores the development and function of theoretical models and frameworks. Examines the major theories from the social sciences designed for framing urban planning or administration issues and public policy. Designed to assist doctoral students in preparing their dissertation research. Opportunities to present work in progress, share ideas, and interact with faculty. Also offered as PLAN 6301; credit will be granted only once. Prerequisite: PLAN 5346; and PLAN 5317 or PAPP 5342.

PAPP 6305. ADVANCED THEORIES OF URBAN SOCIETY. 3 Hours.

Advanced theoretical perspectives of the community and community organization are examined. Special emphasis given to theories from human ecology, organization and stratification, and social welfare.

PAPP 6306. SEMINAR IN PUBLIC ADMINISTRATION. 3 Hours.

Final course in the public administration field, focuses on review and integration of the theories and principles of public administration.

PAPP 6307. THE URBAN ECONOMY. 3 Hours.

Students explore theories that explain local, state, national and international economies in a predominantly urbanized country and world. The course provides an understanding of agglomeration economies that are the foundation of urban genesis, growth and stability or decline. Individual topic areas include transportation, housing, environment, education and employment. An overarching theme is understanding human behavior and decisions in the urban context drawing on the economic theories new urban economics, new economic geography, new institutional economics and others. Offered as PAPP 6307 and PLAN 6307; credit will only be granted for one.

PAPP 6309. INTERGOVERNMENTAL RELATIONS IN THE ADMINISTRATION AND PUBLIC POLICY. 3 Hours.

The course explores the constitutional, political and fiscal relationships among the federal, state and local levels of government. How the relationships impact the administration of urban public policy is of primary focus.

PAPP 6310. MONETARY AND FISCAL POLICY: THE FEDERAL ROLE. 3 Hours.

Examination of the role of the federal government in maintaining economic stability, ensuring full employment and controlling inflation; exploration of liberal interventionist, conservative and radical theories of state economic management to assess the various policy alternatives and the importance of interest groups.

PAPP 6311. ADVANCED PUBLIC POLICY FORMATION AND ANALYSIS. 3 Hours.

The course covers policy process, policy formulation and policy analysis, using multiple theoretical and analytical perspectives. The primary focus is on U.S. policy, with an emphasis on state and local policy issues. The course aims to provide students with advanced knowledge in the theory, process, and tools of policy analysis essential in critiquing and researching public policy. Students will also gain advanced skills in the development and presentation of policy analysis and recommendations.

PAPP 6314. SEMINAR IN POLICY PROCESSES. 3 Hours.

The course focuses on the political, economic, and sociological institutions in the policy process, including various theoretical approaches, and application of these multidisciplinary perspectives in the analysis of specific policy issues.

PAPP 6315. PUBLIC ADMINISTRATION THEORY. 3 Hours.

This course is designed to critically examine public administration theory through the lenses of various governance models that have been proposed beginning with Weber's "ideal"; bureaucratic model through Osborne and Gaebler's market model to Fox and Miller's postmodern discourse model. The course begins by examining each governance model's stated or implied assumptions (about man, government, state, etc.) Second, the course considers the political philosophy and conceptual pillars on which the models are theoretically founded. Finally, the course examines the ideas of what constitutes a state as it might be relevant to a particular model and public administration.

PAPP 6316. SEMINAR IN PUBLIC ADMINISTRATION. 3 Hours.

Final course in the public administration field, focuses on review and integration of the theories that explain the structure, growth and change of public administration.

PAPP 6320. ADVANCED ORGANIZATION THEORY. 3 Hours.

The purpose of this advanced seminar is to examine the role of public agencies as organs of the State. It focuses on federal, urban, and nonprofit organizations. Learning objectives include understanding of interpretive, critical, and postmodern critiques of State's institutions; and application of power, knowledge, and gender lenses to the analysis of organizational practices, culture, and policy actions. Prerequisite: PAPP 5320 or PAPP 5323.

PAPP 6326. PUBLIC BUDGETING & FINANCE. 3 Hours.

The primary objective of this seminar is to provide students with the theoretical underpinnings of budgeting and financial management in the public sector. Students will engage in in-depth discussions of public budgeting and financial management topics drawn from economics, decision-making models, urban politics, federalism, and others to be able to have a sound understanding of how fiscal decisions affect public administration and policy.

PAPP 6340. RESEARCH DESIGN. 3 Hours.

Advanced course especially for Ph.D. students; covers logic of research design and problems of structure. Emphasis on empirical and quantitative studies.

PAPP 6344. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PAPP 6344 and PLAN 6347; credit will be given only once.

PAPP 6346. ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS. 3 Hours.

An introduction to selected advanced techniques related to planning analysis. Subjects include advanced applied regression analysis, multivariate logit analysis, and multinomial logistic regression. Applications of projection techniques, land use and transportation models, and methods of regional analysis. Offered as PLAN 6346 and PAPP 6346. Credit will be given only once.

PAPP 6349. DECISION MAKING AND PUBLIC POLICY ANALYSIS. 3 Hours.

This course explores the theoretical, practical, and topical connections between public policy and public administration through a decision-making lens. The objectives of the course are to enable students to identify, critique, and connect the theoretical and meta-theoretical assumptions of decision-making models to models of public policy analysis and public administration. Course objectives will be pursued through readings, seminar discussions, and research-based assignments that focus on the intersection between decision-making, public policy, and public administration.

PAPP 6399. DISSERTATION. 3 Hours.

Graded F/R only.

PAPP 6699. DISSERTATION. 6 Hours.

Graded F/R/P/W only.

PAPP 6999. DISSERTATION. 9 Hours.

Graded P/F/R.

PAPP 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Sustainable Building Technology

Master's Degrees

- Master of Science in Sustainable Building Technology (<https://www.uta.edu/academics/schools-colleges/cappa/academics/architecture/>)
- Master of Architecture (<https://www.uta.edu/cappa/academics/architecture/architecture/m-architecture.php>)

Overview

The Master of Science in Sustainable Building Technology is a post-professional degree that answers a need for practitioners in diverse fields to have a comprehensive understanding of sustainable building technology. The program provides a curriculum for the strategic intersection of energy efficient building design and sustainable building technologies. Students in this program will gain expertise in three primary areas:

- Advanced design of building system integration
- Advanced environmental system design
- Advanced performance-based design.

Additional courses are available to support areas of advanced study and research.

Range of Prospective Students

The Master of Science in Sustainable Building Technology program draws primarily from the professional community and is a post-professional degree. It is intended for graduates and practicing professionals with degrees in the following fields:

- Architecture
- Landscape architecture
- Historic preservation
- Urban design
- Environmental planning
- Industrial design
- Civil engineering
- Architectural engineering
- Environmental engineering
- Construction management

Graduate Teaching Assistantships

To be considered for a Graduate Teaching Assistant position, the candidate must be admitted without provisional conditions. Candidates whose native language is not English must submit an acceptable score on the Test of Spoken English (TSE-A) before arriving in the United States. GTA positions in the School of Architecture are limited and are very competitive.

Fellowships

To be considered for a Dean's Fellowship, the candidate must have a favorable review in most of the evaluation criteria. Candidates must be new students coming to UT Arlington, must have a GPA of 3.0 in their last 60 undergraduate credit hours and any graduate credit hours, and must be enrolled in a minimum of 6 hours in both long semesters to retain their fellowships. Fellowships in the School of Architecture are limited and very competitive.

Prospective students are strongly encouraged to contact the Graduate Advisor and discuss their options, the admission process, and how the M.SBT program may fit in their professional plans. Students are also invited to visit the School, sit in on classes, and meet faculty and students at the School of Architecture.

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Advising

M.SBT Academic Advisor: Ana-Maria Peredo-Manor

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Master's Admissions Requirements

M.SBT Program Director: Brad Bell

Prospective Students Contact: James Brown, Academic Recruiter

-
- Applicants must fulfill the requirements of both the Graduate School and the College of Architecture Planning and Public Affairs.
 - Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree from an accredited institution in one of the professions or fields of study listed below:
 - A four-year Bachelor of Science in Architecture (BS Arch)*
 - A five- or six-year National Architectural Accrediting Board (NAAB)-accredited professional degree in architecture (BArch or MArch)
 - A four- or five-year Bachelor of Landscape Architecture or Bachelor of Science in Landscape Architecture degree; or a master's degree in Landscape Architecture. All degrees must be from programs accredited by the Landscape Architectural Accreditation Board.
 - A Bachelor of Science in Industrial Design
 - A Bachelor of Science in Urban and Regional Planning
 - A Bachelor of Science in Civil Engineering
 - A Bachelor of Science in Architectural Engineering
 - A Bachelor of Science Construction Management

The program consists of 30 credit hours of study, typically completed in three semesters, providing a path to advanced research or specialized practice.

*The MS in Sustainable Building Technology does not lead to architecture licensure. Students seeking professional licensure should pursue the School of Architecture's accredited Master of Architecture degree.

Admissions Requirements

Applicants must meet the general requirements of the Office of Graduate Studies. A personal interview with the Director, Graduate Advisor or members of the landscape architecture faculty is strongly recommended. Three letters of recommendation are required, and it is suggested that at least two of the letters come from former educators or academic contact. Applicants also are required to submit scores from the Graduate Record Exam (GRE). Average GRE scores of successful applicants since 1998 have been approximately 550 Verbal and 550 Quantitative. Also required is a grade point average (GPA) of 3.00 as calculated by the Office of Graduate Studies.

Applicants holding first professional degrees in landscape architecture, or in some cases degrees related to landscape architecture (such as architecture, engineering, environmental design, horticulture, interior design, planning, and the like) are required to submit portfolios reflecting the applicants' professional and/or academic experiences and interests. Portfolios are assessed according to proficiency in design, presentation and layout, technical skills, and content, similar to criteria used in design studios.

Applicants who have a weakness in one of the criteria for admission can enhance their credentials with strengths in the remaining criteria.

Applicants can be admitted according to four conditions: Unconditional; Provisional; Probationary; and, Deferred. Applicants who do not meet the criteria of one of these conditions will be denied admission to the Program.

Note: Applicants whose native language is not English who do not meet the program's minimum TOEFL score, may be asked to complete extramural training in English through the Pathways Admission Program described in the Admission section of this Catalog.

Unconditional Admission

Applicants must possess a bachelor's degree from an accredited college or university. Transcripts from all previous college or university work, along with scores from the Graduate Record Exam (GRE), and three letters of recommendation are required of all applicants. In addition, applicants should have a minimum Grade Point Average (GPA) of 3.0, as calculated by the Office of Graduate Studies. Applicants holding the first professional degree in landscape architecture, or a related field, must submit a portfolio.

Provisional Admission

An applicant unable to supply all required documentation prior to the submission deadline but who otherwise appears to meet admission requirements may be granted provisional admission. All missing documentation must be received before the end of the first semester of study.

Probationary Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, GRE scores, and GPA), can be admitted on probation, with the condition that they make no less than a B in the first 12 hours of coursework in landscape architecture. Such students must complete no fewer than 9 credits during the semester in which they are on probation.

Deferred Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, GRE scores, and GPA), and/or who have not submitted all of the materials required for unconditional admission, can have their applications deferred for one semester, until outstanding requirements and criteria are met. A deferred admission may be granted when a file is incomplete or when a denied decision is not appropriate.

Denial of Admission

Candidates who do not satisfy the requirements for probationary admission will not be admitted.

International Student Admission

International applicants must meet the Degree Requirements (letters of recommendation, GRE scores, and GPA), and must be admitted in one of the admission categories described above. In addition, applicants whose native language is not English must have a demonstrated speaking ability in English. They also must meet the Program's minimum required score of 575 on the paper exam, or an equivalent score on the computer based- or internet-based tests, on the Test of English as a Foreign Language (TOEFL). International applicants who do not meet the Program's minimum TOEFL score, must complete extramural training in English, as approved by the Program and the Office of Graduate Studies.

Waiver of Graduate Record Exam (GRE)

A waiver of the Graduate Record Exam may be considered for a UT Arlington undergraduate who has completed an undergraduate degree in Architecture or Interior Design; the student's GPA must equal or exceed 3.50 in all undergraduate coursework completed at UT Arlington. The GRE waiver may also be extended to other UT Arlington undergraduates who have completed an undergraduate degree at UT Arlington; the student's GPA must equal or exceed a 3.50 in all undergraduate coursework completed at UT Arlington. The final decision to waive the GRE also requires a positive review of completed coursework by the graduate advisor to determine the applicant's readiness to study Architecture.

Graduate Teaching/Research Assistantships

To be considered for a Graduate Teaching or Research Assistantship, the candidate must be admitted unconditionally. In order to be eligible for teaching assistantships, students whose native language is not English, must complete extramural training in English as approved by the Program and the Office of Graduate Studies, score of 23 on the TOEFL-iBT Speaking subtest or score a 7.0 on the Speaking portion of the IELTS.

Fellowships and Scholarships

To be considered for fellowships or scholarships in the Program the candidate must be admitted without provisional conditions and have a favorable review in most of the evaluation criteria. Fellowships and scholarships in architecture are limited and very competitive. Generally, candidates must be new students coming to UT Arlington, must have a GPA of 3.0 in their last 60 undergraduate credit hours and any graduate hours, and must be enrolled in a minimum of 9 hours in both long semesters to retain their fellowships or scholarships. For further information and to apply for scholarships visit: <http://www.uta.edu/cappa/resources/scholarships/index.php> (<http://www.uta.edu/cappa/resources/scholarships/>)

CAPPA Inadequate Academic Progress Point System

A student may be subject to dismissal from the program if they accumulate 4 deficiency points during their Master's degree or their Ph.D. Students who complete a Master's degree at CAPPA will not carry deficiency points into their Ph.D. work. Deficiency points may not be removed from a student's record by repeating a course or additional coursework.

D = 2 deficiency points

F = 3 deficiency points

I = 1 deficiency point

W = 0.5 deficiency point

A graduate student, whose cumulative grade point average (GPA) falls below a 3.000 in all graduate courses, be they graduate or undergraduate level and taken while enrolled as a UT Arlington graduate student, may be subject to dismissal from the program. (Reference: <http://catalog.uta.edu/academicregulations/academicstanding/#graduatetext>)

Sustainable Building Technology Degree Requirements

TRACK 1 - GENERAL: THREE (3) CONSECUTIVE SEMESTERS (FULL-TIME STUDENT)

The curriculum for this course of study is:

Track 1 Students

First Year

Summer Session	Hours	Fall Semester	Hours	Spring Semester	Hours
ARCH 5695 (topic specific)		6 ARCH 5332		3 ARCH 5326	3
		ARCH 5357		3 ARCH 53xx (Elective)	3
		ARCH 53xx (Performance-Based Design)		3 ARCH 53xx (Elective)	3
		ARCH 53xx (Elective)		3 ARCH 53xx (Elective)	3
		6		12	12

Total Hours: 30

Electives must include at least one course from each of the following categories of courses offered by the school:

1. history and theory
2. technology and practice, and
3. allied disciplines (landscape architecture, urban design, housing, and interior design).

TRACK 2: FOUR (4) CONSECUTIVE SEMESTERS (FULL-TIME STUDENT)

The curriculum for this course of study is:

Track 2 Students

First Year					
Summer Session	Hours	Fall Semester	Hours	Spring Semester	Hours
ARCH 53xx (Elective)		3 ARCH 5332		3 ARCH 5326	3
		ARCH 5357		3 ARCH 53xx (Elective)	3
		ARCH 53xx (Performance-Based Design)		3 ARCH 53xx (Green Design+Construction)	3
	3		9		9
Second Year					
		Fall Semester	Hours		
		ARCH 53xx (Elective)	3		
		ARCH 5695 (topic specific)	6		
	9				
Total Hours: 30					

Electives must include at least one course from each of the following categories of courses offered by the School of Architecture:

1. history and theory
2. technology and practice and
3. allied disciplines (landscape architecture, urban design, housing and interior design).

TRACK 3: FOUR (4) NON-CONSECUTIVE SEMESTERS (FULL-TIME OR PART-TIME STUDENT)

The curriculum for this course of study is:

Track 3 Students

First Year				
Fall Semester	Hours	Spring Semester	Hours	
ARCH 5332		3 ARCH 5326		3
ARCH 5357		3 ARCH 53xx (Green Design +Construction)		3
ARCH 53xx (Performance-Based Design)		3 ARCH 53xx (Elective)		3
		9		9
Second Year				
Fall Semester	Hours	Spring Semester	Hours	
ARCH 53xx (Elective)		3 ARCH 5695 (topic specific)		6
ARCH 53xx (Elective)		3		
		6		6
Total Hours: 30				

Electives must include at least one course from each of the following categories of courses offered by the School of Architecture:

1. history and theory
2. technology and practice and
3. allied disciplines (landscape architecture, urban design, housing and interior design).

TRACK 4: FIVE (5) CONSECUTIVE SEMESTERS (PART-TIME STUDENT)

The curriculum for this course of study is:

Track 4 Students

First Year					
Summer Session	Hours	Fall Semester	Hours	Spring Semester	Hours
ARCH 5357		3 ARCH 5332		3 ARCH 5326	3
ARCH 53xx (Elective)		3 ARCH 53xx (Performance-Based Design)		3 ARCH 53xx (Green Design+Construction)	
	6		6		3
Second Year					
		Fall Semester	Hours	Spring Semester	Hours
		ARCH 53xx (Elective)		3 ARCH 5695 (topic specific)	6
		ARCH 53xx (Elective)		3	
	6		6		
Total Hours: 27					

Electives must include at least one course from each of the following categories of courses offered by the School of Architecture:

1. history and theory
2. technology and practice and
3. allied disciplines (landscape architecture, urban design, housing and interior design).

Master's Degree Curriculum

The program's curriculum imparts knowledge, skills and values necessary for entering the planning profession. The degree requires completion of 30 hours of study. The generalist core (21 hrs) and 9 hours in elective coursework.

Core Courses		21
ARCH 5326	ENVIRONMENTAL CONTROL SYSTEMS II	3
ARCH 5332	ENERGY USE AND CONSERVATION IN ARCHITECTURE	3
ARCH 5357	BUILDING INFORMATION MODELING & VISUALIZATION	3
ARCH 5395	TOPICS IN ARCHITECTURE ((Green Design + Construction))	3
ARCH 5395	TOPICS IN ARCHITECTURE ((Performance-Based Design))	3
ARCH 5695	TOPICS IN ARCHITECTURE ((topic specific))	6
Elective Courses		9
Architecture		
Select 3 of the following:		
ARCH 5321	ADVANCED COMPUTER APPLICATIONS	3
ARCH 5323	CONSTRUCTION MATERIALS AND METHODS	3
ARCH 5338	CODES AND REGULATIONS	3
ARCH 5339	DIGITAL FABRICATION METHODOLOGY	3
ARCH 5347	DIGITAL TECTONICS & PROTOTYPING	3
ARCH 5395	TOPICS IN ARCHITECTURE (High Performance Façades)	3
ARCH 5395	TOPICS IN ARCHITECTURE (Topics will vary)	3
Engineering		
CM 3331	MECHANICAL AND ELECTRICAL SYSTEMS	3
CM 3337	CONSTRUCTION ADMINISTRATION AND ECONOMICS	3
CM 5355	CONSTRUCTION MATERIALS	3
CM 5378	CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION	3
CM 5382	CONSTRUCTION SUSTAINABILITY	3
Total Hours		30

The School of Architecture offers international study programs in Rome, Italy, Barcelona, Spain, Innsbruck, Lund, Sweden and Cottbus, Germany. The Rome Program, conducted for five weeks each summer by UT Arlington faculty, is open to upper division and graduate students and may be used to satisfy history and elective requirements. The Barcelona, Innsbruck and Lund programs are semester-long exchange programs with universities in these cities, with the normal expectation of both studio and elective credit.

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Visit the CAPPa website for current graduate certificates (<https://www.uta.edu/cappa/academics/certificate-programs/>) offered in the College of Architecture, Planning and Public Affairs.

Prospective Students Contact: James Brown, Academic Recruiter

COURSES

ARCH 1101. ACADEMIC SUCCESS SKILLS IN ARCHITECTURE. 1 Hour.

This is a required course intended to establish a solid overview of the School of Architecture and the architecture program for all first semester UTA students who intend to declare as an architecture major. Topics for the class include: critical thinking, presentation techniques, internships, attendance of exhibitions and lectures, navigating the advising process, portfolio review and techniques, and using the library and other university resource sources. Other topics may also be discussed. The course be taken only once for credit.

ARCH 1191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Permission of the instructor and architecture undergraduate advisor required. Restricted to architecture-intended majors.

ARCH 1301. INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN. 3 Hours.

The interrelationships between society, culture, and the built environment. Prerequisite: Department consent.

ARCH 1341. DESIGN COMMUNICATIONS I. 3 Hours.

Introduction to freehand drawing within the dual concepts of observation and representation. This course explores various graphic techniques with emphasis on preparatory sketching, composition, contrast, texture, narrative, and line quality. Students will also be exposed to color use, physical model-making, orthographic delineation, and digital documentation. Prerequisite: Restricted to Architecture-Intended, ARCH_UCOL, Interior Design-Intended and INTD_UCOL majors.

ARCH 1342. DESIGN COMMUNICATION II. 3 Hours.

A continuation of ARCH 1341 with emphasis on refined techniques and more complex drawing problems. This course focuses on constructed geometries and spatial representation through orthographic projection and axonometric delineation, digital modeling, and in-situ notational sketching. Students will also be exposed to line weight, multi-point perspectives, and digital documentation. This course is offered as INTD 1342; credit will be granted only once. Prerequisites: ARCH 1301, ARCH 1341. Restricted to Architecture-Intended, ARCH_UCOL, Interior Design-Intended and INTD_UCOL majors.

ARCH 2300. MASTERWORKS OF WESTERN ARCHITECTURE. 3 Hours.

Selected architectural complexes as representative of various periods of Western culture. Stresses cultural relevance rather than stylistic analysis. Intended as humanities elective for non-architecture majors.

ARCH 2303. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused primarily on the period from prehistory through 1750. Prerequisite: ARCH 1301, ARCH 1341 and ARCH 1342 or INTD 1342. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 2304. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused on the period from 1750 to the present. Prerequisites: ARCH 1301, ARCH 1341, ARCH 1342 or INTD 1342, and ARCH 2303. Sophomore standing in the program. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 2341. DESIGN COMMUNICATION FOR ENGINEERS. 3 Hours.

This course introduces engineering students to design communication skills. Content includes sketching, drawing, graphic layout, diagramming and an introduction to orthographic projections and perspectives. Media will be both analog and digital. Digital tools may include image processing software, graphic design software and computer aided design (CAD) software. Prerequisite: Restricted to AREN students.

ARCH 2391. TOPICS IN ARCHITECTURE. 3 Hours.

Selected topics in concepts, philosophy, and models of architecture and allied arts of design. Prerequisite: Department Consent.

ARCH 2551. BASIC DESIGN AND DRAWING I. 5 Hours.

An introduction to design, design drawing, and color theory utilizing lectures and studio exercises. Two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Emphasis on form, color, texture, and spatial determinants. Prerequisite: ARCH 1342 or INTD 1342, credit or concurrent enrollment in ARCH 2303. Sophomore standing in the program. Restricted to Architecture-intended, ARCH_UNIV, Interior Design-intended, and INTD_UNIV majors.

ARCH 2552. BASIC DESIGN AND DRAWING II. 5 Hours.

An introduction to design, design drawing, and color theory utilizing lectures and studio exercises. Two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Emphasis on form, color, texture, and spatial determinants. This course is offered as ARCH 2552 and INTD 2552, credit will not be granted for both. Prerequisite: ARCH 2303, ARCH 2551 and credit or concurrent enrollment in ARCH 2304. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 3312. HISTORY OF CONTEMPORARY THEORY. 3 Hours.

This course will familiarize students with major intellectual paradigms and themes that have informed postwar architectural practice in Western tradition. Through reading primary theoretical texts that have had major impact on practice, students will hone their skills of critical thinking and be better able to position themselves in their navigation of contemporary theoretical issues. Prerequisite: ARCH 2303 and ARCH 2304 and Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 3323. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

The nature of materials and structural concepts to be used in the construction process. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3324. STRUCTURES I. 3 Hours.

An introduction to architectural structures, including statics and strength of materials, with emphasis on design in timber. Prerequisite: ARCH 3323, PHYS 1441 or PHYS 1443, MATH 1327 or MATH 1426. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3336. STRUCTURAL SYSTEMS FOR ARCHITECTURAL ENGINEERS. 3 Hours.

This course covers the engineering design of various concrete, steel and masonry structural systems used in the construction of buildings. Building types vary from single-story commercial buildings to low-rise and high-rise buildings. Current building codes and project examples are examined from a fundamental structural engineering perspective, in which the rationale for the structural system is analyzed, calculations performed, and systematic construction design processes are developed for gravity loads and lateral loads from start to completion of each project. The project examples culminate with a detailed cost analysis based on current industry trends. Prerequisite: Restricted to CE_AENUCOL, CE_ARENINT, CE_ARENBS, and CE_AREPROB majors.

ARCH 3343. ARCHITECTURE COMPUTER GRAPHICS (DESIGN COMMUNICATION III). 3 Hours.

An advanced course to develop visual sensitivity and awareness of digital techniques to enable the student to study design ideas and present those ideas in the various design disciplines. Emphasis on the relationship of computer graphics with the design process. This course is offered as ARCH 3343 and INTD 2343, credit will only be granted once. Prerequisite: Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3354. INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES. 3 Hours.

Introduces major topics, questions, issues and methods within interdisciplinary and cross-disciplinary environmental studies. Includes a study of some of the most significant texts, studies, practices, and creative works from at least four different fields as they pertain to questions of environment, ecology, and sustainability. Prerequisite: Acceptance in the Environmental and Sustainability Studies Minor.

ARCH 3357. DESIGN TECHNOLOGIES - BUILDING INFORMATION MODELING FOR ARCHITECTS/ENGINEERS. 3 Hours.

Introduction to Building Information Modeling (BIM); discussions of the roles and impacts of BIM in the design process, energy assessment, and facility management. The course includes creating building elements such as walls, windows, doors, roof, ceiling, stairs, ramp, and structural and MEP systems. Course provides an overview of BIM applications such as daylight and energy analysis. Prerequisite: AREN 2352. Restricted to CE_AENUCOL, CE_ARENINT, CE_ARENBS, and CE_AREPROB majors.

ARCH 3361. ARCHITECTURE AND ENVIRONMENT. 3 Hours.

An overview of sustainable design integrated with natural resource conservation. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3364. SITE DESIGN. 3 Hours.

The related site design process includes site planning pertaining to land use, case studies, siting of structures, codes, and topography. Prerequisite: Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3551. BASIC DESIGN FOR ENGINEERS. 5 Hours.

This course is an introduction to design communication (verbal and graphic), the process of design, architectural principles and the process of navigating the relationship between architectural design and engineering. Precedent studies introduce students to Architecture and two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Prerequisite: ARCH 1301 and ARCH 2341 and restricted to AREN students.

ARCH 3553. DESIGN STUDIO: ARCHITECTURE I. 5 Hours.

The reiteration of basic design principles/spatial concepts toward the synthesis of simple building types, with application of materials, introduction of structural systems, with preliminary understanding of site design and environmental issues. Credit will be given for only one of ARCH 3553 or INTD 3553. Prerequisite: ARCH 2552. Credit or concurrent enrollment in ARCH 3323 and ARCH 3343. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3554. DESIGN STUDIO: ARCHITECTURE II. 5 Hours.

A continuation of ARCH 3553 with an increased complexity and scale of projects which address buildings within urban contexts incorporating a variety of design theory, technical, site and structural considerations. Prerequisite: ARCH 3323, ARCH 3343, ARCH 3553. Credit or concurrent enrollment in ARCH 3324 and ARCH 3364. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor.

ARCH 4305. THE CITY OF ROME. 3 Hours.

History, topography, and monuments of the city of Rome and its environs from its legendary founding in 753 B.C. until the 20th Century. Urban form and architecture will be inspected in context of contemporaneous culture, with special emphasis on imperial and papal Rome. Prerequisite: Department consent. Restricted to Architecture and Interior Design Majors.

ARCH 4306. URBAN DESIGN THEORY. 3 Hours.

Design theory and its application to the urban scale, as applied to historical and contemporary examples. Prerequisite: ARCH 2552. Department consent. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4307. THE LIFE OF CITIES. 3 Hours.

A look at a series of world cities by situating their architectural context, with a particular focus on the impact of 20th century modernism and postmodernism on city fabric. Prerequisite: ARCH 2303 and ARCH 2304 and Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4308. HISTORY OF URBAN FORM. 3 Hours.

The history of cities as physical form, influenced by political, economic, and social forces. Prerequisite: Department consent. Restricted to Architecture and Interior Design majors.

ARCH 4309. MUSEUMS: HISTORY, CULTURE, DESIGN. 3 Hours.

This course investigates the historical and cultural forces driving the design of museums in the 19th and 20th centuries with special attention to the development of a diverse range of new museum types beyond traditional art and natural science museums. Field trips to local museum sites are required. Prerequisite: ARCH 2303 and ARCH 2304, junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4311. TOPICS IN ARCHITECTURAL THEORY. 3 Hours.

Selected topics in concepts, philosophy, and models of architecture and allied arts of design with specific application to 20th Century problems. May be repeated for credit as specific topics vary. Prerequisites: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4313. THE ARCHITECT IN CONTEMPORARY SOCIETY. 3 Hours.

Readings on the Culture of Architecture The focus of this course is to examine this social construct in the belief that critical self-reflection can assist in improving success within it. This examination will be conducted through readings in a collection of publications both historical and contemporary that offer critical insight into the professional/social culture of architects. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture. This course is offered as ARCH 4314 and INTD 4314; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4315. TOPICS IN THE HISTORY OF ARCHITECTURE AND DESIGN. 3 Hours.

Selected topics in architecture and the allied arts of design. Some recent topics include: Architecture of Texas, The Life of Cities, History of Architecture Theory, Developing World Slum Housing, Architecture and Politics, and Contemporary Architecture. Certain topics may be offered every second or third year. The course may be repeated up to four times as the topics change. Prerequisite: ARCH 2303 and ARCH 2304, junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4316. MODERN ARCHITECTURE I. 3 Hours.

Development of 20th Century architecture from the origins of the modern movement in the 1890s until its diffusion in Europe and America in the 1930s. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4317. MODERN ARCHITECTURE II. 3 Hours.

Development of 20th Century architecture from the diffusion of modernism in the 1930s to the present day. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4319. HOUSING PROTOTYPES: 1920s TO PRESENT. 3 Hours.

An extensive investigation of the many states of housing that architects and educators have encountered in the last 100 years. The course is organized through introduction, research, analysis, and case study of various housing typologies, unit design principles, density concerns, site, relationship of inside and outside, zoning and building codes, and new emerging housing building types. Prerequisite: ARCH 2303 and ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4320. PERFORMANCE-BASED DESIGN IN ARCHITECTURE. 3 Hours.

An overview of Performance-Based Building Design (PBBD) in architecture and how clients' expectations are translated into performance requirements, how we describe performance objectives, how we define performance indicators, and finally, how we can quantify and assess building performance. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4325. ENVIRONMENTAL CONTROL SYSTEMS I. 3 Hours.

Acoustics and illumination and their significance in the total design. Prerequisite: PHYS 1442. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4326. ENVIRONMENTAL CONTROL SYSTEMS II. 3 Hours.

Climate controls, mechanical and electrical systems, and their significance in the total design. Prerequisite: ARCH 4325 or AREN 3331. Junior standing in program. Restricted to Architecture, Interior Design, and Architectural Engineering majors.

ARCH 4329. TOPICS IN COMPUTERS AND DESIGN. 3 Hours.

Selected topics in the range and potential of digital computer applications in the design professions. May be repeated for credit as specific topics vary. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4332. ENERGY USE AND CONSERVATION IN ARCHITECTURE. 3 Hours.

Basic concepts of the efficient use and conservation of energy related to architectural design principles. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4338. CODES AND REGULATIONS. 3 Hours.

A study of accessibility, building and energy codes and related regulations including the architects' responsibility for compliance. This course is offered as ARCH 4338 and INTD 3338; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4339. DIGITAL FABRICATION METHODOLOGY. 3 Hours.

The history, theory, and methodology framing the discourse for parametric design and digital fabrication with an emphasis on digital fabrication techniques and introduction to parametric modeling software. Prerequisites: Junior standing in program. Open to ARCH and INTD majors.

ARCH 4341. NOTATIONAL DRAWING. 3 Hours.

Seminar concerned with analytical drawing techniques and how to use the sketchbook as a tool and process for architectural production. Emphasis will be on cultivating drawing strategies that will heighten the ability to make observations through first-hand experience and record them with the correct conventions in order to enable recovery for future use in architectural design. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4344. CONCEPTUAL DRAWING. 3 Hours.

A seminar to explore the aspects of conceptual drawing for the architect and the relationship of design ideas in the drawing process. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4345. DIGITAL CONSTRUCTION. 3 Hours.

A workshop exploring video cartography using photography, animation, motion graphics and digital video. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4346. CONSTRUCTION DRAWINGS. 3 Hours.

The techniques of building construction, the communication of technical information, and the process of preparing contract drawings for construction. Prerequisite: ARCH 3343. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4347. DIGITAL TECTONICS & PROTOTYPING. 3 Hours.

The use of digital technology in the architectural design process focusing on the research and fabrication of full-scale production of prototypes. ARCH 4339 Digital Fabrication Methodology is highly recommended. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4348. ARCHITECTURAL PHOTOGRAPHY. 3 Hours.

Basic photography for architects. The use of photography as an investigative and presentation device in architecture. Emphasis on composition and black and white technique. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4349. PORTFOLIO DESIGN. 3 Hours.

Principles and techniques of producing an architectural/interior design portfolio and resume including graphic design, layout, typography, grid systems, model photography as well as use of layout and photographic software. Prerequisite: ARCH 3553, ARCH 3554. Restricted to Architecture and Interior Design majors.

ARCH 4351. WILDERNESS: A CONDITION OF MIND. 3 Hours.

Changing conceptions of wilderness in Western thought, from ancestral prejudices to recent, revolutionary appreciation. Literary and visual documentation. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4352. HOUSING: FROM CAVES TO MANSIONS IN THE CLOUDS. 3 Hours.

This course examines the evolution of American urban settlements as they evolved from French, Spanish and English concepts of town-planning. The course begins with the Native American settlements in the American Southwest, particularly Mesa Verde and Hovenweep, followed by examination of the earliest European capital cities of Rome, Paris and London. Since the wholesale transplanting of European principles of town-planning traditions could not take root in the New World, distinctly American housing settlements evolved such as Savannah, Santa Fe, Taos and St. Augustine. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4353. HISTORY OF LANDSCAPE ARCHITECTURE. 3 Hours.

Development of landscape design from prehistory through 19th century with emphasis upon rural gardens and urban parks as representative of the social, cultural, and intellectual circumstances of the times and places in which they were created. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4354. CONVERGENCES: BETWEEN ART AND ARCHITECTURE. 3 Hours.

This course explores the convergences of artist methods of production with the processes of architectural practices. The course traces the work of leading filmmakers, both artistic and documentarian, whose professional leanings verge on the province of the architect. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

To gain a working knowledge of Building Information Modeling software (Revit) and advanced 3D modeling software. This course is offered as ARCH 4357 and INTD 3357, credit will only be granted once. Prerequisite: ARCH 3343, INTD 2343, or INTD 3343; and Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4360. POLITICS AND PRACTICE OF PRESERVATION. 3 Hours.

The history and theory of preservation and of the political context that influence these. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4362. STRUCTURAL SYSTEMS IN BUILDINGS. 3 Hours.

An overview of various structural systems including those used in long-span and high-rise buildings. Numerical work limited to the explanation of relevant structural concepts. Prerequisite: ARCH 3324. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4365. CATALYTIC MAPPING. 3 Hours.

An advanced theory elective course and workshop using the potential of mapping as a design, analytic and research mechanism for exploring complex contexts. Prerequisite: Junior standing in Architecture, Interior Design or permission of the advisor.

ARCH 4366. RADICAL URBANISM. 3 Hours.

An advanced theory course focused on the exposure to and critical analysis of some of the most radical, inspirational, and transformative urban design ideas and projects from Vitruvius to today. Prerequisite: Junior standing in Architecture, Interior Design or permission by the advisor.

ARCH 4391. CONFERENCE COURSE. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor.

ARCH 4395. SELECTED TOPICS ARCHITECTURE. 3 Hours.

Studio and lecture courses to explore and present selected topics in architecture and design. May be repeated for credit as topics change. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4556. DESIGN STUDIO: ARCHITECTURE III. 5 Hours.

Advanced architectural design problems in programming schematic organization, synthesis and design of buildings in their environmental context. Prerequisites: ARCH 3324, ARCH 3337, ARCH 3343 and ARCH 3554. Senior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4557. DESIGN STUDIO: ARCHITECTURE IV. 5 Hours.

Advanced architectural design problems in programming, schematic organization, synthesis and design of buildings in their environmental context. Prerequisite: ARCH 3324, ARCH 3337, ARCH 3343 and ARCH 3554. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4591. CONFERENCE COURSE. 5 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor. Senior standing in program. Restricted to Architecture majors.

ARCH 4595. SELECTED TOPICS ARCHITECTURE. 5 Hours.

A transitional studio course to explore and present selected topics in architecture and design. May be repeated for credit as topics change. Prerequisite: Department consent.

ARCH 5191. CONFERENCE COURSE. 1 Hour.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit as topic changes.

ARCH 5301. INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN. 3 Hours.

A survey study of the interrelationships between society, culture, and architecture. Concurrent enrollment of ARCH 5591 and ARCH 5342 required.

ARCH 5303. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused primarily on the period from prehistory through 1750. Prerequisite: Permission of the instructor.

ARCH 5304. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused on the period from 1750 to the present. Prerequisite: ARCH 5303 and permission of the instructor.

ARCH 5305. CITY OF ROME. 3 Hours.

History, topography, and monuments of Rome and its environs from its legendary founding in 753 B.C. until the 20th Century, with special emphasis on imperial and papal Rome.

ARCH 5306. URBAN DESIGN. 3 Hours.

Urban design theory, method, and implementation using contemporary and historic examples.

ARCH 5307. THE LIFE OF CITIES. 3 Hours.

A look at a series of world cities by situating their architectural context, with a particular focus on the impact of 20th century modernism and postmodernism on city fabric. Prerequisites: ARCH 2303 & ARCH 2304 or ARCH 5303 & ARCH 5304.

ARCH 5308. HISTORY OF URBAN FORM. 3 Hours.

The history of cities as physical form, influenced by political, economic, and social forces.

ARCH 5309. MUSEUMS: HISTORY, CULTURE, DESIGN. 3 Hours.

This course investigates the historical and cultural forces driving the design of museums in the 19th and 20th centuries with special attention to the development of a diverse range of new museum types beyond traditional art and natural science museums. Field trips to local museum sites are required. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304. Department consent.

ARCH 5311. ARCHITECTURAL THEORY. 3 Hours.

A review and analysis of the concepts, philosophy, ideology, and models that promulgated 20th Century architectural design. May be repeated for credit as topics change. Prerequisite: ARCH 2303 or ARCH 5303, ARCH 2304 or ARCH 5304, and permission of the department.

ARCH 5313. THE ARCHITECT IN CONTEMPORARY SOCIETY. 3 Hours.

Readings on the Culture of Architecture The focus of this course is to examine this social construct in the belief that critical self-reflection can assist in improving success within it. This examination will be conducted through readings in a collection of publications both historical and contemporary that offer critical insight into the professional/social culture of architects. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304.

ARCH 5314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture.

ARCH 5315. TOPICS IN ARCHITECTURAL HISTORY. 3 Hours.

Courses to explore and present selected topics in architecture and related fields of the Ancient Mediterranean, the Classical World, the Middle Ages, the 19th Century, and the Non-Western Traditions. May be repeated for credit as topics change. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304. Department consent.

ARCH 5316. MODERN ARCHITECTURE I 1890 TO 1945. 3 Hours.

Origins and development of Modern Architecture in Europe from 1890 to World War II, and its further evolution in Europe and America from 1918 to 1945. Prerequisites: ARCH 2303 and ARCH 2304.

ARCH 5317. MODERN ARCHITECTURE II 1945 TO PRESENT. 3 Hours.

Architectural developments in Europe, Asia, and America since World War II. Prerequisites: ARCH 2303 and ARCH 2304.

ARCH 5319. HOUSING PROTOTYPES: 1920s TO PRESENT. 3 Hours.

An extensive investigation of the many states of housing that architects and educators have encountered in the last 100 years. The course is organized through introduction, research, analysis, and case study of various housing typologies, unit design principles, density concerns, site, relationship of inside and outside, zoning and building codes, and new emerging housing building types. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304.

ARCH 5320. PERFORMANCE-BASED DESIGN IN ARCHITECTURE. 3 Hours.

An overview of Performance-Based Building Design (PBBD) in architecture and how clients' expectations are translated into performance requirements, how we describe performance objectives, how we define performance indicators, and finally, how we can quantify and assess building performance.

ARCH 5321. ADVANCED COMPUTER APPLICATIONS. 3 Hours.

The study and application of specialized computer programs in environmental design. Prerequisites: ARCH 3343 or INTD 3343 or ARCH 5343, or the equivalent. Department consent.

ARCH 5323. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

Construction materials and structural concepts as used in buildings. Prerequisite: permission of the instructor.

ARCH 5324. STRUCTURES I. 3 Hours.

Statics, strength of materials and simple structural systems in buildings. Prerequisite: permission of the instructor.

ARCH 5325. ENVIRONMENTAL CONTROL SYSTEMS I. 3 Hours.

Illumination, acoustics, climate controls, mechanical and electrical systems, and their significance in the total design.

ARCH 5326. ENVIRONMENTAL CONTROL SYSTEMS II. 3 Hours.

Climate controls, mechanical and electrical systems, and their significance in the total design.

ARCH 5327. STRUCTURES II. 3 Hours.

Continuation of ARCH 5324 with emphasis on structural theory and systems in wood and steel. Prerequisite: ARCH 5324.

ARCH 5328. STRUCTURES III. 3 Hours.

Continuation of ARCH 5327 with emphasis on structural theory and systems in masonry and reinforced concrete. Prerequisite: ARCH 5327.

ARCH 5329. TOPICS IN COMPUTERS AND DESIGN. 3 Hours.

Computer aided design, drafting and graphic techniques as applied to architecture. May be repeated for credit as topics change.

ARCH 5330. COMPARATIVE STRUCTURES. 3 Hours.

Comparative analysis and design of structural systems and construction techniques, including architectural and economic determinants. Prerequisite: ARCH 5328 or permission of the instructor.

ARCH 5331. PROFESSIONAL PRACTICE. 3 Hours.

Survey of the administrative functions, and the ethical and legal responsibilities of the architect.

ARCH 5332. ENERGY USE AND CONSERVATION IN ARCHITECTURE. 3 Hours.

Basic concepts of the efficient use and conservation of energy related to architectural design principles. Prerequisite: permission of the instructor.

ARCH 5333. CONSTRUCTION II. 3 Hours.

Advanced construction assemblies and methods, including the principles of cost control. Prerequisites: ARCH 5670.

ARCH 5335. ADVANCED PROFESSIONAL PRACTICE II: MARKETING DESIGN SERVICES. 3 Hours.

A study of the strategies and methods for marketing professional services. Presented as case studies of architecture, interior design, and landscape architecture firms.

ARCH 5336. PROGRAMMING AND SITE DESIGN II. 3 Hours.

The course focuses on project programming and the technical aspects of site design.

ARCH 5337. SOILS AND FOUNDATIONS. 3 Hours.

Soil classifications, field and laboratory identification, physical properties and load-bearing characteristics, retaining walls and foundations.

ARCH 5338. CODES AND REGULATIONS. 3 Hours.

A study of accessibility, building and energy codes and related regulations including the architects' responsibility for compliance. Prerequisite: Permission of Department.

ARCH 5339. DIGITAL FABRICATION METHODOLOGY. 3 Hours.

The conceptualizing and making of objects lying outside the traditional scope of architectural practice, including elements of industrial and product design and the development of working prototypes.

ARCH 5341. NOTATIONAL DRAWING. 3 Hours.

Seminar concerned with analytical drawing techniques and how to use the sketchbook as a tool and process for architectural production. Emphasis will be on cultivating drawing strategies that will heighten the ability to make observations through first-hand experience and record them with the correct conventions in order to enable recovery for future use in architectural design.

ARCH 5342. DESIGN COMMUNICATIONS. 3 Hours.

Architectural drawing, perception, projections, and three-dimensional representation. Prerequisite: Concurrent enrollment in ARCH 5591 is required.

ARCH 5343. ARCHITECTURAL GRAPHICS II. 3 Hours.

An advanced course to develop visual sensitivity and awareness of digital techniques to enable the student to study design ideas and present those ideas in the various design disciplines. Emphasis on the relationship of computer graphics to the design process. Prerequisite: ARCH 5342 or program approval.

ARCH 5344. CONCEPTUAL DRAWING. 3 Hours.

Seminar to explore aspects of conceptual drawing for the architect and the relationship of design ideas in the drawing process.

ARCH 5345. DIGITAL CONSTRUCTION. 3 Hours.

A workshop exploring video cartography using photography, animation, motion graphics and digital video.

ARCH 5346. CONSTRUCTION DRAWINGS I. 3 Hours.

The techniques of building construction, the communication of technical information, and the process of preparing contract drawings for construction.

ARCH 5347. DIGITAL TECTONICS & PROTOTYPING. 3 Hours.

The use of digital technology in the architectural design process focusing on the research and fabrication of full-scale production of prototypes. Completion of ARCH 4339 or ARCH 5339 Digital Fabrication Methodology is highly recommended.

ARCH 5348. ARCHITECTURAL PHOTOGRAPHY. 3 Hours.

The use of photography as an investigative and presentation medium in architecture. Emphasis on composition in black and white technique.

ARCH 5349. ARCHITECTURE PORTFOLIO. 3 Hours.

Seminar concerned with goal toward the production of a personal design portfolio.

ARCH 5350. VESSELS. 3 Hours.

The design of objects for the post-Industrial Age, including vehicles, furniture, jewelry, household objects, and clothing.

ARCH 5351. WILDERNESS: A CONDITION OF MIND. 3 Hours.

Changing conceptions of wilderness in Western thought, from ancestral prejudices to recent, revolutionary appreciation. Literary and visual documentation.

ARCH 5352. HOUSING: FROM CAVES TO MANSIONS IN THE CLOUDS. 3 Hours.

This course examines the evolution of American urban settlements as they evolved from French, Spanish and English concepts of town-planning.

ARCH 5354. CONVERGENCES: BETWEEN ART AND ARCHITECTURE. 3 Hours.

This course explores the convergences of artist methods of production with the processes of architectural practices. The course traces the work of leading filmmakers, both artistic and documentarian, whose professional leanings verge on the province of the architect.

ARCH 5355. HEMISPHERES. 3 Hours.

The study and analysis of Japanese arts and contemporary culture. The arts of ceramics, painting, calligraphy, and sculpture are examined. Prerequisite: departmental approval.

ARCH 5357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

To gain a working knowledge of Autodesk Revit and 3D Studio Max. Prerequisites: ARCH 3343 or ARCH 5343 or INTD 3343.

ARCH 5361. ARCHITECTURE AND ENVIRONMENT. 3 Hours.

An overview of sustainable design integrated with natural resource conservation.

ARCH 5362. STRUCTURAL SYSTEMS IN BUILDING. 3 Hours.

An overview of various structural systems including those used in long-span and high-rise buildings. Numerical work limited to the explanation of relevant structural concepts. Prerequisite: ARCH 5324.

ARCH 5363. DESIGN RESEARCH. 3 Hours.

Seminar directed toward the understanding of research methods and the programming of an independent design project, leading to the thesis substitute. Graded P/F/R. Prerequisite: Permission of Graduate Advisor.

ARCH 5364. SITE DESIGN. 3 Hours.

The related site design process includes site planning pertaining to land use, case studies, siting of structures, codes, and topography.

ARCH 5365. CATALYTIC MAPPING. 3 Hours.

An advanced theory elective course and workshop using the potential of mapping as a design, analytic and research mechanism for exploring complex contexts.

ARCH 5366. RADICAL URBANISM. 3 Hours.

An advanced theory course focused on the exposure to and critical analysis of some of the most radical, inspirational, and transformative urban design ideas and projects from Vitruvius to today.

ARCH 5370. ADVANCED DESIGN STUDIO. 3 Hours.

Studio course in the generation and development of architectural ideas in formal and environmental contexts. May be repeated for credit. Two of these courses are equivalent to ARCH 5670.

ARCH 5381. PRACTICUM. 3 Hours.

Internship program including work done through an approved architect's office, designed to give practical experience leading to a broader knowledge of the profession. Placement in offices must be approved, and in some cases may also be arranged by the school. Students may enroll in ARCH 5381 for half-time employment or ARCH 5681 for full-time employment. Students enrolled in Practicum may also participate in the Intern Development Program of the American Institute of Architects. No more than six total credit hours in Practicum are allowed for degree. Graded P/F/R.

ARCH 5391. CONFERENCE COURSE. 3 Hours.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit as content changes. Prerequisite: Permission of Graduate Advisor.

ARCH 5395. TOPICS IN ARCHITECTURE. 3 Hours.

Studio, lecture or seminar courses to explore and present special topics in architecture and environmental design. May be repeated for credit as topics change.

ARCH 5591. DESIGN STUDIO I. 5 Hours.

An intensive studio course in architectonic theory and operations. Emphasis on analytic, conceptual, and manipulation procedures.

ARCH 5592. DESIGN STUDIO II. 5 Hours.

Continuation of ARCH 5591. Studio course emphasizing the interrelationship of formal/spatial ideas, use, and the building fabric. Prerequisite: ARCH 5591.

ARCH 5593. DESIGN STUDIO III. 5 Hours.

Continuation of ARCH 5592. Studio course emphasizing the interrelationship of formal/spatial ideas, use, and the building fabric with special attention to the urban context. Prerequisite: ARCH 5592.

ARCH 5594. DESIGN STUDIO IV. 5 Hours.

Continuation of ARCH 5593. Emphasis on complex building designs in urban environments. Off campus study may be substituted. Prerequisite: ARCH 5593.

ARCH 5665. INTERMEDIATE DESIGN STUDIO. 6 Hours.

Advanced architectural design problems in programming, schematic organization, synthesis and design of buildings in their environmental context.

ARCH 5670. ADVANCED DESIGN STUDIO. 6 Hours.

Studio course emphasizing the analysis and design of building aggregations within the urban context. May be repeated for credit.

ARCH 5671. INTEGRATIVE DESIGN STUDIO I. 6 Hours.

Introduces the design of a small to moderate scaled architectural building program. Focus on pre-design, site design, structural resolution, building assembly, building performance, detailing and materiality will be made through graphical identification, analysis, and evaluation. Additional considerations of codes, regulations, cost analysis, and life-cycle cost, are areas of emphasis informing the design process. Prerequisite: ARCH 5325 or ARCH 4325, ARCH 5327. Credit or concurrent enrollment in ARCH 5357, ARCH 4357, or INTD 3357.

ARCH 5672. INTEGRATIVE DESIGN STUDIO II. 6 Hours.

Introduces the design of a larger-scaled architectural project with more complex programming requirements. Focus on the integration of environmental stewardship, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems will be made through graphical identification, analysis, and evaluation, and technical documentation. Project demonstration includes problem identification, contextual evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation. Prerequisite: ARCH 5671 with a grade of C or above.

ARCH 5681. PRACTICUM. 6 Hours.

Internship program including work done through an approved architect's office, designed to give practical experience leading to a broader knowledge of the profession. Placement in offices must be approved, and in some cases may also be arranged by the school. Students may enroll in ARCH 5381 for half-time employment or ARCH 5681 for full-time employment. Students enrolled in Practicum may also participate in the Intern Development Program of the American Institute of Architects. No more than six total credit hours in Practicum are allowed for degree. Graded P/F/R.

ARCH 5691. CONFERENCE COURSE. 6 Hours.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit. Prerequisite: Permission of Graduate Advisor.

ARCH 5693. DESIGN THESIS. 6 Hours.

Individual study project conducted by a supervising committee, with program and statement of intent to be filed with the Graduate Advisor during the previous semester. Graded R. Prerequisite: ARCH 5363.

ARCH 5695. TOPICS IN ARCHITECTURE. 6 Hours.

Studio, lecture or seminar courses to explore and present special topics in architecture and environmental design. May be repeated for credit as topics change. Prerequisite: Permission of Graduate Advisor.

ARCH 5698. RESEARCH THESIS. 6 Hours.

Sustainable Urban Design

Bachelor's Degree

- Bachelor of Science in Sustainable Urban Design (<https://www.uta.edu/academics/schools-colleges/cappa/academics/landscape-architecture/>)

Overview

The four-year Bachelor of Science in Sustainable Urban Design (SUD) is distinctive because in addition to the studio-based disciplines of architecture, planning and landscape architecture, it has public affairs, bringing together the design and governmental realms necessary to bring any urban design project to fruition. This unique interdisciplinary structure will equip students with the skills to successfully navigate within complex urban design decision-making milieus, underscoring the degree's practical, applicable, problem-solving essence. Infusing the curriculum of this design degree is an emphasis upon sustainability that encompasses environmental, social, and economic considerations.

The degree is not a pre-professional program for students who intend to pursue graduate study in architecture: such students will need to subsequently enroll in Path A of CAPPA's Master of Architecture program or an equivalent at another institution. The B.S. in Sustainable Urban Design does prepare for subsequent master-degree study in landscape architecture, planning and public affairs.

About Us

The Bachelor of Science in Sustainable Urban Design degree combines a core liberal arts curriculum with a structured sequence of courses in sustainable urban design, architecture, landscape architecture, planning, public affairs and art. In addition to these courses, students within the program select 18 hours of upper-level electives from a list that includes courses from many disciplines within the university.

The B.S. in Sustainable Urban Design is a four-year program consisting of 120 hours, in two two-year segments: **Basic Studies** and **Major Studies**.

The first two years (**Basic Studies**) is a foundation curriculum taken by all undergraduates at that level in the school. In addition to work in the arts and sciences, Basic Studies includes all required core curriculum for the degree as well as a series of lecture and studio courses which introduce the student to the concepts, history, skills, and vocabulary of design.

Following the two-year Basic Studies sequence, the student completes two years of **Major Studies**, an intensive series of courses and studios on the theory, history, skill, and practice of sustainable urban design.

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

Advising:

BS SUD Academic Advisor: Kelsey Childress

Asst. Director for Academic Affairs and Advising: Cheryl Donaldson

Admissions Requirements

BS SUD Program Director: Diane Jones Allen, D. Eng, ASLA, PLA

Admission to the sustainable urban design-intended program is open to all students meeting the general requirements for entrance to the University.

Prospective Students Contact: James Brown, Academic Recruiter

Major Studies: Entrance Requirements

To declare a major entering the third year in the Sustainable Urban Design program, a student must meet the following requirements in order to enroll in upper-level UDES, LARC, ARCH, INTD, PLAN and PAPP courses:

- The student will have completed all UDES courses and core curriculum courses specified during the first two years of the cohort. Exceptions will be made only for the following situations:
- If the student has not completed UDES 1301, the student must take it during the first (fall) semester of the third year instead of a prescribed elective.
- If the student has not completed UDES 2303, the student must take it during the second (spring) semester of the third year.
- If a student is transferring into the program from the B.S in Architecture program and has taken MATH 1327, credit will be given for that course, releasing the student from needing to take MATH 1301.

- Have a minimum of a 2.8 GPA both overall at UT Arlington as well as within the major (first- and second-year UDES courses).
- Complete a Major Declaration form available from the Academic Advisor. Any exceptions granted must be noted on the form.

Prior to completing the application in the Academic Advisor's office, ALL required cohort coursework must be completed unless one or more of the exceptions noted above have been granted.

GPA requirements may change based on changes in the curriculum of the program. Qualified students must meet the GPA requirements that are in place at the time they fulfill all other requirements to declare their major.

To declare a major for a fall semester, qualified applicants will submit their request to declare a major in the Academic Advisor's office at the completion of the spring semester, by the program specified deadline.

Coursework taken at other institutions or universities must be noted on the application with accompanying attachments showing the completion of/ or current attendance in the course(s). It is the student's responsibility to ensure that all coursework is transferred to the Office of Admissions at UT Arlington in a timely manner.

Upon entrance into the major studies programs, students will be required to maintain the minimum 2.8 GPAs both overall at UT Arlington and within the major to remain active and proceed within the program.

Programs Cohort

The undergraduate programs in the School of Architecture at the University of Texas at Arlington are organized in a structured cohort format.

What Is a Cohort?

A cohort is a group of students that follows the same set schedule and progresses through a program together. The sequential scheduling of the courses promotes an interactive learning environment and facilitates networking opportunities and career-strengthening relationships.

How Does It Work?

The program consists of a sequence of courses that takes a minimum of eight semesters to complete. The courses are offered in specific semesters (Fall and Spring) that require the students to complete the prior level before proceeding to the next level. If a student gets off-track in the cohort, she/he must wait until the missing course(s) are offered again.

How Are the Courses Sequenced?

The major courses must be taken as follows (*Please note: For every year listed below, 'First Semester' is Fall and 'Second Semester' is Spring*):

Sustainable Urban Design Students Cohort

How Are the Courses Sequenced?

First Year			
Fall Semester	Hours	Spring Semester	Hours
ARCH 1301		3 LARC 4300	3
UDES 1301		3	
UNIV 1131 or 1101		1	
		7	3
Second Year			
Fall Semester	Hours	Spring Semester	Hours
UDES 2441		4 UDES 2303	3
PLAN 4320		3 UDES 2442	4
		7	7
Third Year			
Fall Semester	Hours	Spring Semester	Hours
UDES 3551		5 UDES 3552	5
PLAN 4356		3 PAPP 4307	3
ART 2304		3 PLAN 4357	3
LARC 5326		3 ART 4348	3
		14	14
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
UDES 4304		3 UDES 4552	5
UDES 4551		5 LARC 4191	1
		8	6

Total Hours: 66

Special Academic Requirements

GPA Requirements: Upon admission to the major, all declared majors must maintain a minimum GPA of 2.8 both within the major and in the cumulative GPA to continue in the upper level program to satisfy requirements for graduation.

Grade Requirements: A grade of C or higher must be earned in each UDES and other CAPPA courses (ARCH, INTD, ESST, LARC, PAPP, PLAN) used for credit toward an undergraduate degree offered by the college. A grade of C or higher must also be earned in all required Math and other Science courses (PHYS, GEOL). Grades of P are not acceptable for classes in which a grade of C or higher is required.

Repetition of Courses: Two attempts to achieve a satisfactory grade are permitted for each required UDES course. Beyond that number of attempts, the student is denied access to the course in question, or to the sequence of courses for which it is requisite. Enrollment in the course for the time sufficient to receive a grade, including the grade W, is considered an attempt.

Transfer of Credit: The extent of credit toward degree requirements for academic work done elsewhere will be determined by the representatives of the appropriate program. Students applying to transfer credits from studio courses taken elsewhere must present examples of that work for evaluation.

Student Projects: The College of Architecture, Planning and Public Affairs reserves the right to retain, copyright, use, exhibit, reproduce, and publish any work submitted for course credit. The student is encouraged to develop a portfolio of all work accomplished in advanced courses for future professional and academic uses.

COMPETENCE IN ORAL PRESENTATIONS

Students obtaining a Bachelor of Science degree in Sustainable Urban Design demonstrate oral proficiency by taking and passing UDES 2441, UDES 2442, UDES 3551, UDES 3552, UDES 4551, and UDES 4552.

COMPETENCE IN COMPUTER USE

Students obtaining a Bachelor of Science degree in Interior Design can demonstrate computer proficiency by:

- Taking and passing ENGL 1301 or ENGL 1302 at UT Arlington in a computer classroom environment.
- Passing the University computer literacy examination

Suggested Course Sequence

First Year			
Fall Semester	Hours	Spring Semester	Hours
UNIV 1131 or 1101		1 GLOBAL 2301	3
ARCH 1301		3 ENGL 1302	3
ENGL 1301		3 HIST 1301	3
MATH 1301		3 MATH 1303	3
POLS 2312		3 LARC 4300	3
UDES 1301		3	
		16	15
Second Year			
Fall Semester	Hours	Spring Semester	Hours
HIST 1302		3 POLS 2311	3
PHYS 1351		3 GEOL 1330	3
Foundational Component Area		3 Social & Behavioral Sciences elective	3
UDES 2441		4 UDES 2442	4
PLAN 4320		3 UDES 2303	3
		16	16
Third Year			
Fall Semester	Hours	Spring Semester	Hours
PLAN 4356		3 PAPP 4307	3
ART 2304		3 ART 4348	3
LARC 5326		3 PLAN 4357	3
UDES 3551		5 UDES 3552	5
		14	14
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
UDES 4304		3 UDES 4552	5
UDES 4551		5 LARC 4191	1
Approved Prescribed Elective		3 Approved Prescribed Elective	3

Approved Prescribed Elective	3 Approved Prescribed Elective	3
	Approved Prescribed Elective	3
	14	15
Total Hours: 120		

Competence in Oral Presentations

Requirements for a Bachelor of Science Degree in Interior Design

Student Success

UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	

Sustainable Urban Design

UDES 1301	INTRODUCTION TO PRINCIPLES OF SUSTAINABLE URBAN DESIGN	3
UDES 2303	HISTORY OF URBAN DESIGN, FORM, AND INFRASTRUCTURE	3
UDES 2441	URBAN DIAGRAMMING AND COMMUNICATION I	4
UDES 2442	URBAN DIAGRAMMING AND COMMUNICATION II	4
UDES 3551	URBAN DESIGN STUDIO I: URBAN RESILIENCY	5
UDES 3552	URBAN DESIGN STUDIO II: MOBILITY	5
UDES 4304	URBAN SUSTAINABILITY PROJECT CAPSTONE	3
UDES 4551	URBAN DESIGN STUDIO III: CLIMATE CHANGE	5
UDES 4552	URBAN DESIGN STUDIO IV: ADVANCED SUSTAINABLE URBAN DESIGN	5

Architecture

ARCH 1301	INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN	3
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Art

ART 2304	DIGITAL MEDIA	3
ART 4348	INFORMATION VISUALIZATION	3

Landscape Architecture

LARC 4191	CONFERENCE COURSE	1
LARC 4300	INTRODUCTION TO LANDSCAPE ARCHITECTURE	3

Planning

PLAN 4320	SUSTAINABLE COMMUNITIES	3
PLAN 4356	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS	3
PLAN 4357	INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS	3

Public Affairs

PAPP 4307	URBAN GEOGRAPHY	3
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Communications

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3

Political Science

POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3

History

HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3

Mathematics

MATH 1301	CONTEMPORARY MATHEMATICS	3
MATH 1303	TRIGONOMETRY	3

Life and Physical Science Core Curriculum

GEOL 1330	GLOBAL WARMING	3
PHYS 1351	ENERGY AND ENVIRONMENT	3

Language, Philosophy & Culture

GLOBAL 2301	INTRODUCTION TO GLOBAL ISSUES	3
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Social & Behavioral Science Core Curriculum

3

Designated courses in social or cultural anthropology, archaeology, social/political/cultural geography, economics, sociology, classical studies, or linguistics (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/#text>)

Foundational Component Areas Option 3

Any additional course listed in the University's core curriculum. (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/#text>)

Prescribed Electives 18

Select 6 from the list below.

PLEASE NOTE: Some of the approved prescribed elective classes have required prerequisites. Students will need to meet prerequisite requirements to take the classes.

Contact arch.advising@uta.edu for possible permission for CAPPA classes (ARCH, ESST, INTD, LARC, PAPP, and PLAN). ¹

For classes outside of CAPPA, please contact the appropriate department for possible permission.

Architecture

ARCH 3361	ARCHITECTURE AND ENVIRONMENT ¹	3
ARCH 3364	SITE DESIGN ¹	3
ARCH 4308	HISTORY OF URBAN FORM ¹	3
ARCH 4314	HISTORIC PRESERVATION AND RESTORATION ¹	3
ARCH 4332	ENERGY USE AND CONSERVATION IN ARCHITECTURE ¹	3
ARCH 4360	POLITICS AND PRACTICE OF PRESERVATION ¹	3

Landscape Architecture

LARC 4301	SITE PLANNING AND DEVELOPMENT PROCESSES	3
LARC 4330	PLANT IDENTIFICATION AND ECOLOGY	3

Interior Design

INTD 4314	HISTORIC PRESERVATION AND RESTORATION ¹	3
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Planning

ESST 2300	INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES	3
PLAN 3301	THE METROPLEX	3
PLAN 4305	FOUNDATIONS OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY	3

Business

MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT	3
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Engineering

CE 2300	INTRODUCTION TO SUSTAINABLE ENGINEERING	3
CM 2331	CONSTRUCTION DOCUMENTS	3

Liberal Arts

ART 3357	SUSTAINABLE DESIGN	3
DS 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	3
HIST 3327	CITIES AND SUBURBS IN UNITED STATES HISTORY	3
HIST 3336	ENVIRONMENTAL HISTORY OF THE UNITED STATES	3
HIST 3348	HISTORY OF THE DALLAS-FORT WORTH METROPLEX	3
THEA 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	3

Science

BIOL 1334	LIFE ON EARTH: EVOLUTION, ECOLOGY AND GLOBAL CHANGE	3
GEOG 3380	THE SPATIAL HUMANITIES	3
GEOL 1301	EARTH SYSTEMS	3

Social Work

AAST 3353	SOCIAL CLIMATE OF CITIES	3
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Total Hours		120
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At least 36 hours must be 3000/4000 level.

* Acceptance into the major studies (3rd year) is based on space availability.
Plans requirements/classes are subject to change. As needed, students may be changed into the most current plan. Any changes will not impact the students graduation timeline.

¹ Must be fully declared into the SUD major studies program for enrollment consideration into upper-level ARCH and INTD classes.

Studio Culture Policy (<https://www.uta.edu/cappa/academics/architecture/current-students/studio.php>)

Laptop Policy (<https://www.uta.edu/cappa/admissions/tools-resources/laptop-policy/>)

COURSES

UDES 1301. INTRODUCTION TO PRINCIPLES OF SUSTAINABLE URBAN DESIGN. 3 Hours.

This course is an introduction to sustainable urban design and its principles through the lenses of the college's four disciplines: landscape architecture, architecture, planning and public affairs. How these disciplines interface with environmental, economic, socio-cultural and design sustainability is the focus of the course, culminating with an exploration of urban ecology.

UDES 2303. HISTORY OF URBAN DESIGN, FORM, AND INFRASTRUCTURE. 3 Hours.

This course examines the history of urban design, form and infrastructure in a variety of cities, providing students with an understanding of how decisions about design, form and infrastructure impact the lives of inhabitants. Prerequisite: C or better in UDES 2441. Restricted to Sustainable Urban Design-intended students.

UDES 2441. URBAN DIAGRAMMING AND COMMUNICATION I. 4 Hours.

This course establishes a framework for understanding how design is used to create sustainable urban communities. An interdisciplinary course, its focus is upon heightening student awareness of the built environment by investigative sketching and measuring, as well as by digital means. This process of documenting encompasses the human uses of objects and systems that comprise an urban community: buildings, public spaces, landscape, transportation systems, waterways, and other infrastructure. Issues of social and economic equity are introduced, as well as the roles that human interaction and participation play in successful design strategies. Prerequisite: Restricted to Sustainable Urban Design-intended students.

UDES 2442. URBAN DIAGRAMMING AND COMMUNICATION II. 4 Hours.

This course continues developing students' abilities to visually document urban environments in relation to urban ecologies, while beginning to investigate how designs are created to address the range of scales and ecological impact in a city, from the individual site to a neighborhood. This course focuses upon the impact of infrastructure upon a city's human and ecological systems, encompassing the plant and animal species that are part of urban environments. Prerequisite: C or better in UDES 2441. Restricted to Sustainable Urban Design-intended students.

UDES 3551. URBAN DESIGN STUDIO I: URBAN RESILIENCY. 5 Hours.

This studio focuses upon the planning and design for disaster recovery and the impact upon infrastructure caused by natural events such as earthquakes, flooding and tornadoes. The studio explores the latest and most reliable recovery strategies for rebuilding and repairing a city's human and ecological systems. Students document streets, waterways, transportation and landscape, examining issues of congestion, pollution, storm water management, and transportation access. Group design projects are based on both the scale of neighborhoods and regions. Prerequisite: C or better in UDES 2442. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 3552. URBAN DESIGN STUDIO II: MOBILITY. 5 Hours.

This studio examines the major shifts in the organization and spatial allocation of cities that are transforming urban mobility infrastructures, from light rail to pedestrian zones to cyclist lanes. The interface of transportation, public open spaces, buildings and landscape architecture is explored as well as issues of diversity, equity, and inclusion. A series of group design projects at the neighborhood scale continues the refinement of students' graphic and written skills. Prerequisite: C or better in UDES 1301, UDES 3551. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 4304. URBAN SUSTAINABILITY PROJECT CAPSTONE. 3 Hours.

In the Capstone Course, students will culminate their learning by completing a sustainability project at the Institute for Sustainability and Global Impact (ISGI) at UT Arlington under the supervision of the Chief Sustainability Officer. Student capstone projects will address pressing issues concerning sustainable urban communities. Students may collaborate and work on a project for an external organization, or work on sustainability programs and projects at UT Arlington. Potential capstone sites will range from local non-profits and government agencies to faculty research projects and private sector initiatives. The Capstone Course is a one-semester project. Prerequisite: C or better in UDES 3552. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 4551. URBAN DESIGN STUDIO III: CLIMATE CHANGE. 5 Hours.

This studio examines specific climate change issues as selected by the instructor. The studio is a recognition of an evolving set of data with shifting timelines and levels of impact for evaluating the ecological impact of climate change, upon the built environment. One of the areas of study will include sea-level rising and its global impact upon coastal cities. The students will engage in problem solving, using contemporary design and planning strategies on a regional scale. Prerequisite: C or better in UDES 3552. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 4552. URBAN DESIGN STUDIO IV: ADVANCED SUSTAINABLE URBAN DESIGN. 5 Hours.

This studio examines the roles that smart city technologies play in sustainable urban design. The group design projects in the Urban Resiliency and Urban Mobility studios are reassessed, and the course culminates with individual design projects based upon new locations. Prerequisite: C or better in UDES 4551. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

College of Business

Overview

Since its origination in 1965, the College of Business continues to be one of the fastest growing business schools in the nation. This growth has mirrored the dynamic growth of the D/FW Metroplex as the college has worked hard to provide high quality educational programs. The college is organized into six academic departments: Accounting, Economics, Finance, Information Systems and Operations Management, Management, and Marketing. A total of 125 full-time equivalent faculty organize and conduct classes, including 90 with doctoral degrees from some of the top schools in the nation. The college currently enrolls 6,300 students, 1500 of whom are enrolled in twelve graduate business programs.

Teaching, research, and community service are the essential activities of the College of Business. All three activities are aimed at enhancing the college's scholarly environment and strengthening relationships with the business community. The emphasis on excellence in the performance of these cornerstone activities enables the college to offer an outstanding business education for students over a broad spectrum of interest, age, and experience.

Mission, Vision and Values

The mission of the College of Business is to create and disseminate knowledge that engages the business community and positively impacts society. The College seeks to be ranked among the top business schools in the nation.

As its vision, the College develops recognized business thought-leaders who create value and enrich the world. Faculty, students and graduates of the College are functioning as thought-leaders for better understanding the economies of the enterprise, effectively managing its resources and producing results for goal accomplishment.

Five values form much of the foundation upon which the College operates on a daily basis in developing and offering degree programs, linking faculty and students to the business and professional communities, and conducting relevant research to advance business practices and enhance the performance of business and other organizations. These values are:

- Integrity – We do the right thing, always being honest, transparent and accountable.
- Respect - We treat all people in a way that affirms their individual uniqueness, worth and dignity.
- Diversity – We pursue an inclusive environment where individual differences create value.
- Excellence – We continually strive to achieve the highest levels of performance in all our endeavors.
- Collaboration – We team with internal and external partners to create and accomplish shared goals.

Accreditation

The University of Texas at Arlington's College of Business is fully accredited in business and accounting at both the undergraduate and graduate levels by the AACSB-International – The Association to Advance Collegiate Schools of Business.

Business Undergraduate Advising Center

107 Business Building
 817-272-3368
web.uta.edu/business/ugadvise/ (<http://web.uta.edu/business/ugadvise/>)

Each student in the College of Business has access to a professional academic advisor for educational and vocational guidance. The advising process is designed to assist students as they make important decisions related to their academic progress at UT-Arlington and career goals in general.

Specifically, the purpose of advising is:

- To empower students to clarify and achieve their educational goals by providing timely and accurate information about degree requirements, as well as College and University policies and procedures.
- To provide every business student with the opportunity to develop a relationship with a knowledgeable advisor in order to obtain sound academic advising with a degree of continuity.
- To provide students with information about additional services, programs, and support systems available within the College and University as appropriate.

Ultimately, the student is responsible for seeking academic advice, making decisions regarding goals, meeting degree requirements, and enrolling in appropriate courses. The academic advisor is to provide assistance and help in these decisions. All students are responsible for understanding and complying with University and College policies and procedures.

The Advising Center is located on the first floor of the Business Building, Suite 107 and operates on an appointment basis. Please contact the Center by calling 817.272.3368 between the hours of 8:00 am and 5:00 pm, Monday through Friday.

Graduate Business Services

107 Business Building
817-272-3004/3005

<http://www.uta.edu/business/gradbiz> (<http://www.uta.edu/business/gradbiz/>)

Graduate Business Services (GBS) provides information to assist students with various issues relating to their graduate business education. Prospective students, current students and graduating students can contact GBS for general information, assistance with understanding graduate program rules and admission status. Specific advising questions are addressed to the program advisor.

Goolsby Leadership Academy

107 Business Building
817-272-1876

www.uta.edu/goolsby (<http://www.uta.edu/goolsby/>)

Emerging Leader

The Goolsby Leadership Academy was established in 2003 with a gift from an anonymous donor in honor of John and Judy Goolsby. John Goolsby is a 1964 graduate of the College of Business with a degree in accounting. Much of his executive career was spent as CEO of the Howard Hughes Corporation. The mission of the Academy is to educate the nation's future leaders and ensure they are prepared for the multiple, myriad challenges and opportunities they will face. The Academy is focused on the tenets of personal integrity, courage, impact and "strength based" leadership. Simply put, strength based leadership involves building on the strengths that the individual already possesses, to enhance their leadership skills and abilities.

Today's current and emerging leaders need to understand how to apply and reap the benefits of leadership strategies and practices. The Goolsby Leadership Academy currently provides a select group of undergraduate students with rigorous training in:

- Developing and understanding innate leadership skills
- Management and decision making
- Emotional intelligence and motivation
- Ethics and personal integrity
- Goal setting and outcome measurement
- Group dynamics and team building
- Project Management

As part of their major course work, Goolsby students receive customized leadership education designed to transform leadership potential into leadership reality. At the heart of the student development experience are leadership courses, testing to help each student identify their own leadership strengths and challenges, specialized preparation for entering the work force, and extensive interaction with executive leadership.

Students typically apply during the Spring semester of their sophomore year. The two year program starts in the fall of their junior year. Each student accepted into the program receives a significant scholarship for each of the two years. The application, application process, and qualifications for consideration may be found on the Academy's website. Academy administrators include the Associate Dean, Dr. David Mack, who serves as the Executive Director of the Academy and Dr. Jerry Hubbard, who serves as the Director.

Goolsby Scholars will be members of the Honors College. Each of the required Goolsby courses qualifies for Honors College credit.

BNSF Early Leader Program

Thanks to a gift from BNSF, the Goolsby Leadership Academy has created the BNSF Early Leader Program. This extension of the Academy accepts incoming business-intended freshman and is dedicated to strengthening the leadership ability of students. The program is designed to help students transition into Goolsby Scholars in their junior year, though acceptance is not guaranteed. For the freshman fall semester, the students will enroll in a special section of the Freshman Interest Group (FIG) course. In the spring semester of their freshman year, the students will enroll in BNSF specific ECON 2306 section. During the fall semester of the sophomore year, students will enroll in a special section of Communications in Organizations (MANA 2302), taught by a Goolsby Academy faculty member. Students will enroll in a dedicated section of BCOM 3360 in the spring semester. Other events in the BNSF program include additional non-class activities, guest speaker events, team building exercises, and field trips.

Undergraduate Degree Programs

To attain these objectives, guidelines have been developed to provide minimum coverage of the basic areas of human knowledge and exposure to the fundamentals in each of the functional areas of business.

There are two major degree programs, each developed within the frame of reference described above. The first is the Bachelor of Business Administration (B.B.A.) Degree, with subject area concentrations in accounting, economics, finance, information systems, management, marketing, operations and supply chain management, and real estate. A minor is not required or allowed for any B.B.A. The B.B.A. in Accounting, while adhering to the basic philosophy outlined, permits a maximum 27 semester hour concentration in accounting. Thus, in addition to acquiring excellent preparation for a management career in industry, a student may also pursue professional objectives leading to a career in private, governmental, or public accounting. The B.B.A. in International Business is a dual concentration program requiring specific international business course work and 26 to 32 hours in one modern language (Chinese, French, German, Korean, Russian, or Spanish). The second major degree program is a Bachelor of Science (B.S.). A B.S. in Accounting is offered for students planning a career in professional accounting who also desire in-depth study in a related business discipline such as economics, finance, or information systems. This degree program permits a maximum 27 semester hour concentration in accounting and, depending on the area, 15 to 24 semester hours in a related business discipline. A B.S. in Information Systems is offered for the student planning a professional career in business information systems. A B.S. in Economics is also offered for the benefit of the student planning a career as a professional economist; a minor is required for degree completion. The requirements for the B.B.A. in International Business are found later in this section. The requirements for the additional B.B.A. degree programs and the B.S. degree programs are found in their respective departmental sections.

Undergraduate Admission Policy

Admission to the College of Business

Admission to the College of Business as an intended student is based on the University's undergraduate admission requirements plus the following additional admission criteria for the College of Business.

Students Entering Directly from High School or Students with Less Than 24 Credit Hours

Students entering directly from high school or with less than 24 hours of transferrable credit will initially be advised by the University College as a business intended student. Transitioning to advisement by the College of Business advisors will occur as the student accomplishes certain GPA and course completion milestones.

Students Entering with More Than 24 Transfer Credit Hours

Transfer students with 24 hours or more of transferrable credit will be evaluated on the basis of the following admission criteria.

1. Direct Admission Criteria

Business-intended students will be directly admitted to a business major based on the following criteria:

- Students must meet all UT Arlington admission requirements; and
- Students must have a grade point average of 3.25 or better for all college level credit attempted; and
- Students must have the CoB math requirement completed (The CoB math requirement includes MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS and MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS, or equivalent courses as transfer credits).

2. Applicants Who Do Not Meet Direct Admission Criteria

Students who do not meet the criteria for Direct Admission will be classified as Undeclared Business Intended, Pre-Business Intended or Major Intended.

Undeclared Business Intended Major: Students who have completed the CoB math requirement will be admitted to the Undeclared Business Intended (UBUSINT) major. Students will be required to meet with an advisor each semester and monitored for progress toward declaring a business major.

Pre-Business Intended Major: Students who have not completed the CoB math requirement will be considered pre-business admits to the College of Business and will be placed in the Pre-Business Intended (PBUSINT) major. Students will be required to meet with an advisor each semester and monitored for progress toward declaring a business major.

Major Intended (i.e. Accounting Intended): Students who have already decided to pursue a specific business major will be admitted as Intended for that specific major. Students will be required to meet with an advisor each semester and monitored for progress toward declaring a business major.

Students in all groups can declare a business major if they satisfy either Condition 1 or Condition 2 below:

Condition 1:

- Complete the College of Business (CoB) math requirement; and
- Complete a minimum of twenty four (24) hours of business course work at UT Arlington; and
- Earn an overall grade point average of 2.00 at UT Arlington; and
- Earn a business grade point average of 2.00 at UT Arlington.

Condition 2:

- Complete the College of Business (CoB) math requirement; and
- Complete a minimum of twelve (12) hours of business course work at UT Arlington; and
- Earn an overall grade point average of 2.25 at UT Arlington; and
- Earn a business grade point average of 2.25 at UT Arlington.

College of Business Probation and Dismissal

If at any time an undeclared business-intended, pre-business intended or major intended student does not maintain a minimum College of Business (CoB) GPA or UTA GPA of 2.0, the student is on probation in the College of Business. Depending on the circumstances, a student on probation may have restrictions on course load and course selection and will be given specific course grade requirements that must be met. All business hours will be used to calculate a business grade point average for the CoB admission purposes.

If the student is unable to maintain a minimum CoB or UTA GPA of 2.0 after one semester on probation, the student will be referred to the Director of Undergraduate Studies for an appeal. If the appeal is rejected, the student will be dismissed from the College of Business and must choose a major other than business in order to remain enrolled at UT Arlington.

Degree Progress and Major Dismissal

A student who has been accepted to a business degree program must maintain satisfactory progress of at least 2.0 in their UTA, CoB and Major/Concentration GPA's to avoid being placed on probation. Business students are subject to dismissal from a business major and will not be permitted to enroll for additional courses in that major if they:

- Receive a grade of D or F in more than one upper level major course, or
- Receive any combination of grades of D or F in two attempts of the same major course.

Course Transfer Policy

The College of Business has the authority for determining which transfer courses apply toward any undergraduate business degree program or business minor. Students transferring business classes taken at another institution will be required to submit both a catalog course description and a syllabus for each course to the Business Undergraduate Advising Center for approval.

Permission through the College of Business Transfer Credit Approval Form is required **before** a student can take courses outside of UT Arlington for credit transfer. Courses should be completed at the same level (freshman, sophomore, junior, senior) as the UT Arlington course. A course completed at the freshman or sophomore level at another institution will not be considered an equivalent of an upper level (junior or senior) course or degree requirement. Upper level business courses must be completed at an AACSB accredited institution. Transfer credit for courses from institutions outside the United States will be evaluated independently.

College of Business Residency and Graduation Requirements

In addition to meeting the credit hour and course requirements for a specific College of Business degree program, the student must meet the following requirements:

- Be a declared business major;
- A minimum overall grade point average of 2.0;
- A minimum grade point average of 2.0 in all course work taken from the College of Business;
- A minimum grade point average of 2.0 for courses taken within the major/concentration area for those majors having a concentration (This requirement also applies to modern language course work for International Business degree programs);
- Students must complete at least 50 percent of their business course work with the UT Arlington College of Business;
- Students must complete at least 24 of the last 30 semester hours of advanced (3000/4000 level) course work with UT Arlington College of Business, to include a minimum of 12 hours of advanced courses in their major/concentration subject area beyond business core requirements; and
- A grade of "C" or better must be earned in all major/concentration courses required for the degree.

UNIV 1101 Career Preparation and Student Success

All transfer students are required to enroll in a 1 hour career preparation course, UNIV 1101.

UNIV 1131 Issues in College Adjustment

All entering freshmen are required to enroll in a 1 hour college adjustment course, UNIV 1131.

Computer Literacy

Students majoring in business administration obtain competencies in computer literacy via required course work. They are required to take a computer course, INSY 2303.

Special Undergraduate Programs and Opportunities

Double Majors

The College of Business allows Bachelor of Business Administration (BBA) programs to be combined resulting in a degree with a double major. If all specified requirements are completed at the same time as outlined in the departmental sections of the University Catalog, one diploma recognizing both business majors will be awarded. These may restrict the option of participating in a various programs (i.e. Fast Track). The most popular double major combinations available to business students are:

- BBA in Accounting and Finance
- BBA in Accounting and Information Systems
- BBA in Economics and Finance
- BBA in Management and Marketing

See a business advisor for possible double major combinations within the College of Business. Only BBA programs are eligible.

Business Honors Program

The Business Honors Program (BHP) operates as a part of UT Arlington's Honors College. Its primary objective is to establish a cohesive community of exceptionally intelligent and motivated students who will pursue the study of business together in a stimulating learning environment. Participation in the BHP is open to entering freshmen with fewer than 30 college hours and continuing UT Arlington and transfer students with more than 30 college hours.

Additional standards for admission may be found on the Honors College website: <https://www.uta.edu/honors/>. Students who complete the program successfully will receive a special citation on their diplomas. The University honors degree requirements are compatible with all College of Business degree programs.

Internship for Degree Credit

One approved internship can be used as an advanced business elective or advanced major elective for eligible students. Students must be a declared business major, junior or senior standing, have an overall UT Arlington GPA of 2.5 or better, have 3 hours of an advanced business elective or advanced major elective available, and complete the approval forms before the appropriate semester deadline.

The internship must be related to the student's major and is graded on a pass/fail basis. No credit will be given for previous experience or activities. For specific course requirements, refer to the internship approval forms. If a change of major occurs, the internship no longer applies to the degree.

Sales Certificate Program

The Sales Certificate program prepares undergraduate students for a challenging and rewarding career in the sales profession. The program will enhance students' abilities to sell themselves, their ideas, products, and services. It also equips students with knowledge and skills related to developing and managing mutually beneficial relationships with customers. The Sales Certificate program is available to business and non-business majors. Certificate requirements can be found in the Department of Marketing section of the catalog.

Fast Track Master's Degrees in Accounting

This program emphasizes preparation for a career as a professional accountant, including preparation for the Certified Public Accountant designation. Most states, including Texas, require completion of at least 150 semester hours of college study of which at least 37 semester hours must be in accounting in order for an individual to be licensed as a Certified Public Accountant. The Fast Track Program in Accounting is designed to fulfill these requirements and enable outstanding senior undergraduate Accounting students to satisfy degree requirements leading to a Master's of Science in Accounting or a Master's of Science in Taxation while completing their undergraduate studies and thereby completing fewer courses to earn both undergraduate and graduate degrees in accounting.

An undergraduate Accounting student will apply:

- within 30 hours of completing a bachelor's degree
- upon completion of at least 30 hours at UTA, achieving an overall UTA GPA of 3.3 or better
- with an overall GPA of 3.3 or better in all college courses (at all schools), and
- with a UTA Business GPA of 3.3 or better.

Additionally, a candidate must have completed 12 hours of specified undergraduate Fast Track foundation courses with a minimum GPA of 3.5 in these courses. These courses are mandatory and must be completed at UT Arlington. The foundation courses required for admission to the various Fast Track programs are:

ACCT 3311	FINANCIAL ACCOUNTING I	3
ACCT 3312	FINANCIAL ACCOUNTING II	3
FINA 3313	BUSINESS FINANCE	3
BSTAT 3321 or BSTAT 3322	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS (whichever is taken first at UTA) ADVANCED STATISTICS FOR BUSINESS ANALYTICS	3
Total Hours		12

Once admitted, a student will be allowed to take select graduate courses that may be used to satisfy both bachelor's and master's degree requirements. These students will be allowed to enroll in Auditing, Effective Business Communication, and an Accounting elective at the graduate level and these courses should not be completed as an undergraduate.

An undergraduate student who successfully completes the Fast Track graduate coursework with grades of B or better will graduate with the undergraduate degree and will be automatically admitted to the Graduate School at that time. The student will not be required to take the Graduate Management Admissions Test (GMAT), will not have to complete the normal Graduate School application for admission, and will not have to pay the related application fee.

For more details about this program, please consult the graduate accounting advisor (graduate.accounting.advisor@uta.edu).

Fast Track Master's Degrees in Business

Fast Track Programs enable outstanding senior undergraduate Business students to satisfy degree requirements leading to select master's degrees in business while completing their undergraduate studies.

An undergraduate Business student will apply:

- within 30 hours of completing a bachelor's degree
- upon completion of at least 30 hours at UTA, achieving an overall UTA GPA of 3.3 or better
- with an overall GPA of 3.3 or better in all college courses (at all schools), and
- with a UTA Business GPA of 3.3 or better.

Additionally, a candidate must have completed 12 hours of specified undergraduate Fast Track foundation courses with a minimum GPA of 3.5 in these courses. These courses are mandatory and must be completed at UT Arlington. The foundation courses required for admission to the various Fast Track programs are:

MBA or MS-BA or MS-HR or MS-INSY

ECON 3310 or ECON 3312	MICROECONOMICS (first completed at UTA) MACROECONOMICS	3
FINA 3313	BUSINESS FINANCE	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
BSTAT 3321 or BSTAT 3322	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS (first completed at UTA) ADVANCED STATISTICS FOR BUSINESS ANALYTICS	3
Total Hours		12

MS-REAE

ECON 3310 or ECON 3312	MICROECONOMICS (first completed at UTA) MACROECONOMICS	3
FINA 3313	BUSINESS FINANCE	3
REAE 3325	REAL ESTATE FUNDAMENTALS	3
BSTAT 3321 or BSTAT 3322	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS (first completed at UTA) ADVANCED STATISTICS FOR BUSINESS ANALYTICS	3
Total Hours		12

MS-ECON

ECON 3310	MICROECONOMICS	3
ECON 3312	MACROECONOMICS	3
ECON 3318	REGRESSION ANALYSIS AND DATA VISUALIZATION	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS (first completed at UTA)	3

or BSTAT 3322

ADVANCED STATISTICS FOR BUSINESS ANALYTICS

Total Hours

12

Once admitted, a student will be allowed to take select graduate courses that may be used to satisfy both bachelor's and master's degree requirements.

An undergraduate student who successfully completes the Fast Track graduate coursework with grades of B or better will graduate with the undergraduate degree and will be automatically admitted to the Graduate School at that time. The student will not be required to take the Graduate Management Admissions Test (GMAT), will not have to complete the normal Graduate School application for admission, and will not have to pay the related application fee.

For more details about this program, please refer the appropriate graduate advisor.

Professional Program in Accounting (PPIA)

This program emphasizes preparation for a career as a professional accountant, including preparation for the Certified Public Accountant designation. Most states, including Texas, require completion of at least 150 semester hours of college study, of which at least 36 semester hours must be in accounting for an individual to be licensed as a Certified Public Accountant. The Professional Program in Accounting (PPIA) is designed to fulfill these requirements and allow the simultaneous granting of a bachelor's degree and a master's degree. Students accepted into the PPIA program generally complete fewer courses to earn both degrees than non-participants.

After completing ACCT 3311 with a B or better, interested persons should consult with the undergraduate accounting advisor to review eligibility requirements and the application process. Students admitted to the program will complete a plan of study that results in the fulfillment of requirements for the bachelor's degree (excluding BCOM 3360 and the undergraduate Advanced Accounting Elective, which are waived and completed at the graduate level) and sufficient additional graduate course work to fulfill the requirements for the Master of Science in Accounting degree or the Master of Science in Taxation degree.

Applications for admission to PPIA are reviewed individually with consideration given to the following criteria:

- Undergraduate grade point average (GPA)
- Accounting grade point average (GPA)
- GMAT score
- Professional work experience
- Personal accomplishments
- Personal Statement and Letters of Reference

For details about the application process and deadlines consult the Department of Accounting Graduate Program section of the University Catalog or the Department of Accounting website, www.uta.edu/accounting (<https://www.uta.edu/academics/schools-colleges/business/departments/accounting/>).

Requirements for a Bachelor of Business Administration in International Business/Modern Language

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 1 elective hour)

General Core Requirements (p. 50)

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Communication (minimum 6 hours required)

ENGL 1301	RHETORIC AND COMPOSITION I
ENGL 1302	RHETORIC AND COMPOSITION II

Mathematics (minimum 6 hours required)

MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS

Life and Physical Sciences (minimum 6 hours required)

From Approved University General Core Requirement List

Language, Philosophy & Culture (minimum 3 hours required)

Satisfied by Modern Language Level IV (See Modern Language Options below)

Creative Arts (minimum 3 hours required)

From Approved University General Core Requirement List

US History (minimum 6 hours required)

HIST 1301	HISTORY OF THE UNITED STATES TO 1865
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HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)		
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)		
Satisfied by completion of ECON 2305 in the Business Core		
Foundational Component Area (minimum 3 hours required)		
Satisfied by completion of ECON 2306 in the Business Core		
Non-business elective/UNIV 1101 or UNIV 1131		1
Professional Course Requirements - Business Core (36 hours)		
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social Behavioral Science		
ECON 2306 satisfies the Foundational Component		
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313	BUSINESS FINANCE	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322	STRATEGIC MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
Professional Course Requirements - Advanced International Business (15 hours)		
BLAW 4310	BASIC INTERNATIONAL LAW FOR BUSINESS	3
ECON 4306	COMPARATIVE ECONOMIC SYSTEMS	3
or ECON 4321	INTERNATIONAL TRADE	
or ECON 4322	INTERNATIONAL FINANCE	
FINA 4324	INTERNATIONAL CORPORATE FINANCE	3
MANA 4321	INTERNATIONAL MANAGEMENT	3
MARK 4325	INTERNATIONAL MARKETING	3
Modern Language Requirements (23 hours)		
Select one of the following areas (beyond all other requirements):		23
Chinese		
French		
German		
Korean		
Russian		
Spanish		
See Modern Language Options section below for specific courses		
Advanced Electives (3 hours)		3
Upper level, advisor approved elective. (Students are encouraged to include three hours of degree specific language in this area.)		
Total Hours		120

Students are strongly encouraged to study abroad. The College of Business, the Department of Modern Languages, and the International Office currently work together in assisting student participation in existing exchange programs. Furthermore, the University will continue to develop exchange agreements with other recognized international universities.

Modern Language Options

Chinese

Students concentrating in International Business/Chinese should be certain they meet the requirements specified previously under the heading Requirements for a Bachelor of Business Administration Degree. Within the framework of these conditions, a student must complete:

CHIN 1441	BEGINNING CHINESE I	4
CHIN 1442	BEGINNING CHINESE II	4
CHIN 2313	INTERMEDIATE CHINESE I	3
CHIN 2314	INTERMEDIATE CHINESE II (Satisfies Language, Philosophy & Culture University General Core Requirement)	3
CHIN 3303	CHINESE CONVERSATION	3
CHIN 3304	CHINESE CONVERSATION AND CULTURE II	3
CHIN 4334	CONTEMPORARY CHINESE CULTURE	3
CHIN 4335	BUSINESS CHINESE	3
Total Hours		26

French

Students concentrating in International Business/French should be certain they meet the requirements specified previously under the heading Requirements for a Bachelor of Business Administration Degree. Within the framework of these conditions, a student must complete:

FREN 1441	BEGINNING FRENCH I ¹	4
FREN 1442	BEGINNING FRENCH II ¹	4
FREN 2313	INTERMEDIATE FRENCH I ¹	3
FREN 2314	INTERMEDIATE FRENCH II (Satisfies Language, Philosophy & Culture University General Core Requirement)	3
FREN 3303	ADVANCED FRENCH CONVERSATION	3
FREN 4314	IMPROVING FRENCH GRAMMAR AND WRITING	3
FREN 4334	GLOBAL FRENCH CULTURES TODAY	3
FREN 4335	BUSINESS FRENCH	3
Total Hours		26

German

Students concentrating in International Business/German should be certain they meet the requirements specified previously under the heading Requirements for a Bachelor of Business Administration Degree. Within the framework of these conditions, a student must complete:

GERM 1441	BEGINNING GERMAN I ¹	4
GERM 1442	BEGINNING GERMAN II ¹	4
GERM 2313	INTERMEDIATE GERMAN I ¹	3
GERM 2314	INTERMEDIATE GERMAN II (Satisfies the Language, Philosophy & Culture University General Core Requirement)	3
GERM 3313	TOPICS IN GERMAN CULTURE & CONVERSATION	3
GERM 3316	GERMAN COMPOSITION & GRAMMAR	3
GERM 4334	THE CULTURE OF BUSINESS	3
GERM 4335	BUSINESS GERMAN	3
Total Hours		26

Korean

Students concentrating in International Business/Korean should be certain they meet the requirements specified previously under the heading Requirements for a Bachelor of Business Administration Degree. Within the framework of these conditions, a student must complete:

KORE 1441	BEGINNING KOREAN I	4
KORE 1442	BEGINNING KOREAN II	4
KORE 2313	INTERMEDIATE KOREAN I	3
KORE 2314	INTERMEDIATE KOREAN II ((Satisfies the Language, Philosophy & Culture University General Core Requirement))	3

KORE 3303	KOREAN CONVERSATION AND CULTURE I	3
KORE 3304	KOREAN CONVERSATION AND CULTURE II	3
KORE 4334	THE CULTURE OF BUSINESS	3
KORE 4335	BUSINESS KOREAN	3
Total Hours		26

Russian

Students concentrating in International Business/Russian should be certain they meet the requirements specified previously under the heading Requirements for a Bachelor of Business Administration Degree. Within the framework of these conditions, a student must complete:

RUSS 1441	BEGINNING RUSSIAN I ¹	4
RUSS 1442	BEGINNING RUSSIAN II ¹	4
RUSS 2313	INTERMEDIATE RUSSIAN I ¹	3
RUSS 2314	INTERMEDIATE RUSSIAN II (Satisfies the Language, Philosophy & Culture University General Core Requirement)	3
RUSS 3333	CONVERSATION AND TOPICS IN RUSSIAN CULTURE	3
RUSS 4362	RUSSIA AND THE SUCCESSOR STATES TODAY	3
RUSS 4334	THE CULTURE OF BUSINESS	3
RUSS 4335	BUSINESS RUSSIAN	3
Total Hours		26

Spanish

Students concentrating in International Business/Spanish should be certain they meet the requirements specified previously under the heading Requirements for a Bachelor of Business Administration Degree. Within the framework of these conditions, a student must complete

SPAN 1441	BEGINNING SPANISH I ¹	4
SPAN 1442	BEGINNING SPANISH II ¹	4
SPAN 2313	INTERMEDIATE SPANISH I ¹	3
SPAN 2314	INTERMEDIATE SPANISH II (Satisfies the Language, Philosophy & Culture University General Core Requirement)	3
SPAN 3311 or SPAN 3312	SPANISH CULTURE AND CIVILIZATION LATIN AMERICAN CULTURE AND CIVILIZATION	3
SPAN 3314	ADVANCED SPANISH GRAMMAR	3
SPAN 4334	CONTEMPORARY HISPANIC CULTURE	3
SPAN 4335	BUSINESS SPANISH	3
Total Hours		26

Non-heritage speakers should plan to take SPAN 3303 ADVANCED SPANISH CONVERSATION as an advanced business elective. Heritage speakers should plan to take SPAN 2315 in place of SPAN 2314 and SPAN 3305 in place of SPAN 3314.

¹ Students will be placed in appropriate language level upon completion of a written and/or a verbal competency exam administered by the Modern Language Department.

Suggested Course Sequence

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
Modern Language Requirement - Level I		4 Modern Language Requirement - Level II	4
UNIV-BU 1101 (or) UNIV-BU 1131		1 MANA 1301	3

Second Year

First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
POLS 2311		3 BSTAT 2305	3
INSY 2303		3 POLS 2312	3
Modern Language Requirement - Level III		3 Modern Language Requirement - Level IV	3
		15	15

Third Year

First Semester	Hours	Second Semester	Hours
Modern Language Requirement		3 Modern Language Requirement	3
ECON 4306, 4321, or 4322		3 MANA 4321	3
BLAW 3310		3 BSTAT 3321	3
FINA 3313		3 MARK 3321	3
MANA 3318		3 Creative Arts	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
Modern Language Requirement		3 Modern Language Requirement	3
FINA 4324		3 BLAW 4310	3
MARK 4325		3 MANA 4322	3
BCOM 3360		3 Advanced Elective	3
		12	12

Total Hours: 120

Undergraduate Minors

The College of Business offers several minors to undergraduate Non-Business majors. Please visit the appropriate department as listed below for specific minor requirements.

- **Accounting Minor** (Accounting Department)
- **Economics Minor** (Economics Department)
- **Business Analytics Minor and Information Systems Minor** (Information Systems and Operations Management Department)
- **Business Philanthropy Minor** (Marketing Department)
- **Minor in Business Administration** requirements can be found below

For additional information or questions about the undergraduate minors, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

Minor in Business Administration

The College of Business:

- Requires half of the coursework for a minor in business be completed in residence at UT Arlington. For an 18-hour minor requirement, this would require a minimum of 9 hours of business course work at UT Arlington.
- Requires a grade of C or better in all minor requirement courses.
- Will not use vocational and technical courses (including WECM courses) toward any business minor.

Business Administration

Select three of the following:

ACCT 2301	PRINCIPLES OF ACCOUNTING I
ACCT 2302	PRINCIPLES OF ACCOUNTING II ¹
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS
ECON 2305	PRINCIPLES OF MACROECONOMICS
ECON 2306	PRINCIPLES OF MICROECONOMICS
FINA 2330	MONEY, FINANCE AND THE MODERN CONSUMER
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT

MANA 2302	COMMUNICATIONS IN ORGANIZATIONS
Select 9 hours Jr/Sr level from one area or from several areas: ¹	
ACCT	
BANA	
BCOM	
BLAW	
BSTAT	
BUSA	
ECON	
FINA	
INSU	
INSY	
MANA	
MARK	
OPMA	
REAE	
Total Hours	18

Special Graduate Programs and Opportunities

The Graduate Advanced Studies Program (BSAD CT)

This is a certificate program open to those holding a graduate degree in a business field. Applicants must meet normal MBA admission requirements and complete 12-21 semester hours of graduate courses in a specified area. This is an excellent way for business professionals to update their business skills in advanced areas. Some courses taken under this program may be applied in the future toward another graduate degree at this University if approved by the program advisor.

Special Students

An applicant can gain admission as a special student in the College of Business, but he/she must meet the same admission requirements as those unconditionally admitted. In order to take masters and/or doctoral level courses in the College of Business, a student must be admitted as a graduate student.

Dual Degree Programs

The college offers a rich array of dual degree opportunities that build synergistic skill sets that prepare students for more advanced career opportunities. While most dual degree programs include two graduate business degrees, the Professional Management Option in the MBA program allows professionals with undergraduate degrees in engineering, architecture, education, and urban affairs to complete a master's degree in that field along with the MBA. Dual degree programs allow students to earn two degrees with a substantial reduction in course requirements.

Fast Track Programs

The Fast Track Program enables outstanding undergraduate UT Arlington Business students to satisfy degree requirements that will lead to a master's degree in Business Administration (MBA), Accounting, Business Analytics, Human Resource Management, Taxation, Information Systems, Real Estate or Economics while completing their undergraduate studies. If admitted, students will be allowed to take select graduate courses that may be used to satisfy both bachelor's and master's degree requirements. Admitted students will be allowed to complete 6 to 9 hours of selected graduate coursework as an undergraduate student. A GPA of 3.0 in each graduate class taken is required to continue taking graduate courses. Any Fast Track student who completes the 6 to 9 hours of graduate coursework with grades of B or better will be automatically admitted to Graduate School. The student would then be awarded his or her bachelor's degree. The student will not be required to take the GMAT, complete the graduate application, and will have the related application fees waived.

Facilitated Admission of Outstanding UT Arlington Undergraduates

The following master's programs participate in the Facilitated Admissions: Business Administration (MBA), Business Analytics, Economic Data Analytics, Human Resource Management, Information Systems, Real Estate, Quantitative Finance, and Marketing Research. Students pursuing Facilitated Admission must demonstrate quantitative proficiency. For details on admission into the program please refer to UT Arlington's Graduate Catalog Special Admissions Programs under Admission Requirements and Procedures.

Internship Program

Graduate students are encouraged to participate in internships to supplement and complement classroom education by providing valuable experience and training in their chosen area of expertise. Internships allow students to meet and interact with professionals in the work setting, identify and develop critical professional skills, clarify their own career goals and interests, and develop important contacts for future development. This internship program is open to all graduate students who have completed the required number of graduate courses per their program, are in good academic standing

(GPA => 3.0), and have secured their advisor's approval for up to three hours of graduate credit. Interested students should ask for a fact sheet and an application in the Graduate Business Services Office. After gaining the advisor's approval, students will complete an application and meet with the appropriate departmental internship coordinator. Once an internship is obtained, the coordinator will monitor progress and assign a Pass/Fail grade.

Study Abroad/Exchange Programs

The leaders for the 21st century will be deeply involved in business opportunities around the world. Study abroad/exchange programs are available to help students prepare in both curricular and extracurricular ways for these future international leadership roles. Students wishing to study abroad are encouraged to review the many opportunities contained in the Study Abroad Library in the International Office. Once a specific program is identified, students discuss the available courses with their advisor to ensure they meet degree requirements. Depending on their terms, study abroad/exchange programs may allow students to complete courses as resident credit or as transfer credit.

Waivers and Transfer Credit

Course waivers* are determined by each program's Graduate Studies Committee. Check with the program advisor for more details.

A maximum of 9 hours of advanced coursework may be transferred in from other AACSB accredited schools if approved by the program advisor. The grade must be a B or better to transfer. Transfer of graduate courses from other universities will be considered on a case-by-case basis. All work submitted for transfer credit must have been completed no more than six years before completion of a graduate program at the University of Texas at Arlington.

* Note: The University of Texas at Austin offer Business Foundations Programs (BFP) for non-business majors that provide solid foundations in basic business concepts. BFP courses and courses from equivalent programs for non-business majors at other colleges/universities may not be used for course waiver credit. Survey classes cannot be used for waiver credit.

Doctoral Program

The objective of the Doctor of Philosophy in Business Administration degree is primarily to develop scholars with an ability to teach and conduct independent research in various areas of business administration. The program prepares students for careers as researchers and teachers by providing thorough preparation in the theory of business administration and developing the skills needed to conduct high quality research in this area. The curriculum emphasizes and develops the rigorous analytical skills needed to make significant scholarly contributions in fields of business. Graduates of the program will assume significant roles in the world's educational and research institutions.

Coursework is offered in the following areas: accounting, banking and finance, business economics, business policy/strategic management, business statistics, research design, human resource management, insurance and risk management, international business management, investments and securities, management information systems, management sciences, marketing management and research, organizational behavior, organizational theory, production/operations management, real estate, entrepreneurship, and taxation. Coursework in these areas of study supports the following major fields: Accounting, Finance, Information Systems, Management, Marketing, and Operations Management.

Accounting

Mission of the Department

The mission of the Department of Accounting is to:

1. prepare students from diverse backgrounds for professional careers in accounting,
2. create, interpret, and disseminate knowledge of accounting, and
3. provide service to the University and accounting profession.

Accreditation

The College of Business is fully accredited by the AACSB International- The Association to Advance Collegiate Schools of Business. The Department of Accounting has separate accounting accreditation by the AACSB. The department is also a member of the Federation of Schools of Accountancy, an organization to promote and support high quality accredited graduate programs in accounting.

Scholastic Activity and Research Interests of the Faculty

The Department of Accounting values strong academic scholarship. The faculty are involved in a broad spectrum of pure and applied research that are publishable in top tier journals such as The Accounting Review, Journal of Accounting Research and Journal of Accounting and Economics, and in practitioner journals such as The CPA Journal, Journal of Accountancy, among others. Many of the faculty also have professional certifications and years of experience in the business world, including serving as consultants, expert witnesses, and in other professional capacities. They actively engage in research that enables them to be at the forefront of the discovery of new knowledge in their fields. All these activities allow them to bring academic and professional experiences to enhance the quality of teaching in the classroom.

Careers in Accounting

Accountants serve as analysts, consultants, and problem-solvers in business and government. Earning an accounting degree opens up a diverse array of career opportunities including: partner in an international accounting or consulting firm, corporate controller, chief financial officer, director of internal auditing, financial planner, or commercial lender. Compensation is highly competitive with excellent geographic mobility. Upward career mobility is outstanding.

Students of accounting learn to use and control information technology systems, prepare and analyze financial reports, structure business transactions, and develop effective business plans. Individuals who like being challenged by a variety of situations and technologies and who enjoy identifying, analyzing, and solving problems are well-suited to majoring in accounting.

COURSES

ACCT 2301. PRINCIPLES OF ACCOUNTING I. 3 Hours. (TCCN = ACCT 2301)

The accounting process and its informational output. Financial accounting concepts, basic procedures, and the resulting reports. Recognition and creation of accounting information as bases for decisions. An accounting lab is required. The grade for this course requires the completion of both the lecture component and the accounting lab. Prerequisite: 30 credit hours or permission of the department.

ACCT 2302. PRINCIPLES OF ACCOUNTING II. 3 Hours. (TCCN = ACCT 2302)

A study of managerial accounting concepts and techniques. Topics include cost behavior, budgeting, responsibility accounting, and product costing. An accounting lab is required. The grade for this course requires the completion of both the lecture component and the accounting lab. Prerequisite: ACCT 2301 with a grade of C or higher.

ACCT 2303. ACCOUNTING AND COMPLIANCE OF NON-PROFIT ORGANIZATIONS. 3 Hours.

The primary objective of this course is to help students understand accounting theories and compliance issues that relate to non-profit and philanthropic organizations. The course introduces students to general accounting theories, budgeting, internal control, fraud, and compliance issues of non-profit organizations. Restriction: Students enrolled in this course cannot be accounting majors. Prerequisite: Students enrolled in this course cannot be accounting majors, 30 credit hours.

ACCT 3133. PROFESSIONALISM IN ACCOUNTING. 1 Hour.

Topics to engender a stronger sense of professionalism: business and social etiquette, self-assessment, professional deportment, networking, effective communication skills, and dressing professionally. Topics primarily presented by accomplished professionals from public accounting, industry, and government. Prerequisites: Accounting major and ACCT 3311, can be taken concurrently.

ACCT 3303. INTRODUCTION TO ACCOUNTING INFORMATION SYSTEMS. 3 Hours.

The structure of contemporary accounting systems with emphasis on controls, auditing, reporting, and efficient operation. Prerequisite: ACCT 2302 and INSY 2303 with grades of C or higher.

ACCT 3309. ACCOUNTING FOR MANAGERS. 3 Hours.

Planning, controlling, decision making, and performance evaluation. Uses a variety of teaching techniques (e.g., problems, cases, and projects) and is open only to non-accounting majors. Credit will not be given for both this course and ACCT 4302. Prerequisite: ACCT 2302 with a grade of C or higher.

ACCT 3311. FINANCIAL ACCOUNTING I. 3 Hours.

The environment of accounting, development of standards, basic theory, financial statements, worksheets, annuities and present value, receivables, inventories, liabilities, plant assets, depreciation and depletion, and intangible assets. Prerequisite: ACCT 2301 with a grade of C or higher and successful completion of basic accounting skills exam. (See the departmental website for details about the exam.).

ACCT 3312. FINANCIAL ACCOUNTING II. 3 Hours.

Stockholders' equity, earnings per share, investments in bonds and stocks, equity method, revenue recognition, accounting changes, error analysis, income taxes, leases, and cash flows. Prerequisite: ACCT 3311 with a grade of C or higher.

ACCT 3315. PRINCIPLES OF FEDERAL INCOME TAX. 3 Hours.

A study of general federal income tax principles such as income, deductions, losses, and property transactions. The principles of individual taxation will be covered as well as an overview of tax considerations for entities such as corporations and partnerships. Prerequisite: Accounting major with junior standing and ACCT 3311 with a grade of C or higher.

ACCT 4191. STUDIES IN ACCOUNTING. 1 Hour.

Advanced studies, on an individual basis, in the various fields of accounting. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

ACCT 4291. STUDIES IN ACCOUNTING. 2 Hours.

Advanced studies, on an individual basis, in the various fields of accounting. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

ACCT 4302. COST ANALYSIS AND DECISION MAKING. 3 Hours.

This course will cover advanced cost analysis concepts including Cost-Volume-Profit analysis, cost-benefit analysis, product and service costing, pricing and budgeting. Class discussions will integrate concepts and applications of cost analysis with corporate practice through use of analytical problem solving, real world examples and case analyses. Prerequisite: Accounting major with 60 credit hours and ACCT 3303 with a grade of C or higher.

ACCT 4304. MANAGEMENT PLANNING AND CONTROL. 3 Hours.

This course covers intermediate and advanced concepts in decentralization and management control, including budgetary control, performance measurement and incentive structures, and transfer pricing. Class discussions will integrate concepts and applications of control with corporate practice through use of analytical problem solving, real world examples and case analyses. Prerequisite: Accounting major with junior standing and ACCT 4302 with a grade of C or higher.

ACCT 4318. AUDITING. 3 Hours.

Principles, concepts, and techniques which are appropriate to the acquisition, evaluation, and documentation of audit evidence. Internal control concepts, financial compliance, and operational auditing. Prerequisite: Accounting major with junior standing and ACCT 3303 and ACCT 3312 with grades of C or higher.

ACCT 4325. GOVERNMENTAL ACCOUNTING. 3 Hours.

Budgeting, accounting, and financial reporting for local governmental units, hospitals, voluntary health and welfare organizations, and other nonprofit entities. Prerequisite: Accounting major with junior standing and ACCT 3312 with a grade of C or higher.

ACCT 4331. SEMINAR IN ACCOUNTING. 3 Hours.

Readings and discussions of special topics in accounting. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

ACCT 4332. INTERNAL AUDITING I. 3 Hours.

A comprehensive study of internal auditing standards, ethics, concepts, audit techniques, and reporting practices. Prerequisite: Accounting major with junior standing and ACCT 3303 with a grade of C or higher or consent of the instructor.

ACCT 4333. INTERNAL AUDITING II. 3 Hours.

An advance study of operational, organizational, and quality control audits. Topics will include operational audit methodology, audits of administrative and support services, audits of line functions, and audits of special areas. Prerequisite: Accounting major with junior standing and ACCT 4332 with a grade of C or higher and a 3.0 GPA.

ACCT 4391. STUDIES IN ACCOUNTING. 3 Hours.

Advanced studies, on an individual basis, in the various fields of accounting. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

ACCT 4393. ACCOUNTING INTERNSHIP. 3 Hours.

Practical training in accounting. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. Prerequisite: Accounting major with junior standing and consent of department internship advisor.

ACCT 5133. PROFESSIONALISM IN ACCOUNTING. 1 Hour.

Topics to engender a stronger sense of professionalism: business and social etiquette, self-assessment, professional deportment, networking, effective communication skills, and dressing professionally. Topics primarily presented by accomplished professionals from public accounting, industry, and government. Prerequisite: ACCT 5311 with a grade of C or higher or acceptance in the PPIA .

ACCT 5199. GRADUATE ACCOUNTING INTERNSHIP. 1 Hour.

Practical training in accounting. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum twelve accounting semester hours beyond principles completed or with approval of the internship coordinator.

ACCT 5299. GRADUATE ACCOUNTING INTERNSHIP. 2 Hours.

Practical training in accounting. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum twelve accounting semester hours beyond principles completed or with approval of the internship coordinator.

ACCT 5301. ACCOUNTING ANALYSIS I. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of financial accounting.

ACCT 5302. ACCOUNTING ANALYSIS II. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of managerial accounting. Prerequisite: ACCT 5301 with a grade of C or higher.

ACCT 5307. MEASUREMENT AND ANALYSIS FOR BUSINESS DECISION-MAKING. 3 Hours.

This course provides students with a comprehensive overview of financial reporting, analysis and measurement issues in the context of business decision making. Student will gain an understanding of financial statements and their underlying measurements. They will then use this understanding to conduct analyses using financial ratios. Students will then explore the role of cost measurements, allocations, etc. in determining the performance measures of parts of the organization and their inter-relationship with both choosing and evaluating strategies in various business contexts. They will cover issues such as matching strategies to performance measures, choosing and evaluating key performance indicators and balanced scorecards, etc. Prerequisite: Must be a major in the MS in Engineering Management or MS in Business Analytics. Consent of Accounting Department required.

ACCT 5311. FINANCIAL ACCOUNTING I. 3 Hours.

Examination of financial accounting process, problems encountered in preparation of financial statements, and concepts and principles used to resolve these problems. Prerequisite: ACCT 5301 with a grade of C or higher.

ACCT 5312. FINANCIAL ACCOUNTING II. 3 Hours.

Study of additional problems encountered in preparation of financial statements. Prerequisite: ACCT 5311 with a grade of C or higher.

ACCT 5313. SOFTWARE TOOLS. 3 Hours.

An in-depth study of software that would likely be used by accountants and other business people. May include spreadsheet, database, and accounting software, tax software, and other types of tools such as XBRL and XML. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5314. PRINCIPLES OF FEDERAL INCOME TAX. 3 Hours.

A study of general federal income tax principles such as income, deductions, losses and property transactions. The principles of individual taxation will be covered as well as an overview of tax considerations for entities such as corporations and partnerships. Prerequisite: ACCT 5301 with a grade of C or higher.

ACCT 5315. ACCOUNTING SYSTEMS ANALYSIS. 3 Hours.

Analysis and design of business information processes. Includes coverage of control concepts, audit trails, and the uses of information technology. Emphasis on the role of accounting in collecting, storing, and communicating information for management planning and control. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5316. AUDITING CONCEPTS AND PRACTICES. 3 Hours.

Concentrates on practice of professional accounting and auditing. Emphasizes decision making in a variety of unstructured situations where decisions demand a grasp of purpose, method, and judgment for their resolution. May not be taken for credit by students who have received credit for a course in auditing. Prerequisite: ACCT 5312 and ACCT 5315 with grades of C or higher.

ACCT 5317. COST ANALYSIS AND DECISION MAKING. 3 Hours.

The course will cover advanced cost analysis concepts including Cost-Volume-Profit analysis, cost-benefit analysis, product and service costing, pricing and budgeting. Class discussions will integrate concepts and applications of cost analysis with corporate practice through use of analytical problem solving, real world examples and case analyses. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5318. STUDIES IN AUDITING. 3 Hours.

A critical analysis of advanced topics in both auditing theory and professional practice. Emphasis on: development of auditing theory, generally accepted auditing standards, professional responsibilities, auditing EDP, SEC practice and reporting, cases in audit decision making, and analyses of emerging issues and contemporary problems in auditing. Prerequisite: ACCT 5316 with a grade of C or higher.

ACCT 5319. FINANCIAL ACCOUNTING III. 3 Hours.

Accounting for business combinations, preparation of consolidated financial statements, multinational operations, partnerships, and estates and trusts. Prerequisite: ACCT 5312 with a grade of C or higher.

ACCT 5320. GOVERNMENTAL AND NONPROFIT ACCOUNTING. 3 Hours.

Budgeting, accounting and financial reporting, managerial control, and auditing considerations of governmental and nonprofit entities. Prerequisite: ACCT 5312 with a grade of C or higher.

ACCT 5321. RESEARCH IN ACCOUNTING ISSUES. 3 Hours.

Designed to improve student's ability to research complex areas in accounting and to sharpen understanding and application of accounting concepts and principles. Case studies and problems considered and analyzed. Prerequisite: Excel certification and ACCT 5312 with a grade of C or better.

ACCT 5322. ACCOUNTING FOR MANAGEMENT PLANNING AND CONTROL. 3 Hours.

This course covers intermediate and advanced concepts in decentralization and management control, including budgetary control, performance measurement and incentive structures, and transfer pricing. Class discussions will integrate concepts and applications of control with corporate practice through use of analytical problem solving, real world examples and case analyses. May not be taken for credit by students who previously received credit for ACCT 4302 (before Fall 2020) or ACCT 4304 (after Fall 2020) or equivalent. Prerequisite: ACCT 5317 with grade of C or higher.

ACCT 5324. FINANCIAL STATEMENT ANALYSIS. 3 Hours.

A study of the basic financial statements and their use by managers, investors, and creditors. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5327. CONTEMPORARY ISSUES IN ACCOUNTING THEORY. 3 Hours.

Designed to familiarize students with significant problems currently facing the accounting profession, to examine in depth various solutions proposed by accounting scholars and others, and to strengthen student understanding of today's critical issues in accounting theory. Prerequisite: ACCT 5312 with a grade of C or higher.

ACCT 5329. CONTEMPORARY ISSUES IN ACCOUNTING INFORMATION SYSTEMS. 3 Hours.

An exploration of current topics critical to accounting information systems. The course is designed to enhance student understanding of emerging issues and technologies related to reporting, internal controls, system security and effectiveness. Topics may change semester to semester. Prerequisite: ACCT 5315 with a grade of C or higher.

ACCT 5330. INTERNATIONAL ACCOUNTING AND FINANCIAL REPORTING. 3 Hours.

Financial accounting and reporting principles and practices in various countries, the role of accounting in economic development, as well as the accounting considerations in international business operations -- e.g. foreign currency translation, auditing, accounting systems, taxation, and sensitive payments. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5332. OPERATIONAL AUDITING. 3 Hours.

A study of operational audit methodology for management audits. Audits of administrative and support functions, and other special areas such as fraud audits. Prerequisite: Graduate standing and six hours of accounting with grades of C or higher.

ACCT 5335. DESIGN OF ACCOUNTING SYSTEMS. 3 Hours.

A detailed study of the data entry, storage (file design), internal control, and reporting requirements of accounting systems, followed by the development of a significant accounting subsystem using a software development tool. Prerequisite: ACCT 5315 with a grade of C or higher.

ACCT 5339. TAX PLANNING AND RESEARCH. 3 Hours.

A study of the use of various techniques and procedures available in evaluating issues arising under federal income tax law. Emphasizes research into individual and business tax problems and planning alternatives. Prerequisite: ACCT 5314 with a grade of C or higher.

ACCT 5340. STUDY OF FEDERAL INCOME TAX FOR ENTITIES OTHER THAN INDIVIDUALS. 3 Hours.

Comprehensive analysis of the federal income tax consequences applicable to entities other than individuals. Analysis of the relevant tax principles of corporations, partnerships, trusts and estates will be undertaken. Cannot be taken for credit within the 36-hour program requirements for Master of Science in Taxation program. Prerequisite: ACCT 5314 with a grade of C or higher.

ACCT 5341. TAXATION OF PASSTHROUGH ENTITIES. 3 Hours.

Analysis of the federal income tax rules governing passthrough entities. Credit will not be received for both ACCT 5340 and ACCT 5341. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5342. TAX PROBLEMS OF CORPORATIONS AND SHAREHOLDERS. 3 Hours.

Analysis of the federal income tax rules governing corporations and shareholders. Subjects include corporate formations, corporate capital structure, administrative requirements affecting corporations, the corporate alternative minimum tax, special tax provisions (such as the personal holding company and accumulated earnings taxes and the collapsible corporation rules), nonliquidating distributions, stock dividends, redemptions and partial liquidations, liquidating distributions, corporate reorganizations, and Subchapter S corporations. Credit will not be received for both ACCT 5340 and ACCT 5342. Prerequisite: Excel certification and ACCT 5339 with grade of C or higher.

ACCT 5343. TAX PROBLEMS OF TRANSACTIONS IN REAL ESTATE. 3 Hours.

Problems and elections relating to the acquisition, holding, and disposition of real property. Subjects include means of acquisition and disposition, capital gains and losses, deferred payment sales, organization of syndicates, sale and leaseback, dissolutions, and general tax-saving methods. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5345. STATE AND LOCAL TAXATION. 3 Hours.

Introduction to the principles and practices of state and local taxation. Topics considered in the course include the application of both inter- and intra-state taxation, allocation and apportionment principles and issues in relation to the predominant forms of state taxes, such as franchise, sales, use, income, ad valorem, and property tax. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5346. TAX PRACTICE AND PROCEDURE. 3 Hours.

This course overviews the procedural aspects of dealing with the Internal Revenue Service. The focus is from the private practitioner's perspective in assisting clients in navigating the Service's administrative requirements. Topics include administrative organization of the Service, tax audits, the use of Service administrative summonses, statutes of limitation, penalties, interest charges, civil and criminal procedures and appeals. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5347. FEDERAL TAXATION OF GIFTS AND ESTATES. 3 Hours.

A comprehensive survey of the principles and procedures involved in determining the federal estate tax and the supplementary federal gift tax including taxability and valuation of property and the determination of deductions and credits. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5352. INFORMATION SYSTEMS AUDIT AND CONTROL. 3 Hours.

A study of modern approaches to the audit and control of business information systems. Prerequisite: ACCT 5315 and ACCT 5316 with grades of C or higher.

ACCT 5353. STATISTICAL TECHNIQUES USED IN ACCOUNTING. 3 Hours.

A study of statistical techniques used in accounting. Topics include alternative sample selection methods, attribute methods, mean-per-unit estimation, ratio and difference estimation, monetary unit sampling, and regression analysis. Prerequisite: STAT 5301 with a grade of C or higher.

ACCT 5366. FRAUD EXAMINATION. 3 Hours.

Analysis of fraud examiner and auditor responsibilities and current methodologies with respect to financial fraud investigation, detection, and prevention. Management's responsibilities for fraud deterrence and implementation of effective prevention measures. Identification, analysis, and examination of financial fraud using actual case studies. Prerequisite: ACCT 5316 with a grade of C or higher.

ACCT 5372. FEDERAL TAXATION OF INTERNATIONAL TRANSACTIONS. 3 Hours.

This course provides an overview of the U.S. system for taxing international transactions. Topics include U.S. jurisdictional and source-of-income rules; the foreign tax credit; anti-deferral provisions; taxation of U.S. activities of foreign persons, and issues common to both outbound and inbound activities including intercompany transfer pricing rules. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5380. ETHICS IN ACCOUNTING. 3 Hours.

This course is intended to introduce students to ethical reasoning, integrity, objectivity, independence, professionalism and other core values. The course incorporates the essentials of professional responsibilities, including elements of trust and communications with clients and other professionals. Both ethical principles and rules are considered. This course is intended to satisfy conditions of the Texas State Board of Public Accountancy that require candidates for the CPA Exam to have completed an approved ethics course. Prerequisite: ACCT 5312 or equivalent.

ACCT 5382. INDEPENDENT STUDIES IN ACCOUNTING. 3 Hours.

Extensive analysis of an accounting topic. Prerequisite: Consent of faculty member and department chair.

ACCT 5392. SELECTED TOPICS IN ACCOUNTING. 3 Hours.

In-depth study of selected topics in accounting. May be repeated when topics vary. Prerequisite: consent of instructor.

ACCT 5398. THESIS. 3 Hours.

Thesis. Graded F, R. Prerequisite: permission of Accounting Graduate Advisor.

ACCT 5399. GRADUATE ACCOUNTING INTERNSHIP. 3 Hours.

Practical training in accounting. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum twelve accounting semester hours beyond principles completed or with approval of the internship coordinator.

ACCT 5698. THESIS. 6 Hours.

Thesis. Graded F, R. Prerequisite: permission of Accounting Graduate Advisor.

ACCT 6101. ACCOUNTING RESEARCH COLLOQUIUM. 1 Hour.

A forum in which visiting scholars and U.T. Arlington faculty members present and discuss results of their contemporary research. Doctoral students participate by meeting with visiting scholars, reading the research papers, providing written critiques, and discussing the papers. Doctoral students are required to enroll and attend the colloquia presentations each fall and spring semester until the students pass all their comprehensive examinations. May be repeated for credit. Prerequisite: consent of College PhD advisor.

ACCT 6309. SEMINAR IN ACCOUNTING RESEARCH I. 3 Hours.

Analysis of the theoretical and empirical literature in accounting. Prerequisite: consent of College PhD advisor.

ACCT 6310. SEMINAR IN ACCOUNTING RESEARCH II. 3 Hours.

Analysis of Theoretical and Empirical Research in Accounting.

ACCT 6311. SEMINAR IN ACCOUNTING RESEARCH III. 3 Hours.

Continuation of analysis of the theoretical and empirical literature in accounting. Prerequisite: ACCT 6310 with a grade of C or higher and consent of the College Ph.D. advisor.

ACCT 6312. SEMINAR IN ACCOUNTING RESEARCH IV. 3 Hours.

Continuation of analysis of the theoretical and empirical literature in accounting. Prerequisite: ACCT 6310 with a grade of C or higher and consent of the College Ph.D. advisor.

ACCT 6313. SEMINAR IN ACCOUNTING RESEARCH V. 3 Hours.

Seminar will cover advanced accounting research topics.

ACCT 6390. SPECIAL TOPICS IN ACCOUNTING RESEARCH. 3 Hours.

Doctoral level coverage of advanced topics in accounting. Topics may vary. Prerequisite: Approval by faculty member and doctoral program advisor.

COURSES**BLAW 3310. LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS. 3 Hours.**

The basic structure and processes of the legal system are reviewed followed by coverage of key common law areas and major regulatory rules that impact business. The focus is on a working knowledge of the law that has the greatest impact on business today and the social and ethical issues that may be related to legal issues. Prerequisite: 30 credit hours.

BLAW 3311. LAW I. 3 Hours.

The law relevant to business transactions of large and small business firms and individuals. The history and development of our legal system, (e.g. increased government regulation of business) reviewed to help the student understand political and social influences on law. Topics covered include common law and Uniform Commercial Code, and contractual relationships (contracts, assignments, commercial papers, sales, and bailments). Prerequisite: 30 credit hours.

BLAW 3312. LAW II. 3 Hours.

The law of property (real and personal), business associations (agency, partnership, corporation, bankruptcy), wills and trusts. Prerequisite: 30 credit hours.

BLAW 3314. REAL ESTATE LAW. 3 Hours.

Development of real estate law and the legal constraints within which real estate decisions are made. Prerequisite: 60 credit hours.

BLAW 4310. BASIC INTERNATIONAL LAW FOR BUSINESS. 3 Hours.

The basic principles of law related to international transactions and relations as may be applicable to business dealings. Laws related to persons and property in the foreign environment. Prerequisite: 60 credit hours.

BLAW 5330. LEGAL ENVIRONMENT OF BUSINESS. 3 Hours.

The basic structure and processes of the legal system are reviewed followed by coverage of key common law areas and major regulatory rules that impact business. The focus is on a working knowledge of the law that has the greatest impact on business today and the social and ethical issues that may be related to legal issues.

BLAW 5331. LAW OF INTERNATIONAL BUSINESS. 3 Hours.

General principles of law applicable to international business including case law, statutory law, treaties, administrative law, and international agreements.

BLAW 5332. BUSINESS LAW. 3 Hours.

This course provides the basic legal principles of business organizations and operations, with coverage including the law of contracts (both common law and the law of sales of goods), commercial paper, property (including bailments, documents of title, patents and copyrights), employment law, agency, business organizations, selected topics of government regulation of business (securities regulation, antitrust, and bankruptcy), money laundering, suretyship and creditors' rights, the Dodd-Frank Act of 2010, the Sarbanes-Oxley Act of 2002, and CPA professional responsibility and liability.

Accounting - Graduate Programs

Objective

The objective of the Master of Professional Accounting, the Master of Science in Accounting, and the Master of Science in Taxation degree programs is to prepare students for professional careers in the public, private, or governmental sector. As a part of this objective, these programs are designed to provide the educational background to become a Certified Public Accountant or to attain other professional certifications. The MPA program, appropriate for students without significant prior study in accounting, is also designed to provide an understanding of selected fields such as management, finance, economics, and business law. The MS in Accounting and MS in Taxation are more specialized degrees which build on the individual's prior background in accounting and business-related subjects.

The department also offers a Certificate in Taxation. The objective of this certificate program is to serve degreed professionals who wish to update or add to their knowledge of taxation.

Careers in Accounting

Accounting is a career without limits. Accountants serve as analysts, consultants, and problem-solvers in business and government. Earning an accounting degree opens up a diverse array of career opportunities including: partner in an international accounting or consulting firm, corporate controller, chief financial officer, director of internal auditing, financial planner, or commercial lender. Compensation is highly competitive with excellent geographic mobility.

Students of accounting learn to use and control information technology systems, prepare and analyze financial reports, structure business transactions, and develop effective business plans. Individuals who like being challenged by a variety of situations and technologies and who enjoy identifying, analyzing, and solving problems are well-suited to majoring in accounting. Additional information about the accounting profession and its diverse opportunities can be obtained at <https://www.aicpa.org/BecomeaCPA.html>.

Accreditation

The College of Business and the Department of Accounting are accredited by AACSB - International. The department is also a member of the Federation of Schools of Accountancy.

University and College Fellowship/Scholarship Awards

The Department of Accounting follows all applicable Graduate admission criteria when awarding graduate fellowships and scholarships. Students who are unconditionally admitted, have a minimum undergraduate grade point average of 3.0 as calculated by Graduate Admissions (or 3.0 at the graduate level), and enroll for a minimum of six semester credit hours will be eligible for available fellowship and/or scholarship support. A standardized test score (GMAT) will not be used as a sole criterion or the primary criterion for determining fellowship and/or scholarship support.

Fast Track Program

The Fast Track Program in Accounting enables outstanding undergraduate UT Arlington accounting students to satisfy degree requirements that will lead to a Master's of Science in Accounting or Master's of Science in Taxation degree while completing their undergraduate studies. If admitted, students will be allowed to take select graduate courses that may be used to satisfy both bachelor's and master's degree requirements. Admitted students will be allowed to complete 6 to 9 hours of selected graduate coursework as an undergraduate student. A GPA of 3.0 on the graduate work is required to continue taking graduate courses. Any Fast Track student who completes the 6 to 9 hours of graduate coursework with grades of B or better will be automatically admitted to Graduate School. The student will then be awarded his or her bachelor's degree. The student will not be required to take the GMAT, complete the Graduate School Application, and will have the related application fees waived.

Professional Program in Accounting

The Department of Accounting offers a Professional Program in Accounting (PPIA) that allows students to earn both a bachelor's degree and master's degree upon completion of an integrated 152-hour program. This integrated program can be completed in approximately one less semester than required to earn separate bachelor's and master's degrees. Students completing this program will have earned sufficient hours to sit for the CPA exam.

PPIA Enrollment and Course Sequence

Students will get maximum effectiveness from the PPIA program if they apply two semesters before completing undergraduate coursework.

Upon admission to the PPIA, students will meet with the Graduate Advisor to obtain their graduate degree plan. Students will continue following their undergraduate plan until all appropriate undergraduate coursework is completed. Courses omitted from the undergraduate coursework will be taken as part of the MS program. These courses will be taken later as part of the graduate program and will be applied to both the graduate degree and the undergraduate accounting degree. At the beginning of the last semester of undergraduate enrollment, PPIA students will formally apply for graduate admission. At this point, students should again meet with the graduate advisor to ensure a smooth transition to graduate school.

PPIA Admission Requirements

The Department of Accounting's (the department) admission criteria for its PPIA program have been developed to conform to State of Texas requirements and are based on the general admission requirements of the Graduate School. Applicants are encouraged to include a resume that highlights professional and personal accomplishments with their application.

All applications for admission to the PPIA program are reviewed individually. Admission decisions are based on factors associated with academic success in graduate study and may include any of the following criteria: (1) undergraduate grade point average, (2) performance in accounting classes at UTA, (3) GMAT scores, (4) professional work experience, (5) personal accomplishments, (6) letters of reference, and (7) the applicant's personal statement. Standardized test scores are not used as the sole criterion for admitting applicants or denying admission to applicants.

Admission Criteria

The Department has two alternative sets of conditions that allow applicants to be unconditionally admitted to the PPIA program without review by the Departmental Admission and Petition Committee. The Departmental Graduate Advisor reviews all applications and determines if they qualify for admission under one of these two sets of criteria. Applicants who do not satisfy any of the following sets of conditions for unconditional admission are referred to the Departmental Admission and Petition Committee for consideration.

Option #1: Unconditional Admission with GMAT Waiver

This unconditional admission option #1 focuses on the applicant's performance in UTA's undergraduate accounting program. Individuals who meet **all** of the following **three** conditions are given unconditional admission:

- Majoring in accounting at UTA with having completed at least 9 semester hours of accounting study (beyond principles) at UTA;
- At least a 3.25 GPA in their overall UTA undergraduate and UTA accounting course work;
- Completed a minimum of 60 semester hours at UTA with a GPA of at least 3.25 for the most recent 60 semester hours of courses completed at UTA.

Option #2: Unconditional Admission without Committee Review

Individuals who meet **each** of the following **three** conditions are given unconditional admission:

- At least a 3.0 GPA in their overall undergraduate, UTA undergraduate and UTA accounting GPA;
- Have completed at least 45 semester hours of coursework at UTA with at least 9 semester hours of accounting courses (beyond principles) at UTA;
- GMAT total score of at least 550 with a verbal and quantitative score both at the 40th percentile or higher

Option #3: Admission with Committee Review

PPIA applicants who require Committee review are considered for admission using the following factors, with no single factor used as the primary criterion for making admission decisions:

- Undergraduate GPA (overall, UTA undergraduate) and performance in accounting courses at UTA;
- Score on the GMAT (including separate scores on the verbal and quantitative sections);
- Applicant's professional work experience and personal accomplishments;
- Letters of reference and personal statement provided by the applicant.

Unconditional admission is granted to applicants whose documentation clearly demonstrates a readiness for graduate study. By considering the totality of the applicant's circumstances, including the factors listed above, the Graduate Accounting Admission and Petition Committee will evaluate an applicant's readiness to successfully complete one of the Department's graduate programs. To qualify for unconditional admission with committee review, applicants are expected to show significant strength in at least three of the four areas listed above. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission. Provisional status lasts through the initial semester of admission. Applicants whose documentation does not satisfactorily demonstrate readiness for graduate study may be denied admission. A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate. The decision of the Committee is final.

Classroom Time Flexibility

All of the graduate degree programs offered by the Department of Accounting can be completed by individuals who work full-time and wish to attend class in the evenings. Each student's program of work must be approved by the Accounting Graduate Advisor and must include a minimum of 37 semester hours. A minimum of 28 semester hours must be taken at The University of Texas at Arlington. During the final semester, students who have written a thesis must defend the thesis in an oral examination.

Transfer Credit Applied to Master's Degree

University policy allows students to transfer in no more than nine hours of transfer credit into a graduate program. Equivalent coursework completed at other institutions of recognized standing prior to admittance into the UTA masters' program may be transferred to a masters' degree program after evaluation and approval. Courses from other universities taken after a student has been admitted into a masters' program at UT Arlington must be approved in advance by the Department of Accounting Graduate Studies Committee. To request transfer credit, students must complete the Transfer of Graduate Credit form and obtain approvals from the Department of Accounting's graduate advisor and chair of the Department of Accounting's Committee on Graduate Studies. As a general rule, transfer credits will not be approved for core graduate courses in any of the department's masters' programs or for transfer credits taken without prior approval. Other courses which are not considered suitable to a student's program of work will not be approved. The department's transfer credit policy is in addition to the university's regulation on transfer credit and course waivers. Transferred courses do not appear on the UT Arlington Official Transcript and grades earned in transferred courses are not included in calculating a student's UT Arlington graduate grade-point average.

Departmental Grade and Graduation Requirements

Students enrolled in accounting degree programs are subject to the grade requirements for academic probation and graduation as specified under the general regulations of the Graduate Admissions.

Admissions Requirements

Admission Criteria

The Department has two alternative sets of conditions that allow applicants to be unconditionally admitted without review by the Department's Admission and Petition Committee. The Departmental Graduate Advisor reviews all applications and determines if they qualify for admission under one of these two sets of criteria. Applicants who do not satisfy any of the following sets of conditions for unconditional admission are referred to the Departmental Admission and Petition Committee for consideration.

Unconditional Admission without Committee Review

Applicants qualify for unconditional admission without the need for review by the Departmental Admission and Petition Committee if they meet any one of the following two sets of unconditional admission criteria:

Unconditional Admission Set #1: GMAT Condition

Individuals who meet each of the following two conditions are given unconditional admission:

- Applicant holds an earned bachelor's degree from an AACSB accredited college or university, with a minimum GPA of 3.0 on the last 60 hours of undergraduate work and
- GMAT total score is at least 500 with verbal and quantitative score at the 30th percentile or higher, on both. While the GMAT is strongly preferred, for non-business majors, an equivalent GRE score will be accepted in lieu of the GMAT.

Unconditional Admission Set #2: GMAT Waiver Condition

This unconditional admission set #2 focuses on satisfying any one of the following criteria.

- Graduated from UTA or other AACSB accredited college or University within the three years of expected entrance into the graduate program with a minimum GPA of 3.25 in their major and overall;
- Graduated from an AACSB accredited college or university with an earned bachelor's degree, with a minimum GPA of 3.0 in their major and overall, holds a current recognized professional accounting credential or license (e.g., Certified Public Accountant, Certified Financial Analyst, Chartered Accountant);
- Graduated from an AACSB accredited college or university with an earned bachelor's degree, with a minimum GPA of 3.0 in their major and overall, and completed another postbaccalaureate degree (e.g., master's degree, JD degree, LLM degree, MD degree, Ph.D. degree).

Admission with Committee Review

Applicants who require committee review are considered for admission using the following factors, with no single factor used as the primary criterion for making admission decisions.

- Undergraduate and graduate GPA (overall, major, and last 60 hours) and program accreditation status of the applicant's degree granting institution;
- Score on the GMAT (including separate scores on the verbal and quantitative portions);
- Applicant's professional work experience and professional certification/licensure; and
- Letters of reference and personal statement provided by the applicant.

By considering the totality of the applicant's circumstances, including the factors listed above, the Admission and Petition Committee will evaluate an applicant's readiness to successfully complete one of the Department's graduate programs. Depending on the judgment of the committee, the decision

may be to grant unconditional admission, probationary admission, provisional admission, deferred admission, or to deny admission. The decision of the committee is final.

An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies as defined under Admissions Requirements and Procedures in the Graduate Catalog. International applicants must submit a TOEFL score or IELTS score that meets the standards as listed in the admission requirements.

Pre-enrollment Competency (or deficiency) Requirements

If students have not satisfactorily completed all of their pre-enrollment competency (deficiency) requirements, they will, in addition to their program of work, also be required to complete those pre-enrollment competency courses. If college courses constituting the pre-enrollment competency requirements have not been completed with a grade of C or better, students must include these courses in their program of work. Deficiency courses may be completed at the undergraduate level but core courses must be completed at the graduate level.

Master of Science in Accounting

This program is designed for students who have an undergraduate degree in accounting or a degree in business administration with a major in accounting who wish to specialize in an area of accounting other than tax. The student, with the assistance and consent of the Graduate Advisor, will develop a course of study designed to meet his or her educational needs in light of previous academic work and career objectives.

The M.S. in Accounting requires the student to complete a minimum of 37 semester hours of coursework, 24 of which must be in specified courses in the accounting discipline:

ACCT 5133	PROFESSIONALISM IN ACCOUNTING	1
ACCT 5318	STUDIES IN AUDITING	3
ACCT 5319	FINANCIAL ACCOUNTING III	3
ACCT 5320	GOVERNMENTAL AND NONPROFIT ACCOUNTING	3
ACCT 5321	RESEARCH IN ACCOUNTING ISSUES	3
ACCT 5329	CONTEMPORARY ISSUES IN ACCOUNTING INFORMATION SYSTEMS	3
or ACCT 5335	DESIGN OF ACCOUNTING SYSTEMS	
ACCT 5340	STUDY OF FEDERAL INCOME TAX FOR ENTITIES OTHER THAN INDIVIDUALS	3
ACCOUNTING ELECTIVES		6
BUSINESS ELECTIVES		12
Total Hours		37

Master of Professional Accounting (MPA)

The MPA program is designed for individuals who hold an undergraduate degree in any major other than accounting (economics, engineering, finance, liberal arts, management, mathematics, science, etc.) . The MPA program requires the student to complete a minimum of 43 semester hours of coursework, 30 semester hours of which must be in specified courses in the accounting discipline:

ACCT 5133	PROFESSIONALISM IN ACCOUNTING	1
ACCT 5311	FINANCIAL ACCOUNTING I	3
ACCT 5312	FINANCIAL ACCOUNTING II	3
ACCT 5314	PRINCIPLES OF FEDERAL INCOME TAX	3
ACCT 5315	ACCOUNTING SYSTEMS ANALYSIS	3
ACCT 5316	AUDITING CONCEPTS AND PRACTICES	3
ACCT 5319	FINANCIAL ACCOUNTING III	3
ACCT 5321	RESEARCH IN ACCOUNTING ISSUES	3
ACCT 5317	COST ANALYSIS AND DECISION MAKING	3
Accounting Electives		6
Business Electives		12
Total Hours		43

For those individuals who hold an undergraduate business degree, the MPA will normally require 43 hours of coursework. For those individuals who hold an undergraduate degree in a non-business discipline, the MPA will normally require 46 hours of coursework. Regardless of undergraduate background, the MPA degree requires a total of 27 hours of accounting plus 6 hours of accounting principles as a pre-enrollment requirement. Thus, MPA graduates will have a total of 33 hours of accounting.

Master of Science in Taxation

The Master of Science in Taxation (MST) is designed for students who have an undergraduate degree in accounting or a degree in business administration with a major in accounting who wish to specialize in taxation. The student, with the assistance and consent of the Graduate Advisor, will develop a course of study designed to meet his or her educational needs in light of previous academic work and career objectives.

The degree requires a minimum of 37 semester hours, 27 semester hours of which must be in specified courses in the accounting discipline. Of the required accounting semester hours, 18 of those semester hours must be in specified courses in the area of taxation beyond ACCT 5314:

ACCT 5133	PROFESSIONALISM IN ACCOUNTING	1
ACCT 5319	FINANCIAL ACCOUNTING III	3
ACCT 5339	TAX PLANNING AND RESEARCH	3
ACCT 5341	TAXATION OF PASSTHROUGH ENTITIES	3
ACCT 5342	TAX PROBLEMS OF CORPORATIONS AND SHAREHOLDERS	3
ACCT 5347	FEDERAL TAXATION OF GIFTS AND ESTATES	3
Tax Accounting Electives		6
Accounting Electives		6
Business Electives		9
Total Hours		37

Certificate in Taxation

To support The University of Texas at Arlington's mission to provide lifelong learning opportunities to the community, the Department of Accounting offers qualified applicants an opportunity to participate in a graduate Certificate in Taxation. This is a non-degree seeking program. The program offers graduate courses in specific areas of taxation as a means of

- maintaining and promoting their professional development in an interactive environment;
- acquiring continuing education hours necessary to maintain a professional certification;
- furthering their opportunity to participate in a graduate degree program. Subject to the applicable degree requirements, up to 4 courses taken in the certificate can be applied toward a master's degree;
- providing quality cost-efficient staff training;
- interacting with other professionals and developing a dialogue that can improve your practice's efficiency and effectiveness. A number of our professors in the program are either currently with the Internal Revenue Service or in practice in the area of specialization associated with the course.

Admission Requirements

The Tax Certificate is a post-baccalaureate educational opportunity available to degreed applicants. It is narrower in scope and shorter in duration than any of the department's graduate degree programs. To qualify, an applicant must

- have an undergraduate degree;
- have a grade point average of 3.0;

A GMAT score and letters of recommendation are not required for admission to the certificate.

Information About Status as a Certificate Student

Special student status characteristics:

- Must be approved by the Admissions Committee
- No more than twelve (12) hours of work earned as a special student may be applied to a graduate degree at UT Arlington.

A person who is admitted as a certificate student and later seeks admission to a degree program must submit a regular Graduate Admissions Application form, pay the application fee, submit all required documents, and meet all admission requirements, including admission tests and any additional requirements established by the degree program.

Application to a Graduate Program

Admission as a certificate student in no way guarantees subsequent unconditional admission into a graduate program or the Graduate Business School.

Anyone who enters a certificate program and later seeks a graduate degree at the College of Business may apply 12 hours of coursework toward that degree program if done within 6 years of completion of the certificate by petitioning Graduate Admissions through her/his prospective academic department. Only grades of A and B may be applied toward graduate credit.

Terms of Admission

Once admitted, participants may take up to four (4) of the approved courses. The terms of admission allow participants to take only the specific courses approved for the certificate. Participants would not be allowed to take courses outside of their certificate requirements without applying for and having been accepted into the graduate program.

Current Graduate Students

Graduate students currently enrolled in a UT Arlington graduate program may also earn the certificate by notifying the Accounting Advisor of their intent to participate in the certification program and by successfully completing the prescribed number of classes in their degree program.

Available Courses

The Certificate in Taxation requires students to take and successfully complete, with a minimum GPA of 3.0, four advanced tax courses. Those students entering the Certificate of Taxation without having taken the equivalent of the undergraduate tax course will also be required to take a "foundation" course, ACCT 5314. The four advanced tax courses are limited to ACCT 5339 and three additional courses selected from the following:

ACCT 5341	TAXATION OF PASSTHROUGH ENTITIES	3
ACCT 5342	TAX PROBLEMS OF CORPORATIONS AND SHAREHOLDERS	3
ACCT 5345	STATE AND LOCAL TAXATION	3
ACCT 5346	TAX PRACTICE AND PROCEDURE	3
ACCT 5347	FEDERAL TAXATION OF GIFTS AND ESTATES	3

Courses appropriate for the certificate have been selected because their subject matters directly relate to materials needed by professionals engaged in tax-related activities. Full course descriptions for these advanced courses are included in The University of Texas at Arlington's Graduate Catalog.

Grade Point Average While in the Certificate Program

All participants in the certificate must meet the normal GPA requirements of Graduate Admissions, College and Department of Accounting. In particular, they must maintain an overall GPA of 3.0 in order to receive the certificate.

Accounting - Undergraduate Programs

Overview of Degree Programs

To support its mission, the Department of Accounting offers two undergraduate degree programs: the Bachelor of Business Administration with a major in accounting and the Bachelor of Science with a major in accounting. Both degree programs provide accounting and business knowledge sufficient to enable the pursuit of professional opportunities in government, industry, and public practice. The Bachelor of Business Administration degree is intended for those individuals who seek a broader education while the Bachelor of Science degree is appropriate for individuals who wish to complete significant course work in a related business discipline such as finance, economics, or information systems.

The Department of Accounting also offers a Fast Track in Accounting and a Professional Program in Accounting for students who wish to pursue both a bachelor's and master's degree in accounting. Students accepted into either program complete fewer courses to earn both, Bachelors and Masters, degrees than non-participants.

Objective

The objective of the Bachelor in Business Administration and Bachelor of Science in Accounting is to prepare students for graduate study and/or for professional careers in the public, private, government and non-for profit sector as internal auditors, management accountants, government auditors and other accounting related functions. As a part of this objective, these programs are designed to provide the educational background to become a Certified Management Accountant, Certified Internal Auditor, Certified Fraud Examiner or to attain other professional certifications.

Students of accounting learn to use and control information technology systems, prepare and analyze financial reports, structure business transactions, and develop effective business plans. Individuals who like being challenged by a variety of situations and technologies and who enjoy identifying, analyzing, and solving problems are well-suited to majoring in accounting.

Accreditation

The accounting program in the Department of Accounting is fully accredited by the AACSB International.

Transfer Credit

Acceptance of transfer credit for accounting courses will generally be limited to those courses taught in the freshman and sophomore years in the Department of Accounting at UT Arlington. Junior and senior level accounting courses taught at UT Arlington, but completed at another institution, must be validated if they are to be used to fulfill degree requirements for an undergraduate degree in accounting. Courses are ordinarily validated from an examination of course materials and acceptable performance on a validation examination. Students must earn a grade of C or higher on the validation examination for transfer credit. Information about the validation examination can be obtained from the undergraduate advisor.

Entrance Examination for ACCT 3311 (Intermediate I)

A student's performance in ACCT 3311 (Intermediate I) is often viewed as an important indicator of aptitude for success in the accounting profession. To help ensure that each student enrolling in ACCT 3311 has the preparation to succeed, students must pass an entrance examination prior to enrolling in ACCT 3311 FINANCIAL ACCOUNTING I. Students who score in the top one-third of a UT-Arlington ACCT 2301 comprehensive exam (with no less than a B on that exam), and earn a B or better in the UT-Arlington ACCT 2301 are exempt from the ACCT 3311 entrance examination. Details regarding this entrance examination may be obtained on the departmental website.

Degree Progress and Major Dismissal

Students who have been admitted to an accounting degree program must maintain satisfactory progress in their field of study. Declared accounting majors are subject to dismissal from accounting degree programs and will not be permitted to continue to enroll in accounting courses at UT Arlington if they:

- Receive a grade of D or F in more than two upper level accounting courses, or
- Receive a combination of grades of D or F on two attempts of the same accounting course.

Graduation Requirements

In addition to requirements imposed by the University and College of Business, students must earn a grade of C or higher in each accounting course presented to satisfy the requirements for a degree with a major in accounting.

Fast Track Master's Degree in Accounting

This program emphasizes preparation for a career as a professional accountant, including preparation for the Certified Public Accountant designation. Most states, including Texas, require completion of at least 150 semester hours of college study of which at least 37 semester hours must be in accounting in order for an individual to be licensed as a Certified Public Accountant. The Fast Track Program in Accounting is designed to fulfill these requirements and enable outstanding senior undergraduate Accounting students to satisfy degree requirements leading to a Master's of Science in

Accounting or a Master's of Science in Taxation while completing their undergraduate studies and thereby completing fewer courses to earn both undergraduate and graduate degrees in accounting.

An undergraduate Accounting student will apply:

- within 30 hours of completing a bachelor's degree
- upon completion of at least 30 hours at UTA, achieving an overall UTA GPA of 3.3 or better
- with an overall GPA of 3.3 or better in all college courses (at all schools), and
- with a UTA Business GPA of 3.3 or better.

Additionally, a candidate must have completed 12 hours of specified undergraduate Fast Track foundation courses with a minimum GPA of 3.5 in these courses. These courses are mandatory and must be completed at UT Arlington. The foundation courses required for admission to the various Fast Track programs are:

ACCT 3311	FINANCIAL ACCOUNTING I	3
ACCT 3312	FINANCIAL ACCOUNTING II	3
FINA 3313	BUSINESS FINANCE	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS (whichever is taken first at UTA)	3
or BSTAT 3322	ADVANCED STATISTICS FOR BUSINESS ANALYTICS	
Total Hours		12

Once admitted, a student will be allowed to take select graduate courses that may be used to satisfy both bachelor's and master's degree requirements.

These students will be allowed to enroll in Auditing, Effective Business Communication, and an Accounting elective at the graduate level and these courses should not be completed as an undergraduate.

An undergraduate student who successfully completes the Fast Track graduate coursework with grades of B or better will graduate with the undergraduate degree and will be automatically admitted to the Graduate School at that time. The student will not be required to take the Graduate Management Admissions Test (GMAT), will not have to complete the normal Graduate School application for admission, and will not have to pay the related application fee.

For more details about this program, please consult the graduate accounting advisor (graduate.accounting.advisor@uta.edu).

Professional Program in Accounting (PPIA)

This program emphasizes preparation for a career as a professional accountant, including preparation for the Certified Public Accountant designation. Most states, including Texas, require completion of at least 150 semester hours of college study, of which at least 36 semester hours must be in accounting for an individual to be licensed as a Certified Public Accountant. The Professional Program in Accounting (PPIA) is designed to fulfill these requirements and allow the simultaneous granting of a bachelor's degree and a master's degree. Students accepted into the PPIA program generally complete fewer courses to earn both degrees than non-participants.

After completing ACCT 3311 with a B or better, interested persons should consult with the undergraduate accounting advisor to review eligibility requirements and the application process. Students admitted to the program will complete a plan of study that results in the fulfillment of requirements for the bachelor's degree (excluding BCOM 3360 and the undergraduate Advanced Accounting Elective, which are waived and completed at the graduate level) and sufficient additional graduate course work to fulfill the requirements for the Master of Science in Accounting degree or the Master of Science in Taxation degree.

Applications for admission to PPIA are reviewed individually with consideration given to the following criteria:

- Undergraduate grade point average (GPA)
- Accounting grade point average (GPA)
- GMAT score
- Professional work experience
- Personal accomplishments
- Personal Statement and Letters of Reference

For details about the application process and deadlines consult the Department of Accounting Graduate Program section of the University Catalog or the Department of Accounting website, web.uta.edu/accounting.

Requirements for a Bachelor of Business Administration Degree in Accounting

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)

General Core Requirements (p. 50)	42
Communication (minimum 6 hours required)	6
ENGL 1301 RHETORIC AND COMPOSITION I	
ENGL 1302 RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)	6
MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)	6
From Approved University General Core Requirement List	
Language, Philosophy & Culture (minimum 3 hours required)	3
From Approved University General Core Requirement List	
Creative Arts (minimum 3 hours required)	3
From Approved University General Core Requirement List	
US History (minimum 6 hours required)	6
HIST 1301 HISTORY OF THE UNITED STATES TO 1865	
HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)	6
POLS 2311 GOVERNMENT OF THE UNITED STATES	
POLS 2312 STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)	
Satisfied by completion of ECON 2305 in the Business Core.	
Foundational Component Area (minimum 3 hours required)	
Satisfied by completion of ECON 2306 in the Business Core.	
Non-Business Elective/UNIV 1101 or UNIV 1131	3
Professional Course Requirements - Business Core (39 hours)	
MANA 1301 BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301 PRINCIPLES OF ACCOUNTING I	3
ACCT 2302 PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305 INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science	
ECON 2306 satisfies the Foundational Component	
INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360 EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310 LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321 INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313 BUSINESS FINANCE	3
MANA 3318 MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322 STRATEGIC MANAGEMENT	3
MARK 3321 PRINCIPLES OF MARKETING	3
OPMA 3306 OPERATIONS MANAGEMENT	3
Professional Course Requirements - Advanced Accounting (21 hours)	
ACCT 3303 INTRODUCTION TO ACCOUNTING INFORMATION SYSTEMS	3
ACCT 3311 FINANCIAL ACCOUNTING I	3
ACCT 3312 FINANCIAL ACCOUNTING II	3
ACCT 3315 PRINCIPLES OF FEDERAL INCOME TAX	3
ACCT 4302 COST ANALYSIS AND DECISION MAKING	3
ACCT 4318 AUDITING	3
ACCT 4304 MANAGEMENT PLANNING AND CONTROL	3
or ACCT 4325 GOVERNMENTAL ACCOUNTING	
Advanced Business Courses and Electives (15 hours)	

Advanced business, economics, finance, information systems, management, marketing, operations and supply chain management, or real estate. No ACCT. All electives must be selected with the approval of the accounting advisor. See recommended elective tracks below.

Advanced Economics Elective (ECON 33xx or 43xx) 3

Total Hours 120

Double Majors

Two Double Major options for the Bachelor of Business Administration (BBA) in Accounting are available. Accounting undergraduates who pursue one of the following Double Major programs will not have the option of participating in the Fast Track Program in Business. The option of participating in the Fast Track Program in Accounting is still available.

Completion of the Double Major is attained by including all of the following courses in the BBA Accounting plan and completing with grades of C or better in each of the double major courses listed below:

BBA in Accounting and Finance

FINA 3315	INVESTMENTS
FINA 3317	FINANCIAL INSTITUTIONS AND MARKETS
FINA 4315	ADVANCED BUSINESS FINANCIAL ANALYSIS
FINA 33xx or 43xx	
ECON 3303	MONEY AND BANKING
or ECON 3310	MICROECONOMICS

BBA in Accounting and Information Systems

INSY 3300	INTRODUCTION TO PROGRAMMING
INSY 3303	COMPUTER NETWORKS AND DISTRIBUTED COMPUTING
INSY 3304	DATABASE MANAGEMENT SYSTEMS
INSY 3305	INFORMATION SYSTEMS ANALYSIS AND DESIGN
INSY 4305	ADVANCED APPLICATION DEVELOPMENT
INSY 33xx or 43xx	

Suggested Course Sequence

First Year

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
ACCT 3311		3 ACCT 3303	3
BLAW 3310		3 ACCT 3312	3
FINA 3313		3 BSTAT 3321	3
MANA 3318		3 MARK 3321	3
Advanced Economics Elective		3 Advanced Business Elective	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
ACCT 3315		3 ACCT 4304 or 4325	3
ACCT 4302		3 ACCT 4318	3
OPMA 3306		3 BCOM 3360	3
Advanced Business Elective		3 MANA 4322	3
Advanced Business Elective		3 Advanced Business Electives	3
		15	15

Total Hours: 120

Requirements for a Bachelor of Science Degree in Accounting

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)

General Core Requirements (p. 50)	42
Communication (minimum 6 hours required)	6
ENGL 1301 RHETORIC AND COMPOSITION I	
ENGL 1302 RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)	6
MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)	6
From Approved University General Core Requirement List	
Language, Philosophy & Culture (minimum 3 hours required)	3
From Approved University General Core Requirement List	
Creative Arts (minimum 3 hours required)	3
From Approved University General Core Requirement List	
US History (minimum 6 hours required)	6
HIST 1301 HISTORY OF THE UNITED STATES TO 1865	
HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)	6
POLS 2311 GOVERNMENT OF THE UNITED STATES	
POLS 2312 STATE AND LOCAL GOVERNMENT	
Social & Behavioral Science (minimum 3 hours required)	
Satisfied by completion of ECON 2305 in the Business Core.	
Foundational Component Area (minimum 3 hours required)	
Satisfied by completion of ECON 2306 in the Business Core.	
Non-Business Elective/UNIV 1101 or UNIV 1131	3

Professional Course Requirements - Business Core (36 hours)

MANA 1301 BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301 PRINCIPLES OF ACCOUNTING I	3
ACCT 2302 PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305 INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science	
ECON 2306 satisfies the Foundational Component	
INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360 EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310 LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321 INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313 BUSINESS FINANCE	3
MANA 3318 MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322 STRATEGIC MANAGEMENT	3
MARK 3321 PRINCIPLES OF MARKETING	3

Professional Course Requirements - Accounting (21 hours)

ACCT 3303	INTRODUCTION TO ACCOUNTING INFORMATION SYSTEMS	3
ACCT 3311	FINANCIAL ACCOUNTING I	3
ACCT 3312	FINANCIAL ACCOUNTING II	3
ACCT 3315	PRINCIPLES OF FEDERAL INCOME TAX	3
ACCT 4302	COST ANALYSIS AND DECISION MAKING	3
ACCT 4318	AUDITING	3
ACCT 4304	MANAGEMENT PLANNING AND CONTROL	3
or ACCT 4325	GOVERNMENTAL ACCOUNTING	

Advanced Business Courses and Electives (18 hours)

Advanced business, economics, finance, information systems, management, marketing, operations and supply chain management, or real estate. No ACCT. All electives must be selected with the approval of the accounting advisor. See recommended elective track below.

Advanced Economics Elective (ECON 33xx or 43xx) 3

Total Hours 120

Suggested Course Sequence**First Year**

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
ACCT 3311		3 ACCT 3303	3
BLAW 3310		3 ACCT 3312	3
FINA 3313		3 BSTAT 3321	3
MANA 3318		3 MARK 3321	3
Advanced Economics Elective		3 Advanced Business Elective	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
ACCT 3315		3 ACCT 4304 or 4325	3
ACCT 4302		3 ACCT 4318	3
Advanced Business Elective		3 BCOM 3360	3
Advanced Business Elective		3 MANA 4322	3
Advanced Business Elective		3 Advanced Business Elective	3
		15	15

Total Hours: 120

Recommended Advanced Business Elective Tracks for Accounting Majors**Finance Industry Track**

In addition to the Core Business Requirement of FINA 3313, Business Finance.

ECON 3303	MONEY AND BANKING
FINA 3317	FINANCIAL INSTITUTIONS AND MARKETS

FINA 4311	MONEY AND CAPITAL MARKETS
FINA 4315	ADVANCED BUSINESS FINANCIAL ANALYSIS
FINA 4319	FINANCIAL DERIVATIVES

Information Systems Track

In addition to the Business Core Requirement of INSY 2303, Introduction to MIS and Data Processing.

INSY 3303	COMPUTER NETWORKS AND DISTRIBUTED COMPUTING
BANA 3308	INTRODUCTION TO BUSINESS ANALYTICS
INSY 4312	INTRODUCTION TO CYBERSECURITY

Sales and Marketing Track

In addition to the Business Core Requirements of BCOM 3360, Effective Business Communication, and MARK 3321, Principles of Marketing.

MARK 3322	PROFESSIONAL SELLING
MARK 3323	INTEGRATED MARKETING COMMUNICATION / ADVERTISING
MARK 4308	MANAGEMENT AND LEADERSHIP OF THE SALES FORCE
MANA 4341	NEGOTIATIONS AND CONFLICT RESOLUTION

Students will receive a Sales Certificate if all courses are completed and the student has applied for the certificate.

Minor in Accounting

The College of Business:

- Requires half of the course work for a minor in business be completed in residence at UT Arlington. For an 18-hour minor requirement, this would require a minimum of 9 hours of business course work at UT Arlington.
- Requires a grade of C or better in all minor requirement courses.
- Will not use vocational and technical courses (including WECM courses) toward any business minor.

Accounting

ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II ¹	3
ACCT 3311	FINANCIAL ACCOUNTING I ¹	3
ACCT 33xx or 43xx ¹		3
ACCT 33xx or 43xx ¹		3
ACCT 33xx or 43xx ¹		3
Total Hours		18

Students must complete at least 9 hours of upper level accounting coursework at UT Arlington.

The following ACCT prefix courses may not be used to satisfy the minor requirements:

ACCT 3309	ACCOUNTING FOR MANAGERS
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A minimum accounting GPA of 2.0 must be maintained for accounting classes completed at UT Arlington. ACCT 3309 will NOT be included in the accounting GPA calculation.

¹ *Mandatory Prerequisites: Prerequisites MUST be met before enrollment in the course. A student should consider these when selecting courses to satisfy the minor requirement and when registering. For a complete list of prerequisites see the Undergraduate Catalog or the Business Undergraduate Advising Office.*

Business Administration - Graduate Programs

Master of Business Administration

The Master of Business Administration program prepares leaders and managers with or without previous business education for careers within all types of organizations. The faculty's research contributes to educational excellence. Different MBA delivery formats and certificates serve a wide variety of interests.

Doctor of Philosophy in Business Administration

At UTA we are committed to mentoring and producing the next generation of business educators and researchers. The College of Business doctoral program is small and flexible, involving in-depth study in the functional areas of accounting, finance, information technology, marketing, operations management, organizational behavior, or strategic management.

While most graduates undertake careers as teachers, scholars and researchers working within academic environments, the doctoral degree can also lead to careers in industry and government.

Master of Business Administration

Admissions

The MBA Graduate Studies Committee has three alternative sets of conditions that allow applicants to be admitted without review by the MBA Admissions Committee. The MBA Graduate Advisor reviews all applications and determines if they qualify for admission under one of these three sets of criteria. Applicants who do not satisfy the conditions for admission are referred to the MBA Admissions Committee for consideration.

Admission to the MBA program is based upon an acceptable score on the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) and the record of one's undergraduate academic performance (typically the last 60 hours of the GPA is used as calculated by Graduate Admissions*). A GMAT or GRE score is not the sole criterion for determining admission to the MBA program. An applicant can also be admitted to the program on probation with a GPA of 3.0 and passing scores of 85 percent or greater on three business subject area exams taken through a College of Business approved vendor.

A graduate grade point average is used when it is 3.0 or above and is based on at least 24 semester hours.

An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies as defined in the TOEFL and IELTS Test Score Minimums section under Admissions Requirements and Procedures the Graduate Catalog.

To apply please visit: https://www.applytexas.org/adappc/gen/c_start.WBX

Unconditional Admission without Committee Review

Applicants qualify for unconditional admission without the need for review by the MBA Admissions Committee if they have a bachelor's degree (with a GPA* of 3.0 or better) and take the GMAT scoring at least 500 with a 30th percentile or higher in the verbal and quantitative areas. The GRE is accepted but the GMAT is preferred.

Unconditional Admission without Committee Review (GMAT/GRE Waiver)

A waiver of the GMAT/GRE and unconditional admission will be considered for applicants who meet one of the following conditions:

- Have earned a 3.5 GPA (or higher) in two calculations (cumulative and last 60 hours) with an earned undergraduate degree from an AACSB (or EQUIS/AMBA) accredited school no more than seven academic years prior to the semester for which admission to the MBA is sought.
- An earned graduate degree or a graduate certificate (at least 9 credit hours) from a professionally and/or regionally accredited school with a 3.0 GPA (or higher) for all graduate coursework.

Probationary Admission

Applicants with a bachelor's degree and a GPA* of 3.0 or better who choose not to take the GMAT can be admitted to the MBA program on probation after earning passing scores of 85 percent or greater on three exams in Business Statistics (BSTAT), Economics (ECON), and Management (MANA) taken through a College of Business approved vendor. Modules are available in these areas for exam preparation. Retaking exams is permissible however successful completion of exams is required prior to admission. Upon successful completion of all three exams, the applicant will be admitted on a probationary basis to the MBA program.

Applicants with a bachelor's degree and a GPA* less than 3.0 may be admitted to the MBA program on probation by taking the GMAT or GRE and meeting minimum score requirements (as stated above).

If GMAT/GRE minimum scores and at least 3.0 GPA* are not met, the MBA Admissions Committee will review for admission decision.

Applicants admitted on a probationary basis must complete the first two semesters of the MBA program with a cumulative GPA of 3.0 or better to gain unconditional admission.

Provisional Admission

An applicant unable to supply all required official documentation prior to the admission deadline but otherwise appears to meet admission requirements may be granted provisional admission. Complete and satisfactory credentials must be received by Graduate Admissions before the end of the semester in which the student has registered in a provisional status. Provisional admission does not guarantee subsequent admission on an unconditional basis.

Deferred and Denied Admission

A deferred decision may be made when an applicant's file is not sufficiently complete to make an admission decision, or when an applicant needs to improve certain criteria to enhance their competitive status for future admission consideration. For an applicant lacking sufficient evidence to indicate potential for academic success as an MBA student, admission will likely be denied. All applicant data will be carefully reviewed before an admission denial is made. The decision to defer/deny admission is not based on any single criterion.

Scholarship Information

Students unconditionally admitted, have a minimum undergraduate GPA of 3.0 as calculated by Graduate Admissions (or 3.0 at the graduate level), and enroll for a minimum of six semester credit hours will be eligible to apply for available fellowships and/or scholarships. A standardized test score (GMAT or GRE) will not be used as the sole criterion for determining fellowship and/or scholarship opportunity.

MBA Requirements

The MBA program is designed to accommodate both full-time and part-time students from business and non-business backgrounds. It is not necessary to have completed prior academic work in business administration to gain admission to the program. Students who are admitted unconditionally will complete a 36 credit hour program without the need for background instructional content.

Substitutions

At the MBA Advisors discretion, a course substitution may be provided in the MBA if a student holds an undergraduate degree in an area of study that aligns with an MBA core course. A prerequisite is considered fulfilled when the student is granted a substitution of that specific required course. Required courses may not be taken as electives in the program.

MBA Coursework

There are 36 hours of required courses. The fifteen hours of electives allows the student an opportunity to tailor studies to enhance a career interest.

Requirements for the program include the following courses:

MARK 5311	MARKETING	3
OPMA 5361	OPERATIONS MANAGEMENT (or)	3
INSY 5375	MANAGEMENT OF INFORMATION TECHNOLOGIES (or)	
BSTAT 5325	ADVANCED METHODS FOR ANALYTICS	
FINA 5311	BUSINESS FINANCIAL MANAGEMENT ¹	3
ECON 5313	DECISIONS AND STRATEGY	3
ACCT 5307	MEASUREMENT AND ANALYSIS FOR BUSINESS DECISION-MAKING	3
MANA 5360	LEADERSHIP AND TEAMS	3
MANA 5336	STRATEGIC MANAGEMENT (Capstone course - taken in second to last or last semester of program)	3
Fifteen hours of electives.		15
Total Hours		36

Electives and Concentrations

Students can take courses in different areas (no concentration) or may choose to concentrate in a given area such as accounting, business analytics, digital markets, economics, finance, human resources, information systems, management, marketing, marketing research, operations management, health care administration, or real estate. Students can tailor the program to develop business skills and perspectives essential to career goals and objectives. Students may only have one concentration. Choosing to concentrate or not will not impact the degree name on the transcript or diploma. Both will read "Master of Business Administration."

Students may take electives in any of the curriculum areas of the MBA program. Students may take up to six semester hours in non-business coursework as part of their electives, subject to the approval of the MBA Advisor. An approved study abroad program or internship can also be used to satisfy an advanced elective requirement.

Professional Management Electives

Students holding bachelor's or master's degrees in professional fields such as architecture, education, engineering, nursing, social work, and urban studies have the option of taking, with program advisor approval, up to nine hours of approved electives in their professional area as part of their MBA degree requirements. With these electives, professionals can develop advanced management skill in a functional area by declaring a nine hour concentration, or pursue a more general management approach by declaring no concentration.

MBA Formats

Students pursuing an MBA may choose one of four available formats in which to complete their degree. In all formats, degree completion requires a total of 36 credit hours and the same curriculum requirements apply. Only one change of program between the different formats of the MBA will be allowed.

Flexible MBA

Available on weeknights in Arlington, the Flexible MBA format is designed for working professionals seeking a traditional-style program with maximum flexibility. In this format, courses are taken primarily face-to-face in 15-week sessions and students are able to complete their MBA degree in 18-24 months. Students choosing this format complete degree requirements at their own pace and may select one of thirteen available areas of specialization/concentration in which to focus their MBA. Admission to the Flexible MBA is available each Fall, Spring, and Summer.

Weekend MBA

Available on weekends in Arlington, the Weekend MBA format is designed for working professionals seeking a combination of face-to-face interaction and online learning. In this format, courses are taken in sequence, in 8-week sessions and students are able to complete their MBA degree in under 15 months. Students in this format may pursue a general MBA degree or choose to concentrate their MBA in select specialization areas. Admission to the Weekend MBA is available each Fall and Spring.

Cohort MBA (also referred to as CMBA)

Available on Monday nights and Saturday mornings in Fort Worth, the Cohort MBA format (CMBA) is designed for working professionals seeking the benefits of an accelerated degree timeline while still being able to focus on one course at a time. In this format, courses are taken in sequence, in accelerated 5- or 10-week sessions and students are able to complete their MBA degree in 15 months. Students in this format may pursue a general MBA degree or choose to concentrate their MBA in Health Care Administration or Real Estate. Admission to the Cohort MBA is available each Fall.

Online MBA

Available fully-online, the Online MBA is designed for working professionals who prefer the online format either due to learning preference or work obligations. In this asynchronous format, courses are taken in 7-week sessions and students are able to complete their degree in 12 months. Students in this format may pursue a general MBA degree or choose to concentrate their MBA in Health Care Administration, Finance, or Management. Admission to the Online MBA is available each Fall, Spring, and Summer. ***Note: The Online MBA program is not accepting applications at this time.**

Grade and Graduation Requirements

The MBA program follows the grade requirements for probation as specified under the general regulations of the Graduate Catalog. In addition, students must have at least a 3.0 grade point average in all coursework and area of concentration to graduate.

Executive MBA Program

The Executive MBA (EMBA) program offers high-quality graduate management education to experienced professionals, managers, and executives. The program covers all functional areas of business, and emphasizes the integrated application of management tools and techniques in modern business organizations. Focus areas include globalization, leadership in a diverse world, analytics for decision processes, innovation and entrepreneurship, environmental sustainability, and corporate social responsibility.

The program applies a 15-month, cohort-based format to a lock-step, fixed curriculum. The schedule of classes follows an accelerated weekend-based format. The students, who are usually fully employed, enter the program as a group and progress through the sequence of courses together.

Course content is delivered by senior faculty, with most having extensive industry experience. Guest speakers are featured for industry and technical expertise. Instructors use methods that maximize student interaction and connect classroom discussion directly to each student's job and career situation.

Executive MBA (EMBA)-International Option

The Executive MBA program is designed to provide high-quality, graduate management education to mid-level and upper-level managers and executives. The program covers all functional areas of business management and has an international focus in its course offerings. Other program content themes may include project management, total quality management, strategic resource alignment, leadership, entrepreneurship, big data or other specific areas as determined by the local needs and demand.

The program provides an opportunity for experienced professionals to obtain a master's degree in Business Administration on a schedule that minimizes disruption of work and personal pursuits. It includes a cohort class structure that offers a lock-step, planned curriculum in an executive setting. In other words, members of each class begin the program at the same point, move through the curriculum together, and typically complete the degree requirements for graduation as a group. Executive MBA students are required to complete their degrees in two years or less.

The program consists of 12 courses (36 credit hours). A single course is offered every 6-8 weeks.

Criteria for Admission

The EMBA admission process takes a holistic view of the candidate to determine the likelihood of success in the program and the extent to which each candidate will contribute to the overall success of the class. Factors taken into account in evaluating a candidate include:

Completion of a four-year undergraduate degree or internationally recognized equivalent

Minimum of 5 years of professional work experience, with 2 years of managerial experience

High potential for advancement and proven academic capability

Ability to contribute to the Executive MBA experience

Ability to read, write and speak English. If candidates do not have standardized tests results (e.g. TOEFL, IELTS), they will be required to take an in-house English test and pass an oral English interview. This requirement is waived for custom-designed cohorts for companies or government entities, which are taught in Mandarin.

Strong interest in a U.S. educational experience.

Probationary Admission

If applicants do not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Any available test scores will not constitute the sole or primary basis for ending consideration of an applicant. Probationary admission may require that the applicant receive a B or better in at least their first 9 hours of graduate coursework applicable to their degree being sought at UT Arlington.

Curriculum

- Accounting Analysis II (ACCT5302)
- Managerial Economics (ECON5313)
- Strategic Management (MANA5336)
- Financial Applications (FINA5340)
- Management of Information Technologies (INSY5375)
- International Marketing (MARK5331)
- Management of Multinational Enterprises (MANA5331)
- Strategic Human Resource Management (MANA5340)
- Organizational Behavior* (MANA5320)
- Entrepreneurship* (MANA5339)
- Global Supply Chain Management* (OPMA5368)
- Operations Management* (OPMA5361)

Courses marked with an asterisk (*) are electives.

Course Descriptions – International EMBA

ACCOUNTING ANALYSIS II (ACCT 5302)

- Introduction to concepts, purposes, problems, methodology, and terminology of managerial accounting.

MANAGERIAL ECONOMICS (ECON 5313)

- Application of economic analysis in formulating business decisions based on the theoretical foundations of demand, cost, production, profits, and competition. Macroeconomic topics of particular relevance to managers are included.

STRATEGIC MANAGEMENT (MANA 5336)

- Strategic management uses a general management perspective in addressing issues related to the formulation and implementation of corporate and business level strategy. The course involves developing the ability to identify issues, evaluate strategic options and understand the organizational

process by which strategies get formed and executed. It builds on the knowledge gained in functional area courses and uses case studies and projects to improve students' analytical and decision-making skills.

FINANCIAL APPLICATIONS (FINA 5340)

- Analysis of financial problems of business concerns, presented in case materials. Considers determination of capital needs, choosing among alternative capital investments, planning methods of financing new capital expenditures, and planning recapitalizations, mergers, and reorganizations.

MANAGEMENT OF INFORMATION TECHNOLOGIES (INSY 5375)

- This course covers topics on the management of information technologies (IT) from the view point of senior managers. Subjects discussed include the strategic role of IT to gain competitive advantage, Internet-based business models, building a lean and agile organization through IT, managing IT security and reliability, evolving models of IT service delivery, such as cloud computing and open source, management of outsourcing, IT governance, and ethical issues in the digital era.

INTERNATIONAL MARKETING (MARK 5331)

- Management of marketing in international business. Includes marketing research, pricing, promotion, and distribution in the international environment. Examines marketing problems arising from various degrees of foreign involvement (exports, licensing, foreign subsidiaries).

MANAGEMENT OF MULTINATIONAL ENTERPRISES (MANA 5331)

- Focuses on the international dimensions of strategy and organization and provides a framework for formulating strategies in an increasingly complex global economy. The course seeks to provide students with an understanding of the cultural, political, competitive, technological, legal, and demographic environments in which multinational firms operate. It then examines the nature of global competition by exploring the characteristics of global industries and strategies that have been successful in an international context. Also covered are issues related to organizational design and strategic control in the management of multinational enterprises.

STRATEGIC HUMAN RESOURCE MANAGEMENT (MANA 5340)

- Emphasizes strategic perspective of modern human resource management theory and practice. Topics include human resource planning, staffing, training and development, compensation, performance appraisal, and labor and employee relations.

ORGANIZATIONAL BEHAVIOR* (MANA 5320)

- Systematic study of behavioral problems in the complex organization. Analyzes the interaction of environmental and internal factors and their effects upon organizational behavior.

ENTREPRENEURSHIP* (MANA 5339)

- New venture opportunity assessment, formation, and development in startup and corporate environments. Students will understand the role of entrepreneurship in the economy and the attributes of entrepreneurial behavior. Students will learn how to assess the market and financial feasibility of a new venture as well as understand how to use equity and debt financing, how to select between starting up, franchising, or buying a business, how to lead the growing company, and how to address family business dilemmas. The cornerstone of the course will be a feasibility assessment project that leads to a business plan for a new venture of the student's choice. For the project, students can explore either an original new venture idea, an already existing venture concept (for example, a franchise), or a new business opportunity in need of assessment for an existing firm or their current employer.

GLOBAL SUPPLY CHAIN MANAGEMENT* (OPMA 5368)

- Course covers concepts and issues important in managing supply chains. A strategic view is taken of the way companies coordinate their operations with suppliers and customers in a global marketplace. The strategic use of information systems to better manage supply chains is also covered.

OPERATIONS MANAGEMENT* (OPMA 5361)

- Introduction to concepts and problem-solving techniques important in production management and operations management. Topics include demand forecasting, capacity management, resource allocation, inventory management, supply chain management, quality control, and project management.

Dual Degree Option

Students may pair the MBA degree with a specialized graduate degree. Students requesting the dual degree program must be admitted to each participating program. The number of hours that may be used jointly will be determined by the total number of hours required by both degree programs. Dual degree programs are available at the master's level only.

Joint Degree: Bachelor of Science in Biology and Master of Business Administration

The program is designed to prepare students for careers as managers with specific knowledge of the biomedical science field. Students are required to take courses from life sciences, business, and liberal arts, culminating in a joint Master of Business Administration degree (MBA), including a Bachelor of

Science degree in Biology. The curriculum is offered jointly by the College of Business and the College of Science. The BS in Biology will be conferred at the same time as the MBA. If students in this joint degree program are not accepted into the MBA program, or if they enter the MBA program and fail to complete the MBA requirements, then, in order to earn a BS in Biology they must take the same, full complement of courses required for a BS as students not enrolled in the joint program. Students interested in this integrated undergraduate and graduate degree plan should consult with the Biology undergraduate advisor. If eligible for the program, their Biology undergraduate advisor will direct them to contact Graduate Business Services. Application procedures will be discussed at that stage. ***Note: This program is not currently accepting applications.**

PhD in Business Administration

Admission

Admission to the PhD program is based upon the completion of the general admission requirements of Graduate Admissions. For PhD program admission, a score on the Graduate Management Admission Test (GMAT) or Graduate Record Exam (GRE) and a record of undergraduate and master level academic performance are required. Students for whom English is not their native language must achieve a TOEFL score of at least 550. The TOEFL cannot be waived, even when a student has a Master's degree from a US university. International applicants that score below minimum acceptable levels on the verbal portion of entrance examinations may be admitted under the condition that they pass an English proficiency exam or complete UT Arlington's Graduate English Skills Program prior to beginning graduate coursework. Applicants are encouraged to submit a résumé with their application that highlights professional and personal accomplishments, linguistic abilities, computer expertise and leadership experience. A statement of purpose which describes the applicant's academic and work background, research interests, and reasons for applying to the UTA PhD program is required as part of the application.

Multiple criteria are used to make admission decisions. Quantitative measures include an applicant's GMAT or GRE score and grade point averages on undergraduate and master level courses as calculated by the Graduate Admissions. No formula is used nor weights assigned to these factors. There are no set minimum scores for GMAT or GRE required for admission and no cutoff scores on grade point averages. A standardized test score (GMAT or GRE) is not used as the sole criterion for an applicant's admission decision.

PhD admission decisions are made by a committee headed by the major field coordinator for the track that an applicant wishes to specialize in (Management, Finance, etc.). These committees typically give consideration to many factors (educational objectives, letters of recommendation, etc.) in addition to quantitative metrics to arrive at a decision. All students who wish to have a strong application for a PhD program are encouraged to gain research experience through activities such as working as a research assistant for a faculty member, writing a master's thesis, and/or presenting papers at academic conferences. Strong performance in courses in research methods and advanced statistics are also viewed positively. Students who wish to learn more about the admission process for a particular area of business administration are encouraged to contact the major field coordinator for that area.

Categories of Admission Decisions

An applicant is unconditionally admitted when all factors for consideration indicate very strong potential for academic success as a business doctoral student. When multiple factors indicate lack of potential, admission will be denied. Probationary admission is not available for the doctoral program.

A provisional decision to admit may be granted when the applicant meets criteria for unconditional admission but an item of applicant information has not been received by the Graduate Admissions (e.g., official test scores have not arrived). A deferred decision may be made when an applicant's file is not sufficiently complete to make an admit or deny decision.

University and College Fellowship/Scholarship Awards

Doctoral students who are newly admitted, have a minimum undergraduate grade point average of 3.0 as calculated by Graduate Admissions (and 3.0 at the graduate level), and enroll for nine semester credit hours will be eligible for available Dean's Doctoral Assistantship (DDA), fellowship and/or scholarship support. A standardized test score (GMAT or GRE) is not used as the sole criterion for determining fellowship and/or scholarship eligibility.

Students must maintain a minimum GPA of 3.25 in the PhD program to keep any DDA, fellowship and/or scholarship support. Students whose GPA falls below 3.25 can petition through their Area Coordinator and the PhD Program Director for a one semester probationary period to raise their GPA to the 3.25 level or above. If this is granted, the student will continue his/her DDA during that probationary semester. If the student's GPA is not above 3.25 after the probationary semester, the student will no longer be eligible for fellowships, scholarships, or DDA positions.

Degree Requirements

All students must complete work in a major area field and a research field. Some major courses may be external to the College of Business, if deemed appropriate by the student's advisor. Examples include industrial engineering, mathematics, computer science, sociology, and psychology. Students admitted to the PhD program will choose courses in consultation with their major field coordinator, who serves as their academic advisor for the first two years of the program.

The following minimum semester hours must be included in the student's Program of Study.

	Minimum Semester Hours
Business Foundation	0-12 ¹
Major Field Seminar	12

Other Major Field Coursework	12
Research Field	12
Dissertation	18

¹ From 0-12 hours may be required of some students, depending upon the student's background (i.e., previous graduate coursework) at the time of admission to the doctoral program.

Annual Progress Evaluations

All doctoral students are expected to show steady progress toward their degree and to demonstrate satisfactory advances in their ability and motivation to conduct independent research throughout their program. During a student's program, a progress evaluation will be conducted near the end of the first year, but no later than 24 credit hours. After the first year, an annual progress evaluation will take place each subsequent year. The evaluation will be conducted by the major field coordinator/PhD advisor in consultation with a faculty committee. If the student has not yet passed all comprehensive examinations or does not have a formal dissertation committee, the faculty committee will consist of the PhD Committee for the major area. If the student has passed all comprehensive examinations and has a formal dissertation committee, the faculty committee will consist of the Dissertation Committee.

Upon completion of the evaluation, a recommendation of continuation or discontinuation in the program is made to the College of Business PhD program director for a final decision. When a discontinuation decision resulting from the first year diagnostic evaluation is made, the student will immediately be discontinued in the PhD program. For a discontinuation decision in the annual progress review in the second year and beyond, the student will be placed on probation for one regular semester (Fall or Spring) during which he or she must demonstrate satisfactory improvement in his/her performance. At that time the major field coordinator/PhD advisor in consultation with the faculty committee, and the PhD program director, will make a final decision on whether the improvements are satisfactory. An unsatisfactory decision at that time will result in the immediate discontinuation of the student in the PhD program.

During the annual progress reviews, reasons for poor performance include: grade point averages below minimum GPA requirements, unsatisfactory progress in completing coursework, unsatisfactory progress in completing dissertation, and inadequate demonstration of ability and motivation to conduct independent research.

All students must maintain a GPA of 3.25 or higher to remain in good standing in the PhD program. Students whose GPA falls below 3.25 will be given a one-semester probationary period to raise their GPA to the 3.25 level or above. If after that one semester passes, the student's GPA is still below 3.25, the student will be dismissed from the program. Any student who earns three grades of C in the PhD program will be immediately dismissed from the program.

Comprehensive Examinations

Students must demonstrate competence in their fields of study by the successful completion of comprehensive examinations. Written comprehensive examinations in each field will be given at the start of each fall and spring semester of each year and may be given during the summer term. A student is eligible for a written comprehensive examination when that student has completed:

1. Any Business Foundation courses with a GPA of at least 3.25 and
2. prescribed coursework in the field with a GPA of at least 3.25.

If a student fails a written comprehensive examination and continues in that field, the examination must be retaken by the end of the next long semester. If a student fails a second comprehensive examination, that student will not be permitted to continue in the PhD program.

When a student successfully completes the written comprehensive examination, that student should schedule a comprehensive oral examination which is administered by the student's Supervisory Committee. A student who fails the comprehensive oral examination is given a second oral examination within 12 months of the date of the first examination. If a student fails the second comprehensive oral examination, that student will not be permitted to continue in the PhD program.

Upon successful completion of written and oral comprehensive examinations, the student is admitted to candidacy.

Dissertation

The Dissertation Committee consists of a minimum of three members, at least two of whom must be from the major field. There is no maximum number of faculty members that can serve on a committee, although committees of more than five are unusual. The chair of the Dissertation Committee must be from the major field. At least one member of the committee must be from outside the department - either from outside the major field at UTA or a nationally or internationally recognized non-UTA scholar. Any committee member from outside UTA must receive approval from the Graduate Dean.

The dissertation must be completed within four years of the oral comprehensive examination.

Graduate Certificate in Entrepreneurship

The certificate requires a total of nine semester credit hours of coursework, which can be completed in conjunction with an existing Master's or PhD degree in any field or independently as a special student.

Admission Requirements

Graduate students in good standing at UT Arlington

For non-enrolled students (special, certificate only students)

- Bachelor's Degree from an accredited university, and
- GPA of 3.0 for last 60 hours of undergraduate coursework.

Graduate Certificate Requirements

To receive the certificate, all courses must be completed at UT-Arlington. The cumulative grade point average must be 3.0 or higher.

MANA 5339	ENTREPRENEURSHIP	3
Select two from the following list reflecting appropriate area of study		6
ART 5322	ENTREPRENEURSHIP IN ARTS MANAGEMENT AND ARTS BRANDING	
ENGR 5302	ENGINEERING ENTREPRENEURSHIP	
MANA 5333	MANAGEMENT OF TECHNOLOGICAL INNOVATION	
MANA 5330	NEGOTIATIONS & CONFLICT MANAGEMENT	
MANA 5345	SOCIAL ENTREPRENEURSHIP	
PAPP 5354	NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP	
Total Hours		9

For additional information or questions about the graduate certificate, please contact the College of Business Graduate Business Services Office at 817-272-3004 or email gradbiz@uta.edu.

COURSES

BSAD 6182. INDEPENDENT STUDIES IN BUSINESS ADMINISTRATION. 1 Hour.

This independent study course is centered on the application of content related to teaching in higher education settings. Students will be expected to design a lesson, present a lecture, and arrange for a final feedback report following an observed teaching demonstration. The focus will be on reflective teaching, sound lesson design, and receiving feedback towards improved teaching practice in higher education.

BSAD 6310. FOUNDATIONS OF SCIENTIFIC INQUIRY. 3 Hours.

The evolution of the modern corporation is briefly addressed. The core topics include the structure of explanation, the structure of scientific laws, theory building, philosophy of science and relativistic/post-relativistic philosophies of science.

BSAD 6311. EXPERIMENTAL DESIGN AND RESEARCH METHODS. 3 Hours.

In-depth coverage of selected topics in the design of research; topics include philosophy of science, theory of measurement, complex experimental and quasi-experimental designs.

BSAD 6312. REGRESSION. 3 Hours.

The theoretical and practical aspects of regression analysis. Topics include simple and multiple linear regression, the matrix formulation of regression models, regression diagnostics and remedial measures, collinearity and ridge regression, normal correlation models, and non-linear least squares, time series including ARIMA models are covered. Practical applications of statistical software packages are emphasized.

BSAD 6313. ANOVA. 3 Hours.

Experimental design and data analysis, especially as related to business and economic research. Topics include completely randomized designs, complete and incomplete blocks, nested designs, estimation and testing of fixed, random and mixed effects, sampling, nonparametric statistics and analysis of variance.

BSAD 6314. MULTIVARIATE STATISTICS. 3 Hours.

Topics include commonly applied multivariate methods such as multiple analysis of variance, factor analytic methods, discriminant analysis, logistic regression, canonical correlations, profile analysis, cluster analysis, and repeated measures. The use available computer packages to conduct data analysis will be stressed.

BSAD 6315. TIME SERIES. 3 Hours.

Univariate and multivariate time series; analysis of economic and financial data; out-of-sample forecasting using computer software. Autoregressive-moving average models, vector autoregression, unit roots, co-integration, ARCH and GARCH.

BSAD 6316. FINANCIAL ECONOMETRICS. 3 Hours.

In-depth study of the econometric tools and techniques used in empirical finance research. Course emphasizes data extraction and analysis of common finance databases, as well as the theoretical basis for current empirical finance techniques and methods.

BSAD 6317. APPLIED BUSINESS & ECONOMICS DATA ANALYSIS I. 3 Hours.

The course develops an understanding of basic statistical and econometric techniques. Participants exploit real data and computational power to uncover patterns/trends and examine relationships. There is a focus on conceptual frameworks and the application of techniques to data sets in various fields. Participants learn how to use statistical packages such as R, SAS, and STATA to apply the tools to real data. Participants will complete an empirical analysis paper. Prerequisite: BSTAT 5325 or consent of instructor.

BSAD 6318. APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS II. 3 Hours.

The course covers cross-section, panel data, and limited dependent variables methods. Topics may include analysis of natural experiments/differences-in-differences, panel data methods, instrumental variable estimation, simultaneous equation models, sample selection corrections, and limited dependent variable and hierarchical models. Participants learn how to use statistical packages such as R and SAS, to apply these methods to data to examine causal relationships. They build an understanding of appropriate methods for different research design. Participants will complete an empirical research paper. Prerequisite: ECON 5336 or BSAD 6317 or consent of the instructor; cross referenced with ECON 5339.

BSAD 6319. BUSINESS & ECONOMIC FORECASTING. 3 Hours.

This applied course provides students the foundation to analyze business, economic, and financial data to develop forecasts using current statistical and computing tools. Emphasis is on methods that allow students to capture trending and seasonal patterns present in the data and other predictable variations hiding in plain sight, including temporal correlation. Once equipped with appropriate models, including ARIMA methods, students learn how to use the extracted information to project into the future. Critical thinking will be strengthened, as students will select an appropriate forecasting model and demonstrate its efficacy against reasonable alternatives. Prerequisite: ECON 5336 or BSAD 6317 or consent of the instructor.

BSAD 6320. CAUSAL INFERENCE FOR BUSINESS DECISIONS. 3 Hours.

Students learn methods to identify and measure the outcomes of business decisions. In particular, students will learn various issues pertaining to the misattribution of causal effects. The course surveys multiple methods to overcome the misidentification problem. Students will engage in empirical analysis. Prerequisite: ECON 5336 or BSAD 6317 and ECON 5339 or BSAD 6318.

BSAD 6321. FOUNDATIONS OF STRUCTURAL EQUATION MODELING. 3 Hours.

The purpose of this course is to provide a foundation into structural equation modeling (SEM) techniques and issues as well as hands-on training with SEM software. Application of basic techniques such as confirmatory factor analysis (CFA), mediation and moderation in SEM, and multi-group analyses will be covered. Students must have taken a graduate course on regression. Prerequisite: Multivariate.

BSAD 6322. MODELING IN BUSINESS RESEARCH. 3 Hours.

A wide range of modeling techniques such as game theory in economics, discrete choice models in marketing and dynamical stochastic models will be discussed. The course focuses on model development to match mathematical framework and features to the underlying research setting and estimation/model selection techniques. Examples drawing from multiple research disciplines will be used to demonstrate relevant techniques and design principles step by step.

BSAD 6323. DATA ANALYTICS SEMINAR. 3 Hours.

The imperative to harness vast amounts of data has spawned a number of tools and techniques that complement traditional statistical approaches. From a research perspective, these tools and techniques afford new ways of collecting and analyzing data. This seminar will introduce students to contemporary data analytic techniques, including social network analysis, text analysis, machine learning and AI, and their applications in research.

BSAD 6330. Nonparametric Statistics. 3 Hours.

A survey of statistical tools which may be used when the normal assumptions of parametric statistics cannot be made; including procedures for categorical data, methods involving ranks, bootstrapping, and Kolmogorov-Smirnov type techniques. Cross listed with BSTAT 5330. Prerequisite: BSTAT 5325 or equivalent.

BSAD 6392. DOCTORAL RESEARCH AND TEACHING COLLOQUIUM. 3 Hours.

Review of the research process and contemporary developments in the methodology and design of empirical research in the major fields of study represented in the doctoral program. Review of teaching methods for effective classroom instruction. May be repeated for credit.

BSAD 6399. DISSERTATION. 3 Hours.**BSAD 6699. DISSERTATION. 6 Hours.****BSAD 6999. DISSERTATION. 9 Hours.****BSAD 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

COURSES

EMBA 5101. BUILDING HIGH PERFORMANCE LEADERS AND ORGANIZATIONS (LL2). 1 Hour.

1.5 CREDITS. Explores key characteristics of high-performing leaders and organizations and weaves these into a single integrated model that students can easily apply to improve their individual and organizational effectiveness. Leadership Laboratory Module 2.

EMBA 5102. PRICING STRATEGIES AND TACTICS. 1 Hour.

1.5 CREDITS. Often, managers treat pricing as a tactical problem. By pricing to cover costs, they undermine profit. By pricing for competitive advantage, they undermine value. In fact, pricing products and services is a strategic challenge that requires insight, analysis, and perspective. This course will introduce senior managers and executives responsible for pricing decisions and approvals to the theory and techniques needed to understand strategic pricing. The course will focus on how to use price to achieve strategic objectives, including successfully introducing new products to the market, responding to significant price competition, and achieving prices that reflect the true value of your products.

EMBA 5105. CORPORATE GOVERNANCE, SOCIAL RESPONSIBILITY, AND ETHICAL ISSUES (LL4). 1 Hour.

1.5 CREDITS. This module explores and develops key competencies that leaders need in a complex global economy. Issues to be explored may include: the impact of ethics on managerial decision making, developing and maintaining sustainable business practices, cross cultural communication, crisis management and the consequences of unethical behavior. pressures. This course explores such issues with emphasis on the impact of ethics on managerial decision making, creating ethical environments for employees, establishing expected norms of behavior, and topical issues such as environmental sustainability, and the consequences of unethical behavior. Leadership Laboratory Module 4.

EMBA 5111. PROFESSIONAL COMMUNICATION. 1 Hour.

Professional writing and presentation will be explored and practiced throughout the program. Lectures are provided by experts in business communication.

EMBA 5112. BUILDING HIGH PERFORMANCE TEAMS (LL1). 1 Hour.

1.5 CREDITS. This course introduces students to a leadership and organizational effectiveness framework, assesses individual competencies using a comprehensive leadership 360 analysis and focuses on developing talented individuals into a high-performance cohort. Students will learn the skills and techniques required to be both an effective team member and leader. Leadership Laboratory Module 1.

EMBA 5121. STRATEGIC HUMAN RESOURCE MANAGEMENT (LL3). 1 Hour.

1.5 CREDITS. This Leadership Lab module focuses on various human capital competencies that firms and individuals can use to enhance organizational capabilities and achieve strategic objectives. The course details how the acquisition, deployment, assessment, and retention of an organization's workforce impacts productivity and firm performance in various contexts. Leadership Laboratory Module 3.

EMBA 5123. NEGOTIATIONS. 1 Hour.

1.5 CREDITS. Effective Leadership requires strong communication and negotiation skills. The course will cover techniques and tools for effective negotiating.

EMBA 5125. FOUNDATIONS OF QUANTITATIVE ANALYSIS. 1 Hour.

1.5 CREDITS. This course is designed to introduce foundational statistical building blocks used in applied managerial reasoning and decision making. Coverage will include (1) the computation, interpretation, and visualization of descriptive statistics (e.g., quantities reported as key performance indicators and/or metrics on dashboards), (2) tests of statistical differences (e.g., period over period, segment vs. segment, comparisons, etc.), (3) tests for statistical association (e.g., correlations, associations among categorical variables), and (4) an introduction to predictive modeling using multiple regression. In addition to gaining working knowledge of foundational statistics, an intended outcome is to equip organizational leaders to evaluate analysis results prepared by others; a critical skill for modern data-rich business contexts with expanding applications of business analytic techniques.

EMBA 5192. CAPSTONE: SPECIAL TOPICS IN INTERNATIONAL BUSINESS. 1 Hour.

The course combines class discussion of lessons learned from the international project experience with case-based analysis. Discussion merges diverse functional business perspectives with student presentations on concepts covered in the EMBA program.

EMBA 5199. STRATEGIC SALES MANAGEMENT AND PROFESSIONAL SELLING. 1 Hour.

1.5 CREDITS. This course will focus on two key areas: building and managing a superior sales organization and understanding the professional selling process with an emphasis on B2B sales. Topics to be covered include strategic decisions such as sales force structure and deployment, key account and sales territory management, and sales leadership and evaluation of sales organization effectiveness. The second component of the course will cover key selling steps (e.g., prospecting, customer needs development and discovery, objection handling) as well as hands-on skills/techniques for building strong customer relationships in the consultative selling process.

EMBA 5211. COMPETING IN A GLOBAL ENVIRONMENT. 2 Hours.

With an ever-growing number of industries becoming global in scope, managers are being increasingly challenged to manage strategies within a global perspective. This course provides participants with the skills, knowledge and sensitivity required to successfully manage organizations and organizational units within a multinational environment.

EMBA 5299. SPECIAL TOPICS IN EXECUTIVE BUSINESS EDUCATION. 2 Hours.

New topics or independent study options to be offered as needed.

EMBA 5303. STRATEGIC COST MANAGEMENT. 3 Hours.

Tools for cost management to meet strategic as well as tactical organizational goals are examined. Emphasis is on leveraging accounting information for decision making, strategic management, and for the control of processes and organizations.

EMBA 5304. MAKING STRATEGIC DECISIONS WITH FINANCIAL DATA. 3 Hours.

A review of the elements of accounting measurement principles and practical analytical skills needed to manage the resources of a firm. This includes exposure to the fundamentals of financial statement analysis with a focus on profitability, liquidity, solvency and risk management. Reporting incentives and disclosure requirements are explored within this framework.

EMBA 5306. DIGITAL TRANSFORMATION OF THE ENTERPRISE. 3 Hours.

In the modern economy, digital and technological literacy are of key importance for any top executive. Modern executives and business leaders must be able to leverage technology to reimagine their businesses and unlock value through data-driven decision making. In this course, students will be exposed to transformative technological areas that are changing business and are key for leaders to understand and master: AI/ML, IoTs, Cybersecurity, Blockchain, and Cloud Computing with a particular emphasis on analytics (AI, ML, Visualization, NLP).

EMBA 5307. DESIGNING GLOBAL SUPPLY CHAINS FOR COMPETITIVE ADVANTAGE. 3 Hours.

The course focuses on coordination and integration of global logistics, purchasing, operations and market channel strategies. Issues on global supply chains include: forecasting demand and technology and market growth; likelihood of regulation or political instability; activities to do in-house as opposed to outsourcing; global facility location; and managing a geographically dispersed supply chain including relations with vendors.

EMBA 5308. MARKETING AND CUSTOMER VALUE CREATION. 3 Hours.

This course focuses on marketing strategies and tactics to create customer value and build long term relationships to meet organizational goals. Students are exposed to tools that enable managers to understand the ever-changing marketplace and then build an effective marketing strategy to meet corporate goals. Not all customers are profitable or even desirable. Customer management strategies to build marginal buyers into valued customers are also covered.

EMBA 5309. FINANCIALMANAGEMENT FOR EXECUTIVES. 3 Hours.

This course provides an overview of strategic financial management for executives. The first module begins by introducing the tools needed for financial analysis at the executive level. We examine the strategic concept of opportunity cost by analyzing how to use bond yields to model the net present value of business projects. The second module adds advanced financial modeling skills for corporate financial analysis, applied to decisions on capital structure, payout policy, and M&A opportunities. The third module concludes by expanding the executive's perspective to incorporate international financial management and corporate real estate.

EMBA 5310. COMPETITIVE STRATEGY, INTRAPRENEURIAL AND ENTREPRENEURIAL. 3 Hours.

This course broadens student perspectives on strategy and competitive advantage. Strategic vision is developed for mature businesses and entrepreneurial startups. Conceptual tools associated with industry dynamics and the assessment of core competencies are presented. Students learn how to evaluate key competitors to formulate and implement winning strategies.

EMBA 5311. STRATEGIC MARKETING MANAGEMENT. 3 Hours.

The course focuses on how to develop and deliver products and services with meaningful customer value. Students learn to evaluate market potential, price products optimally, and evolve marketing strategies to capitalize on business shifts.

EMBA 5313. EXPERIENCING THE GLOBAL ENVIRONMENT: INTERNATIONAL PROJECT. 3 Hours.

A key factor in understanding how a business may operate in the global marketplace is to understand the culture, business practices, laws and regulations, and logistical challenges that exist in another country. This is particularly true for one as important to the world economy (let alone the U.S.) as China has become. The class will travel to China and participate in a two-week immersion into the cultural and economic aspects of how business is conducted there. Through our extensive network, that has been developed through the graduates of our China EMBA program, we are able to provide an experience like no other program of its kind can offer.

EMBA 5399. SPECIAL TOPICS IN EXECUTIVE BUSINESS EDUCATION. 3 Hours.

New topics or independent study options to be offered as needed.

EMBA 5415. EXPERIENCING THE INTERNATIONAL ENVIRONMENT: SPECIAL PROJECT. 4 Hours.

Key factors in how business operates in the global marketplace means understanding the culture, business practices, laws, and logistical challenges that exist in another country. The class travels to an international destination and participate in a two-week immersion into the cultural and economic aspects of how business is conducted there. This course is an alternative to EMBA 5413 with destinations and itineraries specially designed.

EMBA 5417. EXPERIENCING THE BUSINESS ENVIRONMENT: INDUSTRY PROJECT. 4 Hours.

Understanding the challenges of management by experiencing the dynamics of industry and company culture, business practices, laws and regulations, and logistical challenges that confront today's business enterprises. This course is an alternative to EMBA 5413, with domestic destinations and itineraries specially designed.

EMBA 5499. SPECIAL TOPICS IN EXECUTIVE BUSINESS EDUCATION. 4 Hours.

New topics or independent study options to be offered as needed.

Economics

Economics examines how individuals, businesses, and societies interact. By studying economics, you can gain a better understanding of the costs and benefits of a course of action and thus make informed decisions. Decision-making skills are necessary in multiple areas of the economy including the government and business workplaces.

Economics teaches you to think critically and to solve problems, skills that are highly valued in the workplace. You learn not only how to find data, but how to work with that data and then logically explain insights gained from the analyses. Current research interests of economics faculty include topics in technology, telecommunications, behavioral economics, forecasting, environment, labor, health, international trade, and international finance. The diverse skills and interests of the economics faculty will provide opportunities for learning and growth to the student in our modern economy.

COURSES

ECON 2110. SELECTED TOPICS IN ECONOMICS. 1 Hour.

Topics of current interest in economics. The subject title is to be listed in the class schedule. May be repeated for credit when the topic changes.

Prerequisite: ECON 2305 or ECON 2306.

ECON 2305. PRINCIPLES OF MACROECONOMICS. 3 Hours. (TCN = ECON 2301)

(ECON 2301). Elementary models of the macroeconomy. Measures of aggregate economic activity and unemployment and inflation, money and banking, monetary and fiscal policy, international trade and payments, and applications of theory to society's problems.

ECON 2306. PRINCIPLES OF MICROECONOMICS. 3 Hours. (TCN = ECON 2302)

(ECON 2302) The science of choice; develops demand, supply, and the market mechanism for allocating society's scarce resources; analyzes the impact of different industry structures in the market; applies the tools of microeconomic analysis to various topics such as price controls and international trade.

ECON 2337. ECONOMICS OF SOCIAL ISSUES. 3 Hours.

Economic analysis and application of basic economic principles to a variety of social issues and topics. Students will become familiar with the U.S. economy, its structure, and how economics applies to an assortment of public policy topics such as crime, energy, immigration, drug use, prostitution, minimum wage, our aging population, healthcare, gender driven wages, recycling, and the macro economy, to name a few. In addition, current economic issues and events may be incorporated into the course via lecture and/or class discussions. This is a non-technical course which satisfies the core requirement for social and behavioral studies. Will not serve to meet degree requirements for College of Business Administration majors. Offered as ECON 2337 and AAST 2337; credit will be granted in only one department.

ECON 3222. BITCOIN AND ECONOMICS OF CRYPTOCURRENCIES. 2 Hours.

Bitcoin (BTC) is a digital asset with unique characteristics that has spawned an industry of similar digital assets called cryptocurrencies. The course will examine BTC (and other cryptocurrencies) as both a vehicle for wealth storage and a transaction asset, analyze the market valuation of cryptocurrencies within the context of modern asset pricing theory at an introductory level, and examine the specific characteristics of the BTC market compared to other asset markets. Prerequisite: ECON 2306.

ECON 3301. THE ECONOMICS OF HEALTH. 3 Hours.

Applies economic analysis to the health sector; examines issues involving health insurance and how these issues have been addressed by the market and by the government; role of market structure in health care markets such as the hospital and pharmaceutical industries; compares the U.S. health care system to health care systems in other countries. Prerequisite: ECON 2306.

ECON 3302. THE ECONOMICS OF CRIME. 3 Hours.

Economic analysis of criminal activity and its impact on the allocation of scarce resources; economic models of criminal behavior, optimum allocation of criminal justice resources, public and private sector approaches to deterrence, and current issues such as gun control and drug abuse prevention. Prerequisite: ECON 2306.

ECON 3303. MONEY AND BANKING. 3 Hours.

Monetary and banking systems of the United States, including the roles that money and interest rates play in the economy, the functions and organization of financial markets, financial institutions, central banks, operations of monetary policy, recent developments in the financial industry and the response of monetary authority. Prerequisite: ECON 2305.

ECON 3304. PUBLIC SECTOR ECONOMICS. 3 Hours.

Examines various economic reasons that may justify government involvement in the economy with particular focus on the problems inherent in government intervention. It considers topics such as the efficiency and fairness of alternative taxing systems, the growth and effects of government debt, and public choice (how spending and taxing decisions are made). It analyzes various government programs such as Social Security, health care, expenditure programs for the poor, etc. Prerequisite: ECON 2306.

ECON 3305. LAWS AND ECONOMICS. 3 Hours.

A review of the economic effects of laws and legal institutions, including property rights, the common law of contracts and torts, regulations, and crime and punishment. Prerequisite: ECON 2306.

ECON 3306. SPORTS ECONOMICS AND BUSINESS. 3 Hours.

Economic principles applied to the analysis of professional and amateur sports. Topics include fan demand, team output decisions, league/conference organization, the societal costs and benefits of government financing of sports facilities, player value, and collective bargaining. The course is designed for both business and economics majors. Prerequisite: ECON 2306.

ECON 3310. MICROECONOMICS. 3 Hours.

Develops the theory of consumer and firm behavior using tools of marginal analysis and game theory. Students learn the features of, and requirements for, competitive equilibrium. Examines strategies and outcomes under imperfect competition such as market power, externalities, and imperfect information. Prerequisite: ECON 2306 and 60 credit hours.

ECON 3312. MACROECONOMICS. 3 Hours.

Aggregate economic performance, including economic growth and business cycles. Models and real data will be used. Interactions among private sector behavior, government policies, central bank actions and international events, and their effects on GDP, employment, growth, and prices will be studied. Prerequisite: ECON 2305, ECON 3303, and 60 credit hours.

ECON 3313. INDUSTRIAL ORGANIZATION AND PUBLIC POLICY. 3 Hours.

Explains market structure and its relation to strategic behavior, advertising, pricing and product differentiation decisions. Further topics include the organization of the firm, takeovers, mergers and acquisitions, research and development, and the various regulatory controls placed on firms and industries. Prerequisite: ECON 2306.

ECON 3317. STATISTICS FOR ECONOMETRIC ANALYSIS. 3 Hours.

Course reviews probability and statistics needed for econometric analysis. Topics include preliminary Bayesian Statistics, expectations, measures of central tendency, the Central Limit Theorem, and basic hypothesis testing including the t-test. Students also learn basic coding necessary for these practices in Excel and other programs. Prerequisite: BSTAT 3321.

ECON 3318. REGRESSION ANALYSIS AND DATA VISUALIZATION. 3 Hours.

Building on ECON 3317, students learn how to answer questions with data via regression analysis by exploring the connections between observed economic data and their underlying populations. Various computer programs are used to both perform analysis and present results in a clear, concise and visually appealing way. Emphasis is placed on applications and hands-on data analysis. Prerequisite: ECON 3317.

ECON 3328. PRINCIPLES OF TRANSPORTATION. 3 Hours.

The application of microeconomic and statistical tools in the analysis of the various modes of transportation. Topics for discussion include transportation as a derived demand, regulation of transportation, mass transit, and international issues in transportation. Prerequisite: ECON 2306.

ECON 3335. ECONOMICS OF PUBLIC POLICIES. 3 Hours.

Applies the principles of microeconomics to a wide range of public policy topics, including education, energy, health care, immigration, drugs, crime, recycling, risk and safety, Social Security, sports stadiums, tax policy, and topics on the economics of the family. Prerequisite: ECON 2306.

ECON 3388. EUROPEAN ECONOMIC HISTORY, 1750 TO PRESENT. 3 Hours.

An economic analysis of historical events leading up to and following the Industrial Revolution, large-scale industry, early banking, commerce, Utopian movements, war, postwar economic integration and the continuing debate over economic globalization. Prerequisite: ECON 2305.

ECON 4191. STUDIES IN ECONOMICS. 1 Hour.

Advanced studies, on an individual basis, in the various fields of economics. Prerequisite: ECON 2306 and 90 credit hours and departmental permission.

ECON 4291. STUDIES IN ECONOMICS. 2 Hours.

Advanced studies, on an individual basis, in the various fields of economics. Prerequisite: ECON 2306 and 90 credit hours and departmental permission.

ECON 4300. ADVANCED COMMUNICATION FOR BUSINESS AND ECONOMIC PROFESSIONALS. 3 Hours.

The course includes the creation of documents that can include financial formulas and economic forecasting, industry-specific reports, and presentations incorporating the results of a financial or economic theory and corresponding research. The course will use a variety of learning methods including lecture, class discussion, case analysis and presentation, guest speakers, and written exercises. This course is required to be eligible to sit for the Certified Business Economic (CBE) Exam. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: BCOM 3360 and senior status in BS Economics or consent of instructor.

ECON 4302. ENVIRONMENTAL ECONOMICS. 3 Hours.

Economic forces that influence the quality of the environment; economic theory and environmental management; regulatory requirements for economic impact analysis; international issues including trade and implications for Third World economies. Prerequisite: ECON 2306.

ECON 4305. THE ECONOMICS OF DISCRIMINATION. 3 Hours.

Course reviews the economic theory of discrimination that arises from personal preference and social forces, that is revealed in numerous market situations. Empirical evidence of the impact on employment, careers, purchasing, business practice, and economic outcomes are studied. Students will prepare presentations on the topic. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: ECON 2306.

ECON 4306. COMPARATIVE ECONOMIC SYSTEMS. 3 Hours.

Studies how differing economies are organized with respect to market, command, and traditional institutions. Several empirical economics are evaluated and compared with respect to performance and efficiency. Each economy is placed within its unique historical and social context to explore why certain institutions work in one situation but may fail in others. Prerequisite: ECON 2306.

ECON 4311. MANAGERIAL ECONOMICS. 3 Hours.

Applies Economic Optimization as the fundamental methodology to guide decisions at the firm level. Microeconomic Theory provides the foundation for decision making and strategy. Topics include investment decisions, pricing, price discrimination, strategy, bargaining, uncertainty, moral hazard and adverse selection, and incentive structures for employees and for units of the firm. The class is real-world-oriented exploring actual decisions of firms. Prerequisite: ECON 2306 and 60 credit hours.

ECON 4316. DIGITAL BUSINESS TRANSFORMATION. 3 Hours.

Economics and strategy applied to emerging online markets: the gig economy (e.g., Airbnb, Uber, Slashdot), digital entertainment (e.g., Spotify, Netflix, Hulu), and video gaming (e.g., World of Warcraft, Play Store, Twitch). Economic concepts covered will include platforms, pricing, product positioning, social media, collaboration. Explores how various aspects of IT have transformed previous business models and how future developments could transform it further. Prerequisite: ECON 3310 or ECON 4311 or Consent of the instructor.

ECON 4318. ECONOMIC REGRESSION ANALYSIS CAPSTONE. 3 Hours.

Course builds on linear regression models learned in ECON 3318. Students explore the causal relationships between variables and learn how to use more advanced regression analysis techniques. Students display their mastery of regression analysis through a capstone project using techniques from the course to present their findings. Prerequisite: ECON 3318.

ECON 4319. ECONOMIC GROWTH AND DEVELOPMENT. 3 Hours.

The issues underlying vast differences in development among the nations of the world. Course covers the elements of theories of growth, the role of international trade, and issues of institutional structures related to economic progress in a nation. Prerequisite: ECON 2305 and ECON 2306.

ECON 4320. GAMES AND DECISION MAKING. 3 Hours.

Game theory studies the strategic interactions between two or more parties. These interactions are common in business, law, politics, and sports. Examples include analysis of "games" in the real world such as competition among firms, complex business decisions, and political campaigns. This course starts with the basics of game theory (such as Nash equilibrium and dominant strategies) and moves to more complicated games such as repeated and stochastic games, and auctions. The course includes in-class demonstrations, hands-on experiments, and real-world examples. Students will think analytically and frame strategic interactions by accessing the incentives of those involved through the tools discussed. Prerequisite: ECON 2306.

ECON 4321. INTERNATIONAL TRADE. 3 Hours.

The course provides an understanding of international trade (international movement of goods and services), migration (international movement of labor), and investment (cross-border movement of assets) theories. It is designed to better understand the implications of such theories as they relate to international business management. It helps managers deal with the opportunities and challenges created by the global environment. Prerequisite: ECON 2306.

ECON 4322. INTERNATIONAL FINANCE. 3 Hours.

The nature and instruments of international payments. International financial institutions and arrangements. Exchange rate, balance of payment, and income determination theories. Prerequisite: ECON 2305.

ECON 4323. MATHEMATICAL ECONOMICS. 3 Hours.

This course focuses on applying mathematical concepts to solve economic and business problems. Course will upgrade mathematical skills for graduate work in economics and business. The emphasis is on calculus and linear algebra and their economic applications. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: MATH 1315 or MATH 1316 and ECON 3310 and ECON 3312.

ECON 4324. MONETARY AND FISCAL POLICY. 3 Hours.

The effects of money on production and national income; quantity and commodity theories of money; various theories of interest rates; instruments and policies of Federal Reserve monetary action; proposals for monetary reform. Central bank systems. Prerequisite: ECON 2306 and ECON 3303 and 60 credit hours.

ECON 4325. ECONOMIC FORECASTING. 3 Hours.

The class presents methods that allow users to capture movement in data related to seasonality, trend and cycles to produce forecasts for economic date. Students are exposed to practical coding applications in software including R. Prerequisites: ECON 3318 or equivalent.

ECON 4330. HUMAN RESOURCE ECONOMICS. 3 Hours.

Application of economic principles to labor topics such as the demand for marriage, the demand for children, the economics of beauty, the economics of highly paid sports and entertainment stars, the effects of immigration on U.S. wages and employment, workplace discrimination, the effects of affirmative action policies, and the effects of minimum wage legislation. Prerequisite: ECON 2306.

ECON 4331. SEMINAR IN ECONOMICS. 3 Hours.

Readings and discussions of special topics in economics. Prerequisite: 60 or 90 credit hours and consent of instructor. May be repeated for credit with consent of department chair.

ECON 4391. STUDIES IN ECONOMICS. 3 Hours.

Advanced studies, on an individual basis, in the various fields of economics. Prerequisite: ECON 2306 and 90 credit hours and departmental permission.

ECON 4393. ECONOMICS INTERNSHIP. 3 Hours.

Practical training in economics. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

ECON 5182. INDEPENDENT STUDIES IN ECONOMICS. 1 Hour.

Extensive analysis of an economic topic. Prerequisite: Departmental Permission Required.

ECON 5199. GRADUATE ECONOMICS INTERNSHIP. 1 Hour.

Practical training in economics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

ECON 5282. INDEPENDENT STUDIES IN ECONOMICS. 2 Hours.

Extensive analysis of an economic topic. Prerequisite: Departmental Permission Required.

ECON 5299. GRADUATE ECONOMICS INTERNSHIP. 2 Hours.

Practical training in economics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

ECON 5300. ADVANCED COMMUNICATION FOR BUSINESS AND ECONOMIC PROFESSIONALS. 3 Hours.

This course focuses on developing industry-specific acumen necessary to work in the fields of economics, finance, marketing, management, and information systems. The course includes the creation of documents that can include financial formulas and economic forecasting, industry-specific reports, and presentations incorporating the results of a financial or economic theory and corresponding research. The course will use a variety of learning methods including lecture, class discussion, case analysis and presentation, guest speakers, and written exercises. This course is required to be eligible to sit for the Certified Business Economic (CBE) Exam.

ECON 5301. MATHEMATICAL ECONOMICS. 3 Hours.

Course is designed to upgrade mathematical skills for graduate work in economics and business. The emphasis is on calculus and linear algebra and their applications in economic analysis. Mathematical tools covered include optimization, comparative-statics analysis, and simple dynamic analysis. Prerequisite: MATH 1316 or other calculus course.

ECON 5305. THE ECONOMICS OF DISCRIMINATION. 3 Hours.

Course reviews the economic theory of discrimination that arises from personal preference and social forces, that is revealed in numerous market situations. Empirical evidence of the impact on employment, careers, purchasing, business practice, and economic outcomes is studied. Students will prepare presentations on the topic. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: Graduate student standing regardless of major.

ECON 5306. ENVIRONMENTAL ECONOMICS. 3 Hours.

An examination of the development of laws and policies that concern the environment followed by an application of economic analysis for environmental issues such as water use, air pollution, land controls, public lands, and global environmentalism. Other topics include: property rights, theories of regulation, and enviropreneurship. Participants will produce and present a case study on an environmental economic subject of interest. Prerequisite: ECON 5311 or equivalent.

ECON 5310. MICROECONOMIC THEORY. 3 Hours.

Development of marginal analysis and game theory tools in economics; focus on the analysis of consumer choice and decision making by firms; development of competitive model and various deviations from competition including the exercise of market power, externalities, and information asymmetries. Prerequisite: ECON 3310.

ECON 5311. ECONOMIC ANALYSIS. 3 Hours.

Provides an overview of microeconomic foundations of economic analysis with a focus on business applications. Topics include supply and demand, marginal analysis, pricing issues, and theory of the firm. An overview of macroeconomics is also provided, covering monetary and fiscal policy, inflation, growth, and international trade. Non-credit for MS in Economics.

ECON 5312. MACROECONOMIC THEORY. 3 Hours.

Study of contemporary macroeconomic theory and applications, including stylized facts of macroeconomics, the general framework for macroeconomic analysis, the analysis of modern macroeconomic models, and the long-run economic growth. Prerequisite: ECON 3312.

ECON 5313. DECISIONS AND STRATEGY. 3 Hours.

Decision analysis applied to pricing, hiring, investing, and partnering. Analyze conditions needed to create competitive advantage. Applications to decisions regarding: entering markets, launching products, developing informational advantages, establishing contractual and non-contractual relationships, and managing incentives within the organization.

ECON 5314. ECONOMIC ANALYSIS FOR BUSINESS DECISIONS. 3 Hours.

This course demonstrates how microeconomic theory can be used in business decision-making. Analytical tools are developed to study competitive analysis, strategic position and dynamics, internal organization of the firm, and the firm's strategic position in the supply chain. Through the use of real business information, the class provides an understanding of how to link economic theory with practice. Students will engage in empirical analysis. Prerequisite: ECON 5336 or BSAD 6317 concurrent.

ECON 5315. COMPETITION, INNOVATION, AND STRATEGY. 3 Hours.

Based on economic analysis, students develop the skills to assess the competitive landscape and identify appropriate strategic responses. Applications include: Strategic Pricing, Product Positioning, Project Selection, Entry/Exit, R&D Investments, Organizational Structure, and Supply Chain Incentives. Prerequisite: ECON 3310 or equivalent.

ECON 5316. DIGITAL BUSINESS TRANSFORMATION. 3 Hours.

Economics and strategy applied to emerging online markets: the gig economy (e.g., Airbnb, Uber, Slashdot), digital entertainment (e.g., Spotify, Netflix, Hulu), and video gaming (e.g., World of Warcraft, Play Store, Twitch). Economic concepts covered will include platforms, pricing, product positioning, social media, collaboration. Explores how various aspects of IT has transformed previous business models and how future developments could transform it further. Prerequisite: ECON 5313 or ECON 5314 or ECON 3310 or Consent of the instructor.

ECON 5318. ECONOMICS OF SPORTS. 3 Hours.

Economic principles applied to the analysis of professional and amateur sports. Topics include fan demand, team output decisions, league/conference organization, the societal costs and benefits of government financing of sports facilities, player value, and collective bargaining. The course is designed for both business and economics majors. Prerequisite: ECON 5311 or equivalent.

ECON 5319. THE GLOBAL ECONOMY. 3 Hours.

Students explore the theoretical foundations and real world evidence of topics in international trade, commercial policies (such as tariffs and quotas), and international finance. The emphasis in the first part of the course is on the welfare implications of international trade and commercial policies. The second part looks at international finance and open economy macroeconomics covering the foreign exchange market, balance of payments, and international parity conditions. Prerequisite: ECON 5311 or ECON 5314.

ECON 5321. GLOBAL BUSINESS ANALYTICS. 3 Hours.

This course provides a working knowledge of tools that influence the decisions multinational firms make in the global environment. It is designed to understand the implications of international trade, investment, and institutional theories as they relate to international business management. It focuses on how to test the implications of theories using global data sets. Participants will complete an empirical research project and present their findings. Prerequisite: ECON 5336 or BSAD 6317, or consent of the instructor.

ECON 5325. TRANSFER PRICING. 3 Hours.

Course concerns the theory, practice, strategy and taxation of intra-firm trade among affiliated entities of a multinational enterprise (MNE). Transfer pricing is important for maximizing profits, monitoring performance of segments of an MNE, establishing control over cash and income flows, advancing strategic objectives, and reducing overall corporate tax burden. Issues arise in accounting, economics, taxation, and law.

ECON 5327. MONETARY POLICY AND FINANCIAL SYSTEM ANALYSIS. 3 Hours.

This course reviews the link between financial systems, monetary policy, and the macro economy, with an emphasis on the role that financial markets and institutions play in the domestic and global business environment. Contemporary policy issues are considered and we study how monetary policy actions affect financial markets and institutions. Students will engage in empirical applications using actual data and simulation exercises. Prerequisite: ECON 5336.

ECON 5329. RESEARCH METHODS IN APPLIED ECONOMICS. 3 Hours.

Each student presents a replication of a published article that uses methods from Econometrics I/II, Forecasting, Forecasting and/or Time Series. The instructor will present replications of several published papers and assist students in choosing studies that they will attempt to replicate. Class meetings will focus on answering specific questions that arise as students carry out their replication exercises. The course concludes with student presentations, along with submission of a written report summarizing the replication effort and detailing the extent to which published results were replicable. The goal is to develop the skills to write quality papers using a variety of statistical techniques. Prerequisite: ECON 5336 or BSAD 6317.

ECON 5330. HUMAN RESOURCE ECONOMICS. 3 Hours.

This course studies labor supply decisions made by households, labor demand decisions made by firms, and the equilibrium wage differences that result from these decisions. Other topics include unemployment, human capital investments, efficiency wages and other incentive schemes, inequality, labor mobility and migration, and discrimination. Prerequisites: ECON 5311 or equivalent.

ECON 5331. PROJECT EVALUATION AND FEASIBILITY ANALYSIS. 3 Hours.

This course introduces feasibility analysis including demand/market evaluation, cost estimation, and benefit-cost analysis. Students gain the ability to apply economic analysis methods (present worth, annual cost, rate of return, benefit-cost ratios, and breakeven) to basic economic problems. Other issues include depreciation; risk and uncertainty; sensitivity analysis; and global economic factors that impact the economy and project funding. Students will perform an empirical evaluation of project feasibility using cost-benefit tools. Prerequisite: ECON 5314 or consent of instructor.

ECON 5332. GOVERNMENT, TAXES, AND BUSINESS STRATEGY. 3 Hours.

The interaction between government and business is broad. Effective business leadership requires the ability to analyze and respond to public policy. Economics provides a framework for understanding the incentives of consumers, businesses, bureaucrats, and civil servants in different policy environments and predicting their behavior in response to policy changes. This course focuses primarily on tax policy at the federal, state and local levels, including issues in corporate taxation, personal income tax, treatment of capital gains and losses, tax incidence, work-leisure choices, fiscal competition among state and local governments, capital flight, and fiscal federalism. Prerequisite: Graduate Standing.

ECON 5333. ECONOMICS OF HEALTH. 3 Hours.

Economic analysis applied to current health policy issues, including health expenditures, public and private insurance, incentives, provider education and labor markets, hospitals, prescription drugs, malpractice, long-term care, the Internet. and various proposals for reform.

ECON 5336. APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS I. 3 Hours.

Develops an understanding of statistical and econometric techniques. Participants exploit real data and computational power to uncover patterns/trends and examine relationships. Focus on conceptual frameworks and the application of techniques to data sets in various fields. Participants learn to use statistical packages such as R and SAS to apply the tools to real data and will complete an empirical analysis paper. Prerequisite: Graduate standing.

ECON 5337. BUSINESS & ECONOMIC FORECASTING. 3 Hours.

The course develops univariate and multivariate methods that allow users to capture patterns in data related to seasonality, trend and other random components to produce forecasts that are useful in virtually any business environment. Students also gain extensive practical experience coding in R and will be able to use statistical tools to critically assess the usefulness of alternative methods. Prerequisite: ECON 5336 or BSAD 6317 or consent of instructor.

ECON 5338. APPLIED TIME SERIES. 3 Hours.

Covers topics of time series data analysis popularly used in many fields, including economics and business. Begins with univariate analysis of time series data with the focus on ARIMA, GARCH model, and unit-root tests, and extends to multivariate analysis of distributed lag model, VAR, and cointegration tests. The last part of the course is devoted to discussion of popular nonlinear dynamic models, such as TAR and structural breaks, before moving on to dynamic panel data models. Since emphasis is put on empirical applications, students will spend time in the computer lab to apply the techniques they learn to a variety of time series data. Students will undertake empirical analysis using statistical software. Prerequisite: ECON 5336 or BSAD 6317.

ECON 5339. APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS II. 3 Hours.

The course covers cross-section, panel data, and limited dependent variables methods. Topics may include analysis of natural experiments/differences-in-differences, panel data methods, instrumental variable estimation, simultaneous equation models, sample selection corrections, and limited dependent variable and hierarchical models. Participants learn how to use statistical packages such as R, SAS, and STATA to apply these methods to data to examine causal relationships. They build an understanding of appropriate methods for different research design. Participants will complete an empirical research paper. Prerequisite: ECON 5336/BSAD 6317, or consent of the instructor.

ECON 5341. ADVANCED BUSINESS AND ECONOMIC DATA ANALYTICS. 3 Hours.

Students use advanced modeling and estimation techniques applied to large data sets collected by both business and government. The course includes assignments designed to give practical experience at applying the advanced statistical methods, culminating in a final project that includes a written report and class presentation. Projects will exploit data from various sources, such as sales transactions, individual health records, Internet search results, Twitter feeds, and environmental data. The advanced techniques covered may include data mining, statistical visualization, computational statistics, and other computer-intensive statistical methods. Prerequisite: ECON 5336 and ECON 5339; or BSAD 6317 and BSAD 6318.

ECON 5342. ADVANCED BUSINESS AND ECONOMICS COMMUNICATION (3,0). 3 Hours.

This class encompasses oral and written communication necessary for professional communication. Students will complete deliverables for an electronic portfolio including written work samples that reflect their understanding of financial and economic principles and practices in their field of expertise. Students will evaluate best practices for writing technical documents for: crisis, marketing, negotiation, human resources, persuasion, employment, and networking pertaining to major field of study. Students will complete an oral presentation on an industry-specific topic. This course fulfills NABE requirements for communications in order to sit for CBE exam.

ECON 5343. CAUSAL INFERENCE FOR BUSINESS DECISIONS. 3 Hours.

Students learn methods to identify and measure the outcomes of business decisions. In particular, students will learn various issues pertaining to the miss-attribution of causal effects. The course surveys multiple methods to overcome the misidentification problem. Students will engage in empirical analysis. Prerequisites: ECON 5336 or BSAD 6317 and ECON 5339 or BSAD 6318.

ECON 5382. INDEPENDENT STUDIES IN ECONOMICS. 3 Hours.

Extensive analysis of an economic topic. Prerequisite: Departmental Permission Required.

ECON 5391. SPECIAL TOPICS IN ECONOMICS. 3 Hours.

In-depth study of selected topics in economics. May be repeated when topics vary. Prerequisite: Departmental Permission Required.

ECON 5398. THESIS. 3 Hours.

Graded R/F only. Prerequisite: Permission of Graduate Advisor in Economics.

ECON 5399. GRADUATE ECONOMICS INTERNSHIP. 3 Hours.

Practical training in economics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

ECON 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: Permission of Graduate Advisor in Economics.

ECON 5998. THESIS. 9 Hours.

Graded P/F/R. Prerequisite: Permission of Graduate Advisor in Economics.

ECON 6310. ADVANCED MICROECONOMIC THEORY. 3 Hours.

Investigates the advanced neoclassical theory of microeconomics. The course develops formal models of consumer behavior, market structure, general equilibrium, and welfare. The objective of the course is to acquaint students with the analytical tools necessary to evaluate the formal literature in economics and to conduct scientific, hypothesis-driven statistical studies. Prerequisites: ECON 5301 and ECON 5310.

ECON 6312. ADVANCED MACROECONOMIC THEORY. 3 Hours.

Topics include dynamic general equilibrium analysis of model economies, monetary theory in overlapping generations models, advanced growth theory, and new open-economy macroeconomics. Prerequisites: ECON 5301 and ECON 5312.

Economics - Graduate Programs

Economics examines how individuals, businesses, and societies interact. By studying economics, you gain a better understanding of the costs and benefits of alternative courses of action and thus make informed decisions. Decision-making skills are necessary in all areas of the economy including the government and business.

Economics teaches you to think critically and to solve problems, skills that are highly valued in the workplace. You learn not only how to find data, but how to work with that data and then logically explain insights gained from the analyses. Current research interests of economics faculty include topics in technology, telecommunications, behavioral economics, forecasting, environment, labor, health, international trade, and international finance. The diverse skills and interests of the economics faculty provide opportunities for learning and growth to the student in our modern economy.

Admission Requirements

The focus of the MS in Economic Data Analytics program is quantitative data analysis using economic logic to interpret data. It is a 10-course, 30-hour program highly focused on developing expertise with empirical tools needed for successful data analysis and presentation.

Admission to the MS in Economic Data Analytics is based upon the completion of the general admission requirements of the Graduate Admissions Office. For admission to the MS Economics program a score on either the Graduate Management Admission Test (GMAT) or the Graduate Record Examination (GRE) and record of one's academic undergraduate performance are required. Students for whom English is not their native language must meet language standards set by UTA on the TOEFL or IELTS. International applicants who score below minimum acceptable levels on the verbal portion of entrance examinations may be admitted under the condition that they pass an English proficiency exam or complete UT Arlington's Graduate English Skills Program prior to beginning graduate coursework. Applicants are encouraged to submit with their application a resume that highlights professional and personal accomplishments, linguistic abilities, computer expertise, and leadership experience. A standardized test score (GMAT or GRE) will not be used as the sole criterion for admitting applicants or the primary criterion for denying admission to the MS in Economic Data Analytics program.

The GRE/GMAT test requirement for admissions to the M.S. in Economic Data Analytics program can, under extraordinary circumstances, be waived at the discretion of the department if the applicant already has been awarded a terminal graduate degree from a regionally or professionally accredited program. Waiver of this requirement is rare and will only be made at the discretion of the Department.

Multiple criteria are used to make admission decisions.

1. A bachelor's degree from an accredited general or specific program.
2. An acceptable undergraduate GPA as calculated by Graduate Admissions (approximately the last 60 hours), generally greater than a 3.0 on a 4.0 scale.
3. An acceptable score on the GRE or GMAT. Successful students generally have a minimum score of 148 (600 old GRE scale) on the quantitative section and 150 (450 old GRE scale) on the verbal section of the GRE or a minimum score of 480 on the GMAT.
4. Grades in specified undergraduate business and non-business courses (e.g., math, accounting, economics, statistics).
5. For applicants whose native language is not English, see UT Arlington's requirements: <http://www.uta.edu/admissions/graduate/apply/how-to-apply.php>

Unconditional Admission

Students receiving unconditional admission must have a bachelor's degree from an accredited program. Unconditional admittance will be granted to an applicant who meets one of these standards below:

1. Unconditional admission will be granted if the applicant's composite total from the index (this index is derived by using a formula that multiplies the GPA by 200 and adds the resulting value to the GMAT score) must be 1080 or greater.
2. Unconditional admittance will be granted if the applicant's scores 148 or higher on the Quantitative section and 150 or higher on the Verbal section of the GRE and the applicant's undergraduate GPA, as calculated by Graduate Admissions is at, or above 3.0 on a 4 point scale.

Probationary Admission

If applicants do not meet the standards listed for unconditional admission, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that an applicant earn a GPA of 3.0 or better in the two semesters of graduate coursework at UT Arlington.

Deferred and Provisional Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but whom otherwise appears to meet admission requirements may be granted provisional admission.

Denial of Admission

After a thorough review of the application file, a candidate may be denied admission if he or she has less than satisfactory performance on any two of the admission criteria. All applicant data will be carefully reviewed before an admission denial is made.

Fellowships and Scholarships (<http://web.uta.edu/economics/scholarships.html>)

Students admitted with no provisional conditions to satisfy are eligible for available scholarship and/or fellowship support. A limited number of merit-based scholarships and fellowships may be awarded to graduate students currently enrolled who meet the minimum requirements.

Degree Requirements

MS in Economic Data Analytics

The MS in Economic Data Analytics program focuses on the major growth area of data analytics. Hal Varian, chief economist at Google, has explained why the demand for data analysis is growing rapidly. Organizations have low-cost computer time, huge quantities of data, and access to software tools that allow data analysis. The problem in using these assets is a shortage of qualified empirical analysts. One must know how to find data, be critical of it, develop it by use of software packages, and explain what has been learned by analysis through the lens of economic theory. Advances in econometrics analysis allow us to better understand key issues, such as pricing and cost, inventory management, population trends, and other issues that impact business and government.

The focus of the MS in Economic Data Analytics program is on quantitative analysis based on economic logic. It is a 10-course, 30-hour program highly focused on development of relevant economic theory and empirical tools needed by successful analysts.

There are eight required courses and two electives as indicated in the list of courses:

ECON 5314	ECONOMIC ANALYSIS FOR BUSINESS DECISIONS	3
ECON 5336	APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS I (*)	3
ECON 5342	ADVANCED BUSINESS AND ECONOMICS COMMUNICATION (3,0)	3
ECON 5327	MONETARY POLICY AND FINANCIAL SYSTEM ANALYSIS	3
ECON 5339	APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS II	3
ECON 5341	ADVANCED BUSINESS AND ECONOMIC DATA ANALYTICS	3
ECON 5337	BUSINESS & ECONOMIC FORECASTING	3
ECON 5343	CAUSAL INFERENCE FOR BUSINESS DECISIONS	3
INSY 5336	PYTHON PROGRAMMING	3
or BUSA 5344	SAS TOOLS FOR BUSINESS AND ECONOMICS	
or BUSA 5345	R FOR BUSINESS AND ECONOMIC ANALYSIS	
or BUSA 5322	DATA ANALYTICS WITH PYTHON AND MACHINE LEARNING	
Electives: The student may select any economics course above the 5300 level excluding ECON 5311 and ECON 5313 and any specific ECON courses listed for the program. The student may also choose one elective course with permission of the graduate advisor.		3
Total Hours		30

* Course may be waived in favor of an elective if student has completed ECON 3318 and 4318 with a B or better. Must be approved by the graduate advisor.

Graduates of this program are expected to develop knowledge and competencies needed to contribute to data analysis in public policy and private/business fields. An economic theoretical framework is a key part of the program, but the coursework also focuses on the empirical skills required to effectively extract/scrape data from the web and various private and public sources, and carefully analyze it to uncover patterns/trends, and answer significant data-driven real-life questions, relevant to both local and global environments. The program provides our students with an understanding of issues involved in operating in any data environment and equips them with skills needed to analyze a variety of data and present research findings in reports.

The MS in Economic Data Analytics program participates in both the Fast Track and Facilitated Admission programs for UT Arlington undergraduates.

Economics - Undergraduate Programs

Overview

Students who plan to earn a degree in economics in one of the specialized fields listed below should consider the following suggestions as to their choice of elective economics courses:

- Those planning to do **graduate work** in economics should include two semesters of calculus, as well as linear algebra in their program. Additional math courses are encouraged and should be selected with assistance from the Economics Department's graduate advisor.
- Those planning to apply for **law school** admission should include ECON 3305 (<https://currentcatalog.uta.edu/search/?P=ECON%203305>) LAWS AND ECONOMICS and ECON 3335 (<https://currentcatalog.uta.edu/search/?P=ECON%203335>) among their economics electives.
- Those planning to pursue careers in the **health sector** should include ECON 3301 (<https://currentcatalog.uta.edu/search/?P=ECON%203301>) and ECON 4311 (<https://currentcatalog.uta.edu/search/?P=ECON%204311>) among their economics electives.
- Those planning to work as an **economic analyst** should include Industrial ECON 3313 (<https://currentcatalog.uta.edu/search/?P=ECON%203313>), and ECON 4311 (<https://currentcatalog.uta.edu/search/?P=ECON%204311>) among their economics electives.

Requirements for a Bachelor of Business Administration Degree in Economics

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)		
General Core Requirements (p. 50)		42
Communication (minimum 6 hours required)		6
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)		6
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)		6
From Approved University General Core Requirement List		
Language, Philosophy & Culture (minimum 3 hours required)		3
From Approved University General Core Requirement List		
Creative Arts (minimum 3 hours required)		3
From Approved University General Core Requirement List		
US History (minimum 6 hours required)		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)		6
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)		3
Satisfied by completion of ECON 2305 in the Business Core.		
Foundational Component Area (minimum 3 hours required)		3
Satisfied by completion of ECON 2306 in the Business Core.		
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours)		3
Professional Course Requirements - Business Core (39 hours)		
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science		
ECON 2306 satisfies the Foundational Component		
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3

BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313	BUSINESS FINANCE	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322	STRATEGIC MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
OPMA 3306	OPERATIONS MANAGEMENT	3
Professional Course Requirements - Advanced Economics (18 hours)		
ECON 3303	MONEY AND BANKING	3
ECON 3310	MICROECONOMICS	3
ECON 3312	MACROECONOMICS	3
ECON 3317	STATISTICS FOR ECONOMETRIC ANALYSIS	3
ECON 3318	REGRESSION ANALYSIS AND DATA VISUALIZATION	3
ECON 4311	MANAGERIAL ECONOMICS	3
or ECON 4318	ECONOMIC REGRESSION ANALYSIS CAPSTONE	
or ECON 4325	ECONOMIC FORECASTING	
Advanced Business Electives (18 hours)		
Advanced accounting, business, finance, information systems, management, marketing, operations and supply chain management, or real estate. Recommend INSY 3300 and INSY 3309 to develop competitive skill set. (No Econ)		18
Total Hours		120

Double Majors

A Double Major option for the Bachelor of Business Administration (BBA) in Economics is available. Economics undergraduates who pursue the following Double Major program will not have the option of participating in the Fast Track Program in Business.

Completion of the Double Major is attained by including all of the following courses in the BBA Economics plan and completing with grades of C or better in each of the double major courses listed below:

BBA in Economics and Finance

ACCT 3311	FINANCIAL ACCOUNTING I
Advanced Accounting Elective (ACCT 33xx or 43xx)	
FINA 3315	INVESTMENTS
FINA 3317	FINANCIAL INSTITUTIONS AND MARKETS
FINA 4315	ADVANCED BUSINESS FINANCIAL ANALYSIS
Advanced Finance Elective (FINA 33xx or 43xx)	

Suggested Course Sequence

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15
Second Year			
First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14
Third Year			
First Semester	Hours	Second Semester	Hours
ECON 3303		3 ECON 3310	3

BLAW 3310		3 ECON 3317	3
BSTAT 3321		3 BCOM 3360	3
MANA 3318		3 FINA 3313	3
MARK 3321		3 Advanced Business Elective	3
		15	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
ECON 3312		3 ECON 4311, 4318, or 4325	3
ECON 3318		3 MANA 4322	3
Advanced Business Elective		3 OPMA 3306	3
Advanced Business Elective		3 Advanced Business Elective	3
Advanced Business Elective		3 Advanced Business Elective	3
		15	15
Total Hours: 120			

Requirements for a Bachelor of Science Degree in Economics

Students must have completed ECON 2305 and ECON 2306 before enrolling in certain upper-level economics courses. Specified prerequisites are designated for certain courses.

The Bachelor of Science (BS) in Economics will enable graduates to meet the needs of employers in the era of "big data" and provide a strong background for those who wish to proceed to graduate school. Students will be exposed to the latest data analysis and visualization programs used in the business world and gain analytic skills that are valuable to both employers and graduate schools.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)

General Core Requirements (p. 50)	42
Communication (minimum 6 hours required)	6
ENGL 1301 RHETORIC AND COMPOSITION I	
ENGL 1302 RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)	6
MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)	6
From Approved University General Core Requirement List	
Language, Philosophy & Culture (minimum 3 hours required)	3
From Approved University General Core Requirement List	
Creative Arts (minimum 3 hours required)	3
From Approved University General Core Requirement List	
US History (minimum 6 hours required)	6
HIST 1301 HISTORY OF THE UNITED STATES TO 1865	
HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)	6
POLS 2311 GOVERNMENT OF THE UNITED STATES	
POLS 2312 STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)	3
Satisfied by completion of ECON 2305 in the Business Core.	
Foundational Component Area (minimum 3 hours required)	3
Satisfied by completion of ECON 2306 in the Business Core.	
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours required)	3
Professional Course Requirements - Business Core (27 hours)	
MANA 1301 BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301 PRINCIPLES OF ACCOUNTING I	3
ACCT 2302 PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305 INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360 EFFECTIVE BUSINESS COMMUNICATION	3

BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313	BUSINESS FINANCE	3

Professional Course Requirements - Economics (21 hours)

ECON 2305 satisfies the Social & Behavioral Science

ECON 2306 satisfies the Foundational Component

ECON 3303	MONEY AND BANKING	3
ECON 3310	MICROECONOMICS	3
ECON 3312	MACROECONOMICS	3
ECON 3317	STATISTICS FOR ECONOMETRIC ANALYSIS	3
ECON 3318	REGRESSION ANALYSIS AND DATA VISUALIZATION	3
ECON 4300	ADVANCED COMMUNICATION FOR BUSINESS AND ECONOMIC PROFESSIONALS	3
ECON 4318	ECONOMIC REGRESSION ANALYSIS CAPSTONE	3

Economics Electives 3000-4000 Level (6 hours required from the following: ECON 4311, ECON 4320, ECON 4321, ECON 4322, ECON 4323, ECON 4325 or ECON 4330). ECON 4325 is highly recommended to enhance quantitative skills.

Minor Requirements

18 hours (Minor must include designated lower and upper level courses. Consult with advisor to confirm.) 18

Other Required Courses (minimum 3 hours required)

INSY 3300	INTRODUCTION TO PROGRAMMING	3
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Other electives sufficient to give the total number of hours required for the degree. Recommend INSY 3309 to develop a competitive skill set.

Total Hours 120

Suggested Course Sequence

First Year

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			

16 15

Second Year

First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2

15 14

Third Year

First Semester	Hours	Second Semester	Hours
ECON 3303		3 ECON 3312	3
ECON 3310		3 ECON 3317	3
BSTAT 3321		3 BCOM 3360	3
INSY 3300		3 FINA 3313	3
Minor Requirement		3 Minor Requirement	3

15 15

Fourth Year

First Semester	Hours	Second Semester	Hours
ECON 3318		3 ECON 4318	3
Advanced Economics Elective		3 ECON 4300	3
BLAW 3310		3 Advanced Economics Elective	3
Minor Requirement		3 Minor Requirement	3

Minor Requirement	3 Minor Requirement	3
	15	15
Total Hours: 120		

Minor in Economics for Non-Business Majors

The College of Business:

- Requires half of the course work for a minor in business be completed in residence at UT Arlington. For an 18-hour minor requirement, this would require a minimum of 9 hours of business course work at UT Arlington.
- Requires a grade of C or better in all minor requirement courses.
- Will not use vocational and technical courses (including WECM courses) toward any business minor.

Economics

ECON 2337	ECONOMICS OF SOCIAL ISSUES (Optional)	3
ECON 2305	PRINCIPLES OF MACROECONOMICS	3
ECON 2306	PRINCIPLES OF MICROECONOMICS	3
ECON 3303	MONEY AND BANKING ¹	3
ECON 3310	MICROECONOMICS ¹	3
ECON 3312	MACROECONOMICS ¹	3
ECON 33xx or 43xx ¹		3
Total Hours		21

¹ Mandatory Prerequisites: Prerequisites MUST be met before enrollment in the course. A student should consider these when selecting courses to satisfy the minor requirement and when registering. For a complete list of prerequisites see the Undergraduate Catalog or the Business Undergraduate Advising Office.

Finance and Real Estate

The Department of Finance and Real Estate at UTA is committed to providing one of the highest quality finance programs in Texas. Located in the center of the Dallas/FortWorth Metroplex, UTA is in the midst of a dynamic employment market. The Department of Finance and Real Estate at UTA has ten full-time faculty. The department offers a full complement of classes in corporate finance, investments, financial institutions and capital markets, and international finance. The opportunity exists for students to participate in the finance industry through internships and part-time employment, while continuing their business education. Firms hiring finance students focus on many issues including managerial finance, banking, investment, brokerage, international money markets, insurance, personal financial planning, and mortgage activities. Firms hiring real estate students focus on topics such as environmental consulting, property tax, investment consulting, property development and management, property financing, mortgage banking, appraisal and valuation, site location analysis, and syndication. The departmental student organizations have ranked among the top student organizations in the country and have been placed high in nationwide competition.

The Finance and Real Estate Department seeks excellence in the providing of education, research and service to its various constituencies. Our mission has several dimensions: to achieve and maintain a reputation of high quality in all our degree programs (undergraduate, masters and doctoral); to generate research that will enhance theory and its real-world application; and to provide requisite service in facilitating the fullest realization of potential of all our fellow participants - students, businesses, governments and society at large.

COURSES

FINA 2330. MONEY, FINANCE AND THE MODERN CONSUMER. 3 Hours.

An analysis of consumer and financial behavior in present-day society. Against this backdrop, students understand how consumption choices define one's identity in society and understand the importance of value-oriented financial goals for the wellbeing of individuals, families, and society at large. Students also develop the critical-thinking and quantitative decision-making skills needed for responsible spending and financial choices.

FINA 3313. BUSINESS FINANCE. 3 Hours.

Emphasizes the financing and investment decisions of the corporate manager. Topics include financial statement analysis, working capital management, capital budgeting, financing costs, financial planning, leverage, and how diversity affects firm valuations and access to financing. Prerequisite: ECON 2306, ACCT 2302, MATH 1316 (or permission of instructor), and 30 credit hours.

FINA 3315. INVESTMENTS. 3 Hours.

Principles governing the proper investment of personal and institutional funds, information sources, security analysis, exchanges and regulations. Formerly FINA 4313; credit will be granted only once. Prerequisite: ECON 2306, ACCT 2302, FINA 3313 (or concurrent enrollment) and 60 credit hours.

FINA 3317. FINANCIAL INSTITUTIONS AND MARKETS. 3 Hours.

The structure of financial institutions and markets in the United States and their interactions. How and why the institution has evolved, how it fits within the financial system, how it operates, what is its current impact, and what may its future role be. Formerly FINA 4314; credit will be granted only once. Prerequisite: ECON 2306, ACCT 2302, and 60 credit hours.

FINA 4191. STUDIES IN FINANCE. 1 Hour.

Advanced studies, on an individual basis, in the various fields of finance. Prerequisite: 90 credit hours and permission of department. May be repeated for credit with consent of department chair.

FINA 4291. STUDIES IN FINANCE. 2 Hours.

Advanced studies, on an individual basis, in the various fields of finance. Prerequisite: 90 credit hours and permission of department. May be repeated for credit with consent of department chair.

FINA 4311. MONEY AND CAPITAL MARKETS. 3 Hours.

This in-depth analysis of the development, characteristics, and significance of money and capital markets explores how the markets interrelate, interact, and impact the financing/investment decisions that are the basis of finance. Prerequisite: FINA 3313.

FINA 4315. ADVANCED BUSINESS FINANCIAL ANALYSIS. 3 Hours.

To develop an ability to recognize financial problems, analyze financial data, formulate alternative solutions, and render financial decisions. Case materials are used in studying financial problems. Management of investment in current and fixed assets, planning of profits, forecasting of cash requirements, capital budgeting, planning of methods of financing and capital structure, dividend policy, valuation of assets, and mergers. Prerequisite: FINA 3313 and FINA 3315.

FINA 4318. PORTFOLIO MANAGEMENT AND SECURITY ANALYSIS. 3 Hours.

This course develops an understanding of portfolio management and security analysis by focusing on the analytical techniques and empirical results of investment theorists and practitioners. Risk, efficiency, diversification, fundamental analysis, and technical analysis as they apply to corporate finance, international finance, and investments will be examined. Prerequisite: FINA 3313.

FINA 4319. FINANCIAL DERIVATIVES. 3 Hours.

Topics included in this course are an introduction to options and futures markets, investment and risk management strategies using these derivative products, and pricing of options and futures contracts. Additional coverage includes basic swap agreements, exotic options, and corporate risk management. Prerequisite: FINA 3313.

FINA 4320. CAPITAL BUDGETING. 3 Hours.

Development of the logic and methodology of the capital budgeting decision. Measurement of cash flows, present value techniques, evaluation of capital investments, ranking of capital investments, analysis of risk, and administration of capital investments. Prerequisite: FINA 3313.

FINA 4324. INTERNATIONAL CORPORATE FINANCE. 3 Hours.

Issues and questions which concern financial management of international corporations. Analysis of the financing of investment abroad and the management of assets in differing financial environments. The foreign investment decision, cost of capital and financial structure for multinational decision making, management of foreign subsidiary working capital, and financial control of multinational operations. Prerequisite: FINA 3313.

FINA 4326. WEALTH AND EXCHANGE. 3 Hours.

This course provides students with an introduction to the principles of financial management in the setting of a philanthropic organization. The focus is on the primary financial topics of capital budgeting, capital structure, and working capital management which have been modified to consider the philanthropy setting. The study of capital budgeting examines how modifications to traditional NPV analysis can be implemented and justified in a setting without corporate income taxes. The study of capital structure examines how the traditional choice between debt and equity is replaced with a choice between fundraising or debt issuance. Debt issuance is further explored through an analysis of the characteristics of muni bond markets and how muni markets differ from corporate bond markets. The study of liquidity management and financial analysis focuses on those measures that are most useful and available for studying the financial condition of philanthropic organizations. Throughout the course, a focus is put on applied analysis using excel spreadsheets and incorporating real world data drawn from the financial statements, bond quotes, and regulatory filings of local philanthropic institutions. Prerequisite: This course is open only to non-finance majors, 30 credit hours.

FINA 4328. STUDENT MANAGED INVESTMENT FUND. 3 Hours.

This course provides a conceptual and theoretical foundation for the activities of selected student managers involved with the on-going operations of the student managed investment fund (SMIF). Using a blend of academic- and practitioner-oriented readings, projects, and group analytical sessions, managers will be introduced to both the conventional wisdom and state-of-the-art methods used in performing many of the Fund's functional tasks, including security research, security trading, and economic forecasting. After establishing a background in the technical aspects of managing a security portfolio, we will focus on developing a solid intuition about what an investment professional in each of these positions must know to do his or her job well. Prerequisite: FINA 3315 and departmental permission.

FINA 4331. SEMINAR IN FINANCE. 3 Hours.

Readings and discussion of special topics in Finance. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

FINA 4351. FINANCIAL MODELING. 3 Hours.

The focus is on computer applications in the major areas of finance. Financial Modeling integrates financial theory and practice through software-driven hands-on experience. Students will learn how to utilize financial concepts and practice within a software framework. Core concepts are drawn from corporate finance, investments, and financial institutions and markets. Examples of topics include: financial statement forecasting and consolidation, mergers and acquisitions, statistical approaches in finance, the Capital Asset Pricing Model, portfolio analysis, predictive models of different risk categories, bond and stock valuation, and market interest rate behavior. Learning is enhanced using a lecture-lab format. Prerequisite: FINA 3313.

FINA 4391. STUDIES IN FINANCE. 3 Hours.

Advanced studies, on an individual basis, in the various fields of finance. Prerequisite: 90 credit hours and permission of department. May be repeated for credit with consent of department chair.

FINA 4393. FINANCE INTERNSHIP. 3 Hours.

Practical training in finance. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: FINA 3313, 60 credit hours, and consent of department internship advisor.

FINA 5182. INDEPENDENT STUDIES IN FINANCE. 1 Hour.

Extensive analysis of a finance topic. Prerequisite: consent of instructor and department chair.

FINA 5199. GRADUATE FINANCE INTERNSHIP. 1 Hour.

Practical training in finance. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

FINA 5299. GRADUATE FINANCE INTERNSHIP. 2 Hours.

Practical training in finance. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

FINA 5311. BUSINESS FINANCIAL MANAGEMENT. 3 Hours.

Study of providing the organization with funds necessary for its operation and of achieving effective utilization of funds. Primary emphasis on financial decision-making within organizations, and techniques of financial analysis and forecasting. Prerequisite: ACCT 5301 or departmental permission.

FINA 5315. HEALTH CARE FINANCIAL MANAGEMENT. 3 Hours.

Analysis of financial problems with an emphasis on the application of financial management principles and concepts to health care organizations.

FINA 5323. INVESTMENTS. 3 Hours.

Application of economic theory and principles to investment decisions of individuals and financial institutions. Considers how psychological influences, diversity, and biases affect wealth creation. Students who successfully complete the course will have the knowledge to be productive in a diverse professional environment where state-of-the-art investment models and techniques are implemented. Prerequisite: FINA 5311 or departmental permission.

FINA 5327. FINANCIAL DERIVATIVES. 3 Hours.

Nature and functions of the various futures and options markets; hedging for risk reduction, speculative trading for profit; the role of futures and options in overall portfolio strategy, along with fundamental concepts such as basis, spreading, normal and inverted markets and money management. Prerequisite: FINA 5311 and FINA 5323.

FINA 5328. STUDENT MANAGED INVESTMENT FUND. 3 Hours.

This course provides a conceptual and theoretical foundation for the activities of selected student managers involved with the on-going operations of the student managed investment fund (SMIF). Using a blend of academic- and practitioner-oriented readings, projects, and group analytical sessions, managers will be introduced to both the conventional wisdom and state-of-the-art methods used in performing many of the Fund's functional tasks, including security research, security trading, and economic forecasting. After establishing a background in the technical aspects of managing a security portfolio, we will focus on developing a solid intuition about what an investment professional in each of these positions must know to do his or her job well. Prerequisite: A course in investments and departmental permission.

FINA 5329. PORTFOLIO AND SECURITY ANALYSIS. 3 Hours.

The use of economic and accounting data in the selection of securities. Examination of current and traditional techniques used by investment practitioners. Prerequisite: FINA 5311 and FINA 5323.

FINA 5330. REAL OPTIONS. 3 Hours.

Option approaches to evaluating firm capital budgeting decisions. Techniques for making investment decisions involving physical assets of nonfinancial firms. Prerequisite: FINA 5311.

FINA 5331. INTERNATIONAL FINANCE. 3 Hours.

Examines ways in which financial decision-making processes are altered by operation in a multinational environment. Includes the effects of devaluation expectations, foreign exchange and investment controls. Also, case study materials related to actual decisions by multinational firms. Prerequisite: FINA 5311.

FINA 5334. FINANCIAL INSTITUTIONS AND MARKETS. 3 Hours.

An examination of major financial institutions and markets with emphasis on trends affecting the current operations, competitive position, and overall future of the primary financial intermediaries and the financial markets. Prerequisite: FINA 5311.

FINA 5340. FINANCIAL APPLICATIONS. 3 Hours.

Analysis of financial problems of business concerns, presented in case materials. Considers determination of capital needs, choosing among alternative capital investments, planning methods of financing new capital expenditures, and planning recapitalizations, mergers, and reorganizations. Prerequisite: FINA 5311.

FINA 5350. MATHEMATICAL FINANCE. 3 Hours.

Intensive review of the mathematics necessary for graduate work in finance, with application to selected areas of business finance, investment analysis and financial markets. Prerequisite: FINA 5311.

FINA 5351. FINANCIAL MODELING FOR INVESTMENTS. 3 Hours.

Study of common financial modeling techniques are explored in this course. The primary focus is on portfolio optimization models and models used for pricing and analyzing derivative stock options, although most of these techniques have other applications. Students are provided with the opportunity to develop the skills needed to build financial models of their own. Prerequisite: FINA 5311 or departmental permission.

FINA 5352. FINANCIAL MODELING FOR CORPORATE ANALYSIS. 3 Hours.

This course focuses on the financial modeling in the major areas of corporate finance, including financial statement forecasting, bond and stock valuation, and merger and acquisition analysis using computer software such as Excel. A lecture-lab format will be used to integrate financial theory and practice through software-driven hands-on experience. Prerequisite: FINA 5311 or departmental permission.

FINA 5376. FINANCIAL DATA ANALYTICS. 3 Hours.

This course is a hands-on introduction to the application of data science techniques to visualize, condition, transform, and model financial data using R. Topics include: the layered grammar of graphics, security and portfolio returns, risk analysis, portfolio optimization and performance, publishing results using R Markdown, and an introduction to processing large data sets from public data sources, WRDS, and the SEC's Edgar database. Prerequisite: FINA 5311 or departmental permission.

FINA 5382. INDEPENDENT STUDIES IN FINANCE. 3 Hours.

Extensive analysis of a finance topic. Prerequisite: departmental permission.

FINA 5392. SELECTED TOPICS IN FINANCE. 3 Hours.

In depth study of selected topics in finance. May be repeated when topics vary. Prerequisite: departmental permission.

FINA 5398. THESIS. 3 Hours.

Thesis. FINA 5398 graded R (Research) or F only. Prerequisite: STAT 5325 and approval of Graduate Advisor.

FINA 5399. GRADUATE FINANCE INTERNSHIP. 3 Hours.

Practical training in finance. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

FINA 5698. THESIS. 6 Hours.

Thesis. Prerequisite: STAT 5325 and approval of Graduate Advisor.

FINA 6192. RESEARCH IN FINANCE. 1 Hour.

Independent study of advanced topics in finance under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

FINA 6292. RESEARCH IN FINANCE. 2 Hours.

Independent study of advanced topics in finance under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

FINA 6301. SEMINAR IN THE THEORY OF FINANCE. 3 Hours.

Development of the fundamental theories of modern finance from their microeconomic origins. Topics include: investment under uncertainty, asset pricing models, market equilibrium, market efficiency, and expected utility theory. Prerequisite: FINA 5311.

FINA 6311. SEMINAR IN THE THEORY OF CORPORATE FINANCE. 3 Hours.

Advanced theory of corporate finance. Capital budgeting, dividend policy, and capital structure. Prerequisite: FINA 5311.

FINA 6312. SEMINAR IN THE THEORY OF INVESTMENTS. 3 Hours.

Advanced theory of investments. Modern portfolio theory and the efficiency of capital markets. Prerequisite: FINA 5311.

FINA 6313. ADVANCED RESEARCH IN FINANCE. 3 Hours.

Analytical methods commonly applied in the academic finance literature. Topics such as factor analysis in arbitrage pricing models and techniques for identification of nonstationarities in risk. Prerequisite: FINA 5311 and STAT 5301.

FINA 6314. ADVANCED RESEARCH IN FINANCE II. 3 Hours.

Specialized and evolving techniques in financial research; topics such as identification of efficient markets, linear programming in capital budgeting, and multiple discriminant analysis in bankruptcy prediction and bond rating models. Prerequisite: FINA 5311 and STAT 5301.

FINA 6390. SEMINAR IN SPECIAL TOPICS IN FINANCE. 3 Hours.

Doctoral level coverage of advanced topics in finance. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

FINA 6392. RESEARCH IN FINANCE. 3 Hours.

Independent study of advanced topics in finance under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

COURSES

REAE 3325. REAL ESTATE FUNDAMENTALS. 3 Hours.

A foundation for study and research in specialized areas such as real estate financing, real estate investment and counseling, real estate management, real estate development, and property appraising. Formerly BUSA 3325; credit will be granted only once. Prerequisite: MATH 1315 or MATH 1316 or any other Calculus (or permission of instructor) and junior standing.

REAE 4191. STUDIES IN REAL ESTATE. 1 Hour.

Advanced studies, on an individual basis, in the various fields of real estate. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

REAE 4291. STUDIES IN REAL ESTATE. 2 Hours.

Advanced studies, on an individual basis, in the various fields of real estate. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

REAE 4314. REAL ESTATE DEVELOPMENT. 3 Hours.

The land conversion process including feasibility analysis, site selection, design, construction, and financial analysis. Land use controls, planning, and environmental constraints are also examined. Formerly REAE 4311; credit will be granted only once. Prerequisite: junior standing.

REAE 4319. REAL ESTATE FINANCE. 3 Hours.

Problems associated with real property financing. In-depth study of financial intermediaries who supply funds for real property investment. May be included as a part of the finance concentration. Formerly BUSA 4319; credit will be granted only once. Prerequisite: REAE 3325 (FINA 3313 may be substituted for non-real estate majors).

REAE 4321. REAL ESTATE INVESTMENT. 3 Hours.

The determination of financial feasibility for proposed real estate investments, the effect of income taxes and various financing patterns on the equity investment, and the criteria for proper decision making to maximize benefits for equity investors. Formerly REAE 4310; credit will be granted only once. Prerequisite: REAE 3325 (FINA 3313 may be substituted for non-real estate majors).

REAE 4331. SEMINAR IN REAL ESTATE. 3 Hours.

Readings and discussion of special topics in real estate. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

REAE 4334. REAL ESTATE APPRAISAL. 3 Hours.

Theory and methods of residential and income property appraisal. Market analysis, highest-and-best-use analysis, capitalization techniques, and market, cost, and income approaches to valuation and reconciliation of value indicators. Prerequisite: REAE 3325 (FINA 3313 may be substituted for non-real estate majors).

REAE 4391. STUDIES IN REAL ESTATE. 3 Hours.

Advanced studies, on an individual basis, in the various fields of real estate. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

REAE 4393. REAL ESTATE INTERNSHIP. 3 Hours.

Practical training in real estate. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

REAE 5182. INDEPENDENT STUDIES IN REAL ESTATE. 1 Hour.

Extensive analysis of a real estate topic. Prerequisite: departmental permission.

REAE 5199. GRAD REAL ESTATE INTERNSHIP. 1 Hour.

Practical training in real estate. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

REAE 5299. GRAD REAL ESTATE INTERNSHIP. 2 Hours.

Practical training in real estate. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

REAE 5301. SUSTAINABLE ISSUES IN THE BUILT ENVIRONMENT. 3 Hours.

A survey-based course that analyzes current and historical sustainability issues. The global and political nature of this evolving discipline is emphasized. Additionally, a macro view of the components currently embodied in the practice of sustainability will be examined and discussed.

REAE 5302. SUSTAINABLE STRATEGIES IN THE BUILT ENVIRONMENT. 3 Hours.

Business strategies that emphasize quantitative methods, asset allocation, socially responsible investing, and evaluation research.

REAE 5303. SUSTAINABLE POLICIES IN THE BUILT ENVIRONMENT. 3 Hours.

Governmental, regulatory, internal reporting, and policy development related to sustainability. Grant writing will also be explored.

REAE 5304. SUSTAINABLE PROJECTS IN THE BUILT ENVIRONMENT. 3 Hours.

A field-based study of buildings, developments, organizations, and companies that exemplify sustainable practices. Course will include elements of social networking and communication strategies.

REAE 5311. REAL ESTATE ANALYSIS. 3 Hours.

Survey of real estate finance, investment, valuation/market analysis, and urban development, including financial, physical, and social aspects of the real estate development process.

REAE 5312. INTERNATIONAL PROPERTY MARKETS. 3 Hours.

Property markets are characterized by significant institutional differences that affect the nature and performance of national markets. Analysis of socio-economic and cultural factors influencing the operation of international markets.

REAE 5313. GIS & PROPERTY ANALYSIS. 3 Hours.

The increasing availability of geographically referenced property data offers significant potential for real estate research and modeling. Covers fundamentals of Geographic Information Systems (GIS) (Concepts, principles, and functions) and essential skills for applying GIS to real estate industry problems.

REAE 5314. SEMINAR IN REAL ESTATE DEVELOPMENT. 3 Hours.

Topics relating to site selection, design, market analysis, financial feasibility, and management in the real estate development process.

REAE 5315. REAL ESTATE TRENDS & ISSUES. 3 Hours.

Analysis of specialized topics associated with emerging trends and issues in the real estate industry using current literature and case studies.

REAE 5316. ADAPTIVE REUSE & REDEVELOPMENT OF COMMERCIAL INVESTMENT REAL ESTATE. 3 Hours.

The tools and techniques associated with the market and financial feasibility analysis of adaptively reusing and redeveloping existing properties into economically viable commercial investment real estate.

REAE 5317. REAL ESTATE CONSTRUCTION MANAGEMENT. 3 Hours.

Topics relating to construction management for commercial investment real estate.

REAE 5318. SUSTAINABLE DEVELOPMENT. 3 Hours.

Sustainability perspectives about values, rights, property and what constitutes an optimum human environment; sustainability principles and case studies emphasizing on-the-ground, incentive-based commercial investment real estate development that balances economic growth with environmental quality. Projects will include those in urban areas as well as those in rural areas focusing on agricultural elements.

REAE 5319. SEMINAR IN REAL ESTATE FINANCE. 3 Hours.

Study of real property financing methods; analysis of cost of borrowing, sources of funds, and mortgage terms; emphasis on construction and permanent financing of commercial and industrial properties.

REAE 5320. TEXAS REAL ESTATE STUDY TOUR. 3 Hours.

A field-based study of Texas real estate markets, focusing on projects in Austin, San Antonio, Houston, and Dallas-Fort Worth.

REAE 5321. SEMINAR IN REAL ESTATE INVESTMENT. 3 Hours.

Introduction to analytical techniques, sources of financing, and other factors related to real estate investment. Stresses current developments and topics.

REAE 5322. COMMERCIAL LEASE ANALYSIS. 3 Hours.

Application of critical occupancy decisions such as comparative lease analysis, lease vs. purchase analysis, lease buyout analysis, and sale-leaseback analysis to optimize user space decisions.

REAE 5323. REAL ESTATE PROJECT STUDIO. 3 Hours.

Studio based course focused on a commercial real estate project.

REAE 5324. REAL ESTATE ECONOMICS. 3 Hours.

A review of the nature of urban areas and the development of the urban economics as an economic discipline. Emphasis will be on identifying location patterns in urban areas, policy issues, real estate and urban housing options, government issues in urban areas, and urban social problems. Students will utilize data analytics and projective techniques in developing projects based on current local urban real estate issues and opportunities.

REAE 5327. ADVANCED REAL ESTATE MARKET ANALYSIS. 3 Hours.

Study of advanced market analysis techniques and methods, including trend analysis and demand forecasting. Emphasis is on the application of these methods to commercial property markets.

REAE 5334. SEMINAR IN REAL ESTATE APPRAISAL. 3 Hours.

Market, cost, and income approaches with stress on income forecasting and capitalization.

REAE 5337. REAL PROPERTY LAW. 3 Hours.

Legal property theory underlying real estate transactions and relationships including estates and interests in land, conveyances, and mortgages.

REAE 5350. QUANTITATIVE METHODS FOR REAL ESTATE. 3 Hours.

Study of advanced statistical, modeling, and econometric techniques as applied to real estate markets. Emphasis on the integration of these techniques with traditional real estate analysis.

REAE 5382. INDEPENDENT STUDIES IN REAL ESTATE. 3 Hours.

Extensive analysis of a real estate topic. Prerequisite: departmental permission.

REAE 5392. SELECTED TOPICS IN REAL ESTATE. 3 Hours.

In-depth study of selected topics in real estate. May be repeated when topics vary. Prerequisite: REAE 5311.

REAE 5398. THESIS. 3 Hours.

Prerequisite: departmental permission.

REAE 5399. GRAD REAL ESTATE INTERNSHIP. 3 Hours.

Practical training in real estate. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

REAE 5698. THESIS. 6 Hours.

Prerequisite: departmental permission.

REAE 6390. SEMINAR IN SPECIAL TOPICS IN REAL ESTATE. 3 Hours.

Doctoral level coverage of advanced topics in real estate. May be repeated for credit when topics vary. Prerequisite: REAE 5311.

REAE 6392. RESEARCH IN REAL ESTATE. 3 Hours.

Independent study of advanced topics in real estate under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: REAE 5311.

Finance and Real Estate - Graduate Programs

Master of Science in Quantitative Finance

The Master of Science in Quantitative Finance degree program is a STEM program designed to meet the growing demand for financial professionals equipped to implement state-of-the-art analytical techniques in support of financial decision-making. Students complete a rigorous eight-course sequence that includes: finance theory, mathematical finance, financial modeling, economic theory, and econometrics. Students then complete a four-course elective program designed jointly by the student and the program advisor. The Master of Science in Quantitative Finance degree program is a specialized degree program designed to build upon the candidate's prior background.

Master of Science in Real Estate

The purpose of the Master of Science in Real Estate degree program is to provide students an opportunity to obtain a better understanding of the mechanics of real estate decision making in modern society and a greater depth of training in the discipline of real estate decision making than is possible at the baccalaureate level. The specific objectives of the program are to prepare students for careers in business, government, research, and teaching and for further graduate study. In this program, students are exposed to the theory, research, and practical applications of numerous real estate content areas, including investment analysis, appraisal, real estate development, primary and secondary mortgage markets, and mortgage backed securities. The Master of Science in Real Estate degree program is a specialized degree program designed to build upon the candidate's background.

Accreditation

Both programs are accredited by AACSB-International.

Admission - Master of Science in Quantitative Finance

Admission to the M.S. in Quantitative Finance (MSQF) program is based upon the completion of the general graduate admission requirements of the University. For admission into the MSQF program, an acceptable score in the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) and acceptable undergraduate performance are required. The GMAT is strongly preferred. Preference is given to individuals having extensive mathematics or computer science backgrounds. Students whose native language is not English must also take the Test of English as a Foreign Language (TOEFL), TOEFL iBT, Test of Spoken English (TSE) or International English Language Testing System (IELTS). International applicants scoring below acceptable levels on verbal portions of entrance examinations may be admitted conditional upon passing an English proficiency exam or upon completing the University's Graduate English Skills Program prior to beginning graduate coursework. The GMAT or GRE score shall not be used as the sole criterion for admitting applicants or the primary criterion for denying an applicant's admission into the MSQF program. Specifically, multiple criteria are used to make admission decisions. Unconditional acceptance is based on consideration of all the information listed below, and the decision to deny admission is not based on any single criterion.

Applicants are encouraged to submit with their application a resume that highlights professional and personal accomplishments, linguistic abilities, computer expertise and leadership experience.

Along with the grade point average and GMAT or GRE scores, admission criteria include the following:

1. An undergraduate GPA of at least 3.0 on a 4.0 scale as calculated by Graduate Admissions. The grade point average is calculated on your undergraduate degree using approximately the last 60 hours. A graduate grade point average is used along with GMAT scores when it is a 3.0 or above and based on at least 24 hours.
2. GMAT or GRE sub-scores (verbal and quantitative) are also considered in the admission decision. A typical successful candidate will score at or above the 75th percentile on the quantitative portion, and at or above the 40th percentile on the verbal portion of either exam.
3. International Applicants must submit a score of at least 550 on the paper-based TOEFL, a score of at least 213 on the computer based TOEFL, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section to meet this requirement.
4. Grades in specified undergraduate business and non-business courses (math, accounting, economics, statistics, for example)
5. Mathematics coursework).
6. General and specific program accreditation status of degree-granting institution.
7. Professional work experience.
8. Professional certification or licensure.

Unconditional Admission

For unconditional admission, items 1 through 5 above should indicate strongly the potential for successful academic performance at the master's level. Students who are unconditionally admitted, have a minimum undergraduate grade point average of 3.0 as calculated by Graduate Admissions (or 3.0 at the graduate level), and enroll for a minimum of six semester credit hours will be eligible for available fellowship and/or scholarship support. A standardized test score (GMAT or GRE) will not be used as the sole criterion or the primary criterion for determining fellowship and/or scholarship eligibility.

Probationary Admission

An applicant deemed deficient in one or more of the above criteria may be considered for probationary admission upon careful review of his/her materials. Probationary admission requires the student to maintain a 3.00 grade point average for the first two semesters of enrollment. Additionally, the student may be required to take deficiency courses.

Provisional, Deferred and Denied Admission

Provisional admission may be granted if an applicant is unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements. A deferred decision may be granted when a file is incomplete or when denial is inappropriate.

An applicant will likely be denied admission when three or more of items one through six above indicate lack of potential for success in the program. All applicant data will be evaluated carefully before a denial is issued.

Degree Requirements

The M.S. in Quantitative Finance is designed to provide a specialized, highly analytical graduate education to financial managers, financial analysts, and technical personnel. The program consists of 36 credit hours of coursework in finance, economics, mathematics, statistics, and computer science. All students will complete a twenty-four-hour set of foundation classes consisting of:

FINA 5323	INVESTMENTS	3
FINA 5327	FINANCIAL DERIVATIVES	3
FINA 5350	MATHEMATICAL FINANCE	3
FINA 5351	FINANCIAL MODELING FOR INVESTMENTS	3
FINA 5352	FINANCIAL MODELING FOR CORPORATE ANALYSIS	3
FINA 5376	FINANCIAL DATA ANALYTICS	3
ECON 5336	APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS I	3
INSY 5336	PYTHON PROGRAMMING	3
Total Hours		24

The remaining twelve-hours of coursework are selected by the student, subject to the approval of the program advisor. Courses will be chosen from a list that includes:

1. finance elective classes (international finance, financial institutions, capital markets, real options, and capital budgeting),
2. economics (macroeconomic theory, econometrics, time series analysis),
3. mathematics (advanced calculus, real analysis, differential equations, stochastic processes, and numerical methods),
4. statistics (probability theory, mathematical statistics), and
5. computer science (programming languages, numerical methods, parallel processing, software engineering).

Students who do not have the appropriate background may have to take additional foundation coursework. Quantitative background appropriate to begin the MSQF program consists of a minimum of 6 credit hours of calculus and 3 credit hours each in linear algebra, statistics, and computer programming. Other foundation coursework would include at least 3 credit hours each of microeconomics and finance.

Master of Science in Real Estate

Admission - Master of Science in Real Estate

Along with the grade point average and GMAT or GRE scores, admission criteria include the following:

1. An undergraduate grade point average (GPA) of 3.0 on a 4.0 scale, as calculated by Graduate Admissions, is typical of a successful candidate. This will be integrated into a formula or index that multiplies the GPA by 200 and adds the resulting value to the GMAT Score. An index score greater than 1070 or higher is typical of a successful candidate.
2. GMAT sub scores (verbal and quantitative) are also considered in the admission decision. GMAT sub scores greater than the 30th percentiles are typical of a successful candidate.
3. A GRE quantitative percentile greater than the 30th percentile and Verbal percentile greater than the 30th percentile is typical of a successful applicant.
4. International applicants must submit a score of at least 550 on the paper-based TOEFL, a score of at least 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section to meet this requirement.
5. Grades in specified undergraduate business and non-business courses (math, accounting, economics, statistics, for example)
6. Educational objectives and quality of written expression of the 200 word application essay.

7. Letters (2 are required) of recommendation from two persons familiar with the applicant's academic background and/or work experience who can assess the applicant's potential success in graduate school.
8. General and specific program accreditation status of degree-granting institution.
9. Professional work experience.
10. Professional certification or licensure.

Unconditional Admission

For unconditional admission, the applicant's composite total from the index must be 1070 or higher and items 1 through 5 above should strongly indicate potential for successful academic performance as a graduate real estate student.

Students who are unconditionally admitted, have a minimum undergraduate grade point average of 3.0 as calculated by Graduate Admissions (or 3.0 at the graduate level), and enroll for a minimum of six semester credit hours will be eligible for available fellowship and/or scholarship support. A standardized test score (GMAT) will not be used as the primary criterion for determining fellowship and/or scholarship eligibility.

Probationary Admission

For an applicant with an index score below 1070, probationary admission may be available if items 1-10 indicate a potential for successful academic performance as a graduate real estate student. Probationary admission requires the student to maintain a 3.00 grade point average for the first two semesters of enrollment. Additionally, the student may be required to take deficiency courses.

Provisional, Deferred and Denied Admission

A provisional decision to admit may be granted when the applicant meets criteria for unconditional or probationary status but one or more applicant credentials are incomplete. A deferred decision may be made when an applicant's file is not sufficiently complete to make a final admission decision.

For an applicant with an index score less than 1000 and if items 1-10 do not indicate a potential for successful academic performance as a graduate real estate student admission will likely be denied. All applicant data will be carefully reviewed before an admission denial is made.

Waiver of GMAT Score for Graduate Certificate in Real Estate Development Students

Students who successfully complete the Graduate Certificate in Real Estate Development with a GPA of 3.5 or higher will, upon the recommendation of the Real Estate Admissions Committee and approval of the Dean of Business, be granted a waiver of the GMAT requirement for their application to the Master of Science in Real Estate program.

Degree Requirements

The program, which can be completed by part-time students who attend classes during the late afternoon, and evening hours, is designed to accommodate students with divergent educational backgrounds and career interests. Each student's program of work must be approved by the Real Estate Graduate Advisor and it must contain a minimum of 15 semester hours in approved advanced graduate real estate courses taken at The University of Texas at Arlington.

A minimum of 36 semester hours is required. All classes must be approved by the Graduate Advisor in Real Estate. Students who do not have a bachelor's degree in business administration may have to take additional coursework (up to 3 semester hours) to acquire a sufficient general business foundation. Students may have foundation courses waived by the Graduate Advisor if they have completed equivalent courses.

ECON 3310 or ECON 3312	MICROECONOMICS ((first completed at UTA)) MACROECONOMICS	3
FINA 3313	BUSINESS FINANCE	3
REAE 3325	REAL ESTATE FUNDAMENTALS	3
BSTAT 3321 or BSTAT 3322	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS ((first completed at UTA)) ADVANCED STATISTICS FOR BUSINESS ANALYTICS	3
Total Hours		12

Fast Track Program

The MS in Real Estate participates in the Fast Track program. Students interested in this program should first contact their Undergraduate Advisor.

Graduate Certificate in Real Estate Development

Objective

In keeping with the mission of The University of Texas at Arlington to provide lifelong learning opportunities, the Department of Finance and Real Estate now offers a Graduate Certificate in Real Estate Development. The Graduate Certificate in Real Estate Development is designed to provide qualified real estate professionals advanced instruction in real estate development and allow them to further their professional development. This post-baccalaureate Certificate provides an educational opportunity that is narrower in scope, and shorter in duration, than graduate degree programs. It is

ideal for people transitioning from one sector of real estate into real estate development, or those in the process of satisfying education requirements for various professional real estate licenses.

Admission

Admissions to the Graduate Certificate in Real Estate Development is based upon the general graduate admission requirements of the University. Generally applicants must have an undergraduate grade point average of at least 2.9 as calculated by Graduate Admissions. A graduate grade point average is used when the applicant has attained at least 24 graduate semester hours.

Applicants whose undergraduate GPA was less than a 2.9 may still be admitted to the Graduate Certificate in Real Estate Development program by meeting the admissions requirements for the M.S. Real Estate program.

Course Requirements

Foundation Course

REAE 5311	REAL ESTATE ANALYSIS	3
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Required Courses

REAE 5314	SEMINAR IN REAL ESTATE DEVELOPMENT	3
REAE 5321	SEMINAR IN REAL ESTATE INVESTMENT	3
REAE 5319	SEMINAR IN REAL ESTATE FINANCE	3
REAE 5334	SEMINAR IN REAL ESTATE APPRAISAL	3

Total Hours		15
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Use of Courses Toward Degree Program

Students that initially enroll in the Graduate Certificate in Real Estate Development may later use up to 15 hours of coursework from the Certificate program toward the Master of Science in Real Estate degree.

You may be entitled to know what information The University of Texas at Arlington (UT Arlington) collects concerning you. You may review and have UT Arlington correct this information according to procedures set forth in UTS139 (<https://www.utsystem.edu/board-of-regents/policy-library/policies/uts139-texas-public-information-act/>). The law is found in sections 552.021 (<http://www.statutes.legis.state.tx.us/Docs/GV/htm/GV.552.htm#552021>), 552.023 (<http://www.statutes.legis.state.tx.us/Docs/GV/htm/GV.552.htm#552023>) and 559.004 (<http://www.statutes.legis.state.tx.us/Docs/GV/htm/GV.559.htm#559004>) of the Texas Government Code. For more information, see our Privacy Policy (<http://www.uta.edu/oit/policy/Internet-privacy.php>).

Finance and Real Estate - Undergraduate Programs

Finance is the branch of business concerned with management of money. The specific nature of the money management function depends to some extent on the type of organization. Based on similarity of the finance function, finance is generally classified into three areas: corporate finance, investments and securities, and financial institutions. Career opportunities may be available in each of these areas. A brief description of each area along with some courses applicable to each is provided below. A faculty advisor should be consulted before making final decisions relative to a degree program.

Financial Institutions: Commercial banks, savings and loan associations, credit unions, mutual funds, pension funds, finance companies, and insurance companies. Also, various governmental bodies that regulate financial institutions are included.

Investments and Securities: Firms such as investment banks, stockbrokers, institutional investors, and investment advisory services.

Corporate Finance: Manufacturing firms, wholesalers, retailers, and firms engaged in providing all types of non-financial services.

Requirements for a Bachelor of Business Administration in Finance

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)		
General Core Requirements (p. 50)		42
Communication (minimum 6 hours required)		6
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)		6
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)		6
From Approved University General Core Requirement List		
Language, Philosophy & Culture (minimum 3 hours required)		3
From Approved University General Core Requirement List		
Creative Arts (minimum 3 hours required)		3
From Approved University General Core Requirement List		
US History (minimum 6 hours required)		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)		6
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)		3
Satisfied by completion of ECON 2305 in the Business Core.		
Foundational Component Area (minimum 3 hours required)		3
Satisfied by completion of ECON 2306 in the Business Core.		
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours)		3
Professional Course Requirements - Business Core (39 hours)		
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science		
ECON 2306 satisfies the Foundational Component		
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3

FINA 3313	BUSINESS FINANCE	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322	STRATEGIC MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
OPMA 3306	OPERATIONS MANAGEMENT	3
Professional Course Requirements - Finance (12 - 18 hours)		
FINA 3315	INVESTMENTS	3
FINA 3317	FINANCIAL INSTITUTIONS AND MARKETS	3
FINA 4315	ADVANCED BUSINESS FINANCIAL ANALYSIS	3
Advanced Finance Elective (FINA 33xx or 43xx)		3
Advanced Business Courses and Electives (24 hours)		
ACCT 3311	FINANCIAL ACCOUNTING I (or FINA 4XXX or REAE 4XXX)	3
Advanced Accounting Elective (ACCT 33xx or 43xx)		3
Advanced business, economics, information systems, management, marketing, operations and supply chain management, or real estate. No FINA will apply. See list of recommended business electives below.		9
Advanced Finance or Advanced Business Electives		6
ECON 3303	MONEY AND BANKING	3
or ECON 3310	MICROECONOMICS	
Total Hours		120

Recommended Business Electives for Finance Majors

ACCT 3312	FINANCIAL ACCOUNTING II
BLAW 3311	LAW I
BLAW 3312	LAW II
INSU 4329	PROPERTY AND CASUALTY RISK MANAGEMENT
INSY 3305	INFORMATION SYSTEMS ANALYSIS AND DESIGN
REAE 3325	REAL ESTATE FUNDAMENTALS
REAE 4319	REAL ESTATE FINANCE
REAE 4321	REAL ESTATE INVESTMENT

Double Majors

Two Double Major options for the Bachelor of Business Administration (BBA) in Finance are available. Finance undergraduates who pursue one of the following Double Major programs will not have the option of participating in the Fast Track Program in Business.

Completion of the Double Major is attained by including all of the following courses in the BBA Finance plan and completing with grades of C or better in each of the double major courses listed below:

BBA in Finance and Accounting

ACCT 3303	INTRODUCTION TO ACCOUNTING INFORMATION SYSTEMS
ACCT 3311	FINANCIAL ACCOUNTING I
ACCT 3312	FINANCIAL ACCOUNTING II
ACCT 3315	PRINCIPLES OF FEDERAL INCOME TAX
ACCT 4302	COST ANALYSIS AND DECISION MAKING
ACCT 4318	AUDITING
ACCT 4304	MANAGEMENT PLANNING AND CONTROL
or ACCT 4325	GOVERNMENTAL ACCOUNTING

BBA in Finance and Economics

ECON 3303	MONEY AND BANKING
ECON 3310	MICROECONOMICS
ECON 3312	MACROECONOMICS
ECON 3318	REGRESSION ANALYSIS AND DATA VISUALIZATION
ECON 4311	MANAGERIAL ECONOMICS

or ECON 4323 MATHEMATICAL ECONOMICS
or ECON 4325 ECONOMIC FORECASTING

Suggested Course Sequence

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15
Second Year			
First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14
Third Year			
First Semester	Hours	Second Semester	Hours
BLAW 3310		3 FINA 3315	3
FINA 3313		3 FINA 3317	3
MANA 3318		3 BCOM 3360	3
MARK 3321		3 BSTAT 3321	3
ACCT 3311 ^{or} FINA 4XXX or REAE 4XXX		3 ECON 3303 or 3310	3
		15	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
Advanced Accounting Elective		3 FINA 4315	3
Advanced Finance Elective		3 MANA 4322	3
Advanced Business Elective		3 OPMA 3306	3
Advanced Business Elective		3 Advanced Business Elective	3
Advanced Finance or Advanced Business Elective		3 Advanced Finance or Advanced Business Elective	3
		15	15

Total Hours: 120

Requirements for a Bachelor of Business Administration in Real Estate

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)

General Core Requirements (p. 50)	42
Communication (minimum 6 hours required)	6
ENGL 1301 RHETORIC AND COMPOSITION I	
ENGL 1302 RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)	6
MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)	6
From Approved University General Core Requirement List	
Language, Philosophy & Culture (minimum 3 hours required)	3
From Approved University General Core Requirement List	
Creative Arts (minimum 3 hours required)	3

From Approved University General Core Requirement List		
US History (minimum 6 hours required)		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)		6
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)		3
Satisfied by completion of ECON 2305 in the Business Core.		
Foundational Component Area (minimum 3 hours required)		3
Satisfied by completion of ECON 2306 in the Business Core.		
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours)		3
Professional Course Requirements - Business Core (39 hours)		
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science		
ECON 2306 satisfies the Foundational Component		
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313	BUSINESS FINANCE	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322	STRATEGIC MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
OPMA 3306	OPERATIONS MANAGEMENT	3
Professional Course Requirements - Real Estate (15 - 18 hours)		
REAE 3325	REAL ESTATE FUNDAMENTALS	3
REAE 4319	REAL ESTATE FINANCE	3
REAE 4334	REAL ESTATE APPRAISAL	3
Advanced Real Estate Electives (REAE 33xx or REAE 43xx)		6
Advanced Business Courses and Electives (21 hours)		
Advanced Accounting Elective (ACCT 33xx or 43xx)		3
Advanced business, economics, finance, information systems, management, marketing, or operations and supply chain management. No REAE.		6
Advanced Economics Elective (ECON 33xx or 43xx)		6
Advanced Real Estate or Advanced Business Elective		3
BLAW 3314	REAL ESTATE LAW	3
Total Hours		120

Recommended Business Electives for Real Estate Majors

ACCT 3315	PRINCIPLES OF FEDERAL INCOME TAX
ECON 4325	ECONOMIC FORECASTING
FINA 3315	INVESTMENTS
FINA 3317	FINANCIAL INSTITUTIONS AND MARKETS
FINA 4320	CAPITAL BUDGETING
FINA 4351	FINANCIAL MODELING
INSU 4329	PROPERTY AND CASUALTY RISK MANAGEMENT
INSU 4330	LIFE AND HEALTH RISK MANAGEMENT
MARK 4311	MARKETING RESEARCH

Suggested Course Sequence

First Year

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
REAE 3325		3 REAE 4319	3
BLAW 3310		3 BLAW 3314	3
FINA 3313		3 Advanced Real Estate Elective	3
MANA 3318		3 BSTAT 3321	3
Advanced Economics Elective		3 MARK 3321	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
REAE 4334		3 MANA 4322	3
Advanced Real Estate Elective		3 OPMA 3306	3
BCOM 3360		3 Advanced Business Elective	3
Advanced Business Elective		3 Advanced Economics Elective	3
Advanced Accounting Elective		3 Advanced Real Estate or Advanced Business Elective	3
		15	15

Total Hours: 120

Health Care Administration - Graduate Programs

Objectives

The program in Health Care Administration is designed to provide graduate students an integrated, contemporary, and multidisciplinary education. Diverse topics are included in the curriculum, research and residences to provide:

1. An understanding of the modern health industry
2. Knowledge, skills and abilities to assume administrative roles in various organizations in the health industry
3. Opportunities to develop leadership skills
4. Interactions with diverse specialists in the health industry to evaluate and resolve administrative problems

Admission

Admission to the M.S. in Health Care Administration (HCAD) program is based upon the completion of the general admission requirements of Graduate Admissions. For HCAD program admission a score on the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) and record of one's undergraduate academic performance are required. Students for whom English is not their native language must achieve a TOEFL score of at least 575 (paper-based) or 230 (computer-based). Applicants are encouraged to submit with their application a resume that highlights professional and personal accomplishments, linguistic abilities, computer expertise and leadership experience. A standardized test score (GMAT or GRE) will not be used as the sole criterion for admitting applicants or the primary criterion for denying an applicant's admission to the HCAD program.

Multiple criteria are used to make admission decisions. Quantitative measures include an applicant's GMAT or GRE scores and grade point average as calculated by Graduate Admissions. These measures are integrated into a formula, or index, that multiplies the grade point average by 200 and adds the total GMAT score. Index factors are weighed equally at the outset of applicant evaluation. A graduate grade point average is used in the index when it is 3.0 or above and is based on at least 24 semester hours. For unconditional admission, the applicant's composite total from the index must be 1050 or higher and items 1 through 5 above should strongly indicate potential for successful academic performance as a graduate health care administration student.

Along with grade point average and GMAT or GRE scores, admission criteria include the following:

1. GMAT or GRE sub scores (verbal and quantitative)
2. GMAT or GRE writing sample
3. Grades in specified undergraduate business and non-business courses (math, accounting, economics, statistics, for example)
4. Educational objectives and quality of written expression of the application essay
5. Letters of recommendation from three persons familiar with the applicant's academic background and/or work experience
6. Undergraduate Major
7. General and specific program accreditation status of degree granting institution
8. Professional work experience
9. Professional certification or licensure
10. A personal interview, at the discretion of the program advisor

Unconditional Admission

The GMAT or GRE test may be waived for applicants with an earned graduate degree in an appropriate health care related discipline or profession.

The GMAT or GRE test may also be waived for applicants with five or more years of increasing responsibility in managerial, professional, and/or technical positions in the health care industry, and with a 3.0 grade point average on undergraduate work as calculated by Graduate Admissions; detailed work history required with application.

The GMAT or GRE test may also be waived for applicants who have (within the last 3 years) or will receive an undergraduate degree from UT Arlington with a GPA of 3.2 or higher, as calculated by the graduate school.

Students who are unconditionally admitted, have a minimum undergraduate grade point average of 3.0 as calculated by the Graduate School (or 3.0 at the graduate level), and enroll for a minimum of six semester credit hours will be eligible for available fellowship and/or scholarship support. A standardized test score (GMAT or GRE) will not be used as the sole criterion or the primary criterion for determining fellowship and/or scholarship eligibility.

Probationary Admission

For an applicant with an index score below 1050, probationary admission may be available when at least three items of 1 through 5 above strongly indicate potential for successful academic performance as a graduate health care administration student. Items 6 through 10 will also be used to identify positive indicators for admission. Probationary admission requires the student to maintain a 3.00 grade point average for the first two semesters of enrollment. Additionally the student may be required to take deficiency courses.

Provisional, Deferred and Denied Admission

A provisional decision to admit may be granted when the applicant meets criteria for unconditional or probationary status but one or more applicant credentials are incomplete. A deferred decision may be made when an applicant's file is not sufficiently complete to make an admit or deny decision.

For an applicant with an index score less than 1000 and other evidence that indicates lack of potential for academic success as a graduate health care administration student, admission will likely be denied. However, all applicant data will be carefully reviewed before an admission denial is made.

Degree Requirements

The M.S. Degree in Health Care Administration requires 39 hours of specified coursework. The thirteen courses are normally taken in the following sequence.

HCAD 5301	HEALTH CARE ADMINISTRATION I	3
HCAD 5337	ETHICS, LEADERSHIP, AND TEAMWORK	3
HCAD 5305	FINANCIAL ACCOUNTING FOR HEALTH CARE INDUSTRY	3
HCAD 5306	MANAGERIAL ACCOUNTING FOR HEALTH CARE INDUSTRY	3
HCAD 5316	HEALTHCARE FINANCE	3
HCAD 5310	HEALTH CARE LAW	3
HCAD 5350	HEALTH CARE INFORMATION SYSTEMS	3
HCAD 5315	STATISTICAL METHODS FOR HEALTH CARE ADMINISTRATORS	3
HCAD 5377	HEALTH CARE QUALITY ASSESSMENT	3
HCAD 5330	SERVICES MARKETING MANAGEMENT	3
HCAD 5333	ECONOMICS OF HEALTH	3
HCAD 5390	STRATEGIC MANAGEMENT FOR HEALTH CARE ORGANIZATIONS	3
HCAD 5399	GRADUATE HEALTH CARE ADMINISTRATION INTERNSHIP	3
Total Hours		39

Together these courses provide the student with a general background in business and economics and industry relevant knowledge in all of the fundamental areas of managing health care organizations. The internship course requirement can be satisfied in either of two methods. The internship options are as follows:

Internship

The completion of an internship is a primary component of the program for students who do not have prior appropriate professional work experience in a health-related organization. The internship provides students the opportunity to acquire firsthand professional knowledge of and experience with the functioning of a health-related organization. The working internship requires the completion of 240 hours of approved work experience in a professional capacity and a final written report, related to the student's internship exposure, supervised by a member of the faculty of the degree program. The MS HCAD Advisor will provide overall supervision and coordination of the internship.

Residence/Internship Substitute

A student who has substantial and acceptable work experience in a supervisory or professional position may qualify for the internship substitute. Work experience is approved by the MS HCAD Advisor. Accordingly, a student may request:

Option I

Design, conduct and complete a supervised research project, an effort equivalent in scope to three (3) hours of graduate research-oriented courses, that is highly relevant to the student's intended future professional focus in lieu of a working internship; the project will be supervised by at least one member of the faculty of the degree program, or

Option II

Complete an approved graduate course with significant research content highly relevant for the student's intended future professional field of specialty.

Integrated Degree Plans

Bachelor of Science in Biology and Master of Science in Health Care Administration

A five-year curriculum designed to prepare students for careers in health care administration. The curriculum also prepares students for medical school and advanced study. Students are required to take courses from life sciences, business and liberal arts, culminating in a five-year Master of Science Degree in Health Care Administration (HCAD), including a Bachelor of Science Degree in Biology. The curriculum is offered jointly by the College of Business and the College of Science. The BS in Biology will be conferred at the same time that the student is awarded the MS in Health Care Administration. If a student engaged in this joint degree program is not accepted into the HCAD graduate program, or enters the HCAD program

and fails to complete the requirement for the master's degree in HCAD, then in order to earn a BS in Biology, the student must take the same, full complement of courses required to earn the BS as taken by students not enrolled in the BIOL/HCAD joint program.

Students interested in this integrated undergraduate and graduate degree plan should consult with the Biology undergraduate advisor and the Health Care Administration Graduate Advisor.

Graduate Certificate Program

Admission

The certificate program is available to any student who has been admitted into Graduate Studies at UT Arlington. The student should contact the Graduate Advisor to declare the intent to earn the certificate before enrolling in courses to satisfy certificate requirements.

Program of Study

The certificate requires the completion of at least 12 hours of courses. HCAD 5301 is required.

HCAD 5301	HEALTH CARE ADMINISTRATION I	3
Select at least three of the following:		9
HCAD 5316	HEALTHCARE FINANCE	
or HCAD 5330	SERVICES MARKETING MANAGEMENT	
or HCAD 5333	ECONOMICS OF HEALTH	
or HCAD 5350	HEALTH CARE INFORMATION SYSTEMS	
Total Hours		12

A grade of A or B must be received for all courses that can be applied to meet certificate requirements.

Change of program to the M.S. Health Care Administration Program

A student in the Certificate Program must apply for a change of program and meet all admission requirements to enter the M.S. Health Care Administration program.

COURSES

HCAD 5192. SPECIAL TOPICS IN HEALTH CARE ADMINISTRATION. 1 Hour.

In-depth study of selected topics in health care administration.

HCAD 5199. GRADUATE HEALTH CARE ADMINISTRATION INTERNSHIP. 1 Hour.

Practical training in health care administration. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

HCAD 5292. SPECIAL TOPICS IN HEALTH CARE ADMINISTRATION. 2 Hours.

In-depth study of selected topics in health care administration.

HCAD 5299. GRADUATE HEALTH CARE ADMINISTRATION INTERNSHIP. 2 Hours.

Practical training in health care administration. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

HCAD 5301. HEALTH CARE ADMINISTRATION I. 3 Hours.

Introduction to health care; legislation; reimbursement systems; characteristic administrative and clinical roles responsibilities and education; public health care structures; regulatory agencies; health industry trends; and advances in research and technologies.

HCAD 5302. HEALTH CARE ADMINISTRATION II. 3 Hours.

Managed care; types of health care delivery systems; national health care policy; teamwork in primary care; management of cost and quality of care; legal issues; ethical issues, including bioethics and business ethics; changing roles of health care professionals; varieties of domestic, public and international health care delivery systems.

HCAD 5305. FINANCIAL ACCOUNTING FOR HEALTH CARE INDUSTRY. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of financial accounting for health care industry.

HCAD 5306. MANAGERIAL ACCOUNTING FOR HEALTH CARE INDUSTRY. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of managerial accounting for health care industry. Prerequisite: HCAD 5305.

HCAD 5310. HEALTH CARE LAW. 3 Hours.

Coverage of statutory and case law of the health care industry. Topics include patient rights and malpractice, employment and compensation matters, insurance and claims, and government agencies that regulate aspects of health services delivery.

HCAD 5315. STATISTICAL METHODS FOR HEALTH CARE ADMINISTRATORS. 3 Hours.

Statistical methods designed to prepare graduate students to become competent producers and consumers of data analyses and to use statistical thinking to approach managerial decision making. Students should be familiar with the effectiveness and limitations of various applicable techniques and should be able to recognize when additional statistical expertise is required. Topics include an introduction to evidenced based medicine, probability with an emphasis on the poor predictive value of imperfect diagnostics for rare conditions, standardizing and trending data, graphic and numeric descriptions of data, concepts of inference such as margins of error and significance of results, concepts of quality control including time series analysis and forecasting, and health care applications of discrete random variables with Poisson or binomial probability mass functions. It is recommended that students who have no recent courses in statistics take BSTAT 5301 prior to HCAD 5315.

HCAD 5316. HEALTHCARE FINANCE. 3 Hours.

Analysis of financial problems with an emphasis on the application of financial management principles and concepts to healthcare organizations.

HCAD 5330. SERVICES MARKETING MANAGEMENT. 3 Hours.

Examines conceptual frameworks and management practices particularly relevant to the health care industry. The course examines many concepts and theories from the service marketing industry and analyzes their values in crafting marketing strategies. Emphasis is on problem solving unique to the health care industry.

HCAD 5333. ECONOMICS OF HEALTH. 3 Hours.

Economic analysis applied to current health policy issues, including health expenditures, public and private insurance, incentives, provider education and labor markets, hospitals, prescription drugs, malpractice, long-term care, the Internet, and various proposals for reform. For HCAD majors only.

HCAD 5337. ETHICS, LEADERSHIP, AND TEAMWORK. 3 Hours.

Examines the leadership process, change management, and high-performance team-building strategies. Emphasis will be placed on the development of self-awareness and skills necessary to lead. Identification of values and ethical issues in health care administration will also be stressed through the application of ethical principles and theories of decision making in the analysis of ethical dilemmas.

HCAD 5340. HEALTH CARE STRATEGIC HUMAN CAPITAL. 3 Hours.

A high-performing workforce, developed through effective people practices, is the lifeblood of a health care organization. This course presents a strategic perspective on contemporary human resource management theory and practice. Key topics covered include workforce planning, staffing, diversity, development, performance measurement and management, and compensation; labor and employee relations, regulations, and legislation; as well as key concepts in team and organizational behavior.

HCAD 5350. HEALTH CARE INFORMATION SYSTEMS. 3 Hours.

Addresses issues in the development, integration, and management of health care information systems. Specifically, topics in financial information systems, patient care systems, and health care delivery applications will be discussed. Both case studies and real life applications will be studied.

HCAD 5377. HEALTH CARE QUALITY ASSESSMENT. 3 Hours.

Covers an integrated case study approach to organizational performance management resulting in the delivery of ever-improving value to patients, improved health care quality and organizational sustainability, improvement of overall organizational effectiveness as a health care provider, and organizational learning.

HCAD 5380. HEALTH CARE DATA ANALYTICS. 3 Hours.

Digitization of patient records and widespread use of digital technologies in healthcare organizations have created large repositories of data that can be analyzed to improve care delivery quality, lower cost, and increase patient satisfaction. This course introduces concepts, techniques, and tools for collecting and analyzing healthcare data to gain insight and support decision making by managers and policymakers in healthcare organizations. Data visualization techniques to effectively communicate results are also covered. The course will consist of lectures, case studies, hands-on exercises, and projects.

HCAD 5390. STRATEGIC MANAGEMENT FOR HEALTH CARE ORGANIZATIONS. 3 Hours.

Development of skills necessary for managing health care organizations from a strategic perspective. Particular emphasis is given to the use of systematic assessment of the environment and the organization, as well as the development and implementation of business strategies to meet the needs of stakeholders. Prerequisite: Must be taken in the last semester of the HCAD program.

HCAD 5392. SPECIAL TOPICS IN HEALTH CARE ADMINISTRATION. 3 Hours.

In-depth study of selected topics in health care administration.

HCAD 5398. RESEARCH IN HEALTH CARE ADMINISTRATION. 3 Hours.

Independent research under the supervision of a faculty member.

HCAD 5399. GRADUATE HEALTH CARE ADMINISTRATION INTERNSHIP. 3 Hours.

Practical training in health care administration. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Last semester of the program and permission granted by Graduate Advisor.

Information Systems and Operations Management

The Department of Information Systems and Operations Management (ISOM) offers a rich environment for studying and excelling in the fields of technology and/or operations. Students learn the business and technical skills for a more effective and efficient organization. Faculty are dedicated to teaching and nurturing students to help them achieve their full potential. ISOM fosters relationships with the community and works closely with industry to address their technology and operations needs.

The ISOM Department offers the BBA in Information Systems, BBA in Operations and Supply Chain Management, BS in Business Analytics, BS in Information Systems, an MS in Business Analytics, an MS in Information Systems, and a Ph.D. in Business Administration with emphasis in Operations and Supply Chain Management or Information Systems. Students are prepared for a variety of careers in these fields.

Scholastic Activity and Research Interests of the Faculty

Faculty conduct research in their respective fields and make significant contributions to industry and academia by publishing, speaking and attending conferences. All faculty are eager to share their experiences and research knowledge. Research topics include business analytics, security, business intelligence, quality management, operations process and control, and many more.

COURSES

BSTAT 2305. INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS. 3 Hours.

Guiding business and economic decision-making with the use of descriptive and inferential statistical techniques. Topics include the collection, description and summarization of business and economic data; probability as a foundation of business intelligence; discrete and continuous random variables, their probability and sampling distributions, and their application in business analytics; estimation and confidence intervals for (and tests of hypotheses regarding) the population mean in business settings; and correlation and linear regression analysis as business decision-making tools. Software is used to conduct analyses throughout the course.

BSTAT 3321. INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS. 3 Hours.

Informing business and economic decision-making with intermediate-level tools of business analytics. Topics can include the quality and representativeness of data; conditional probability; statistical independence; business applications of discrete and continuous probability distributions at the intermediate level; multiple-population inference; non-parametric methods; and intermediate regression analysis. Both spreadsheet and statistical software are used to conduct analyses throughout the course. Prerequisite: MATH 1308 or BSTAT 2305.

BSTAT 3322. ADVANCED STATISTICS FOR BUSINESS ANALYTICS. 3 Hours.

Advanced statistical methods oriented toward predictive analytics and multivariate methods in business settings. Topics can include experimental design; regression cross-validation; logistic regression; classification and regression trees; cluster analysis; factor analysis and multi-dimensional scaling; and time series analysis and forecasting. Prerequisite: BSTAT 3321.

BSTAT 5301. FOUNDATIONS OF ANALYTICS. 3 Hours.

Introduction to statistical learning for business analytics, designed to prepare graduate students to become competent consumers of data analytics and statistical information that they will encounter in their professional and personal lives. Students should be able to perform basic statistical analyses and to think critically when interpreting statistical results. Topics include data visualization, spreadsheet analytics, descriptive statistics, probability, estimations, hypothesis testing, and simple regression.

BSTAT 5303. QUANTITATIVE ANALYSIS. 3 Hours.

Study of the methods of quantitative analysis used in business administration. Topics include matrix algebra, systems of linear equations, differential and integral calculus, linear programming, classical optimization, and a survey of management science models. Prerequisite: MATH 1315.

BSTAT 5325. ADVANCED METHODS FOR ANALYTICS. 3 Hours.

Advanced statistical learning for business analytics designed to prepare graduate students to become competent producers and consumers of predictive analytics and statistical information and to use evidenced based managerial decision making in their careers. They should be able to recognize the strengths and weaknesses of applicable techniques and when additional expertise is required. Topics include multiple regression, correlation, logistic regression, discriminant analysis, clustering, and classification and regression trees. It is strongly recommended that students who have no recent courses in statistics take BSTAT 5301 prior to BSTAT 5325.

BSTAT 5330. Nonparametric Statistics. 3 Hours.

A survey of statistical tools which may be used when the normal assumptions of parametric statistics cannot be made; including procedures for categorical data, methods involving ranks, bootstrapping, and Kolmogorov-Smirnov type techniques. Cross-listed with BSAD 6330. Prerequisite: BSTAT 5325 or equivalent.

BSTAT 5360. COMPUTATIONAL TECHNIQUES FOR BUSINESS ANALYTICS. 3 Hours.

Computer software is the primary analytical tool for business analytics and modern research methods. Data analysts, statisticians, and researchers need technologies and skills using the computer as a tool for structuring and cleaning data sets, creating validation samples, conducting analyses, fitting models, simulating stochastic systems, model validation, and model presentation. Emphasis is placed on the use of data analytic software. Cross-listed with INSY 5360. Prerequisite: BSTAT 5325 or equivalent.

BSTAT 5392. SELECTED TOPICS IN BUSINESS STATISTICS. 3 Hours.

In-depth study of selected topics in business statistics. May be repeated when topics vary.

BSTAT 5399. GRADUATE BUSINESS ANALYTICS INTERNSHIP. 3 Hours.

Practical training in business statistics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

BSTAT 6382. INDEPENDENT STUDIES IN BUSINESS STATISTICS. 3 Hours.

Extensive analysis of a business statistics topic.

COURSES**INSY 2303. INTRODUCTION TO M.I.S. AND DATA PROCESSING. 3 Hours.**

Introduction to business data processing, computer programming, management information systems, and problems involved in business information processing systems. Selected software tools are presented and managerial applications are required. Formerly BUSA 2303; credit will be granted only once.

INSY 3300. INTRODUCTION TO PROGRAMMING. 3 Hours.

An introductory programming course that teaches students how to solve business problems using the scripting language, Python. Students will be exposed to object-oriented programming concepts, file handling, database access, and graphical user interfaces. Prerequisite: INSY 2303.

INSY 3303. COMPUTER NETWORKS AND DISTRIBUTED COMPUTING. 3 Hours.

Concepts of computer networks and data communications. Topics include principles of communication and networking protocols, hardware and software, architectures, and management issues. Formerly INSY 4304; credit will be granted only once. Prerequisite: INSY 2303.

INSY 3304. DATABASE MANAGEMENT SYSTEMS. 3 Hours.

Comprehensive coverage of database technology and applications. Data models, query processing (SQL), relational database design, and implementation. Topics covered are hierarchical, network, relational, and object-oriented models, data dictionaries, distributed databases, evaluation and selection of database management systems (DBMS), and data administration. Formerly INSY 4302; credit will be granted only once. Prerequisite: INSY 3300.

INSY 3305. INFORMATION SYSTEMS ANALYSIS AND DESIGN. 3 Hours.

This is a survey of the concepts and methods of information systems analysis and design, system development life cycle (SDLC) and methodologies associated with the SDLC. Course covers feasibility analysis, requirements definition, systems design, data design, coding design, programming, and implementation. Prerequisite: INSY 3304 and INSY 4305. INSY 4305 may be taken concurrently.

INSY 3330. INTRODUCTION TO E-COMMERCE. 3 Hours.

Examines current and projected developments in electronic commerce. Topics include the information technologies upon which electronic commerce is based, such as the telecommunications infrastructure; new perspectives on space, time and money in business; electronic consumers and advertising; the effect of e-commerce on logistics and supply chain management; electronic financial markets and digital payment mechanisms; marketing through digital storefronts and virtual corporations; new frontiers of business such as electronic auctions and business to business e-commerce; the relationship between e-commerce and successful business strategy; and finally, public policy. Formerly BUSA 3330; credit will be granted only once. Prerequisite: INSY 2303.

INSY 4191. STUDIES IN INFORMATION SYSTEMS. 1 Hour.

Advanced studies, on an individual basis, in the various fields of information systems. May be repeated for credit with consent of department chair. Prerequisite: Senior standing and permission of instructor.

INSY 4291. STUDIES IN INFORMATION SYSTEMS. 2 Hours.

Advanced studies, on an individual basis, in the various fields of information systems. May be repeated for credit with consent of department chair. Prerequisite: 90 credit hours and permission of instructor.

INSY 4305. ADVANCED APPLICATION DEVELOPMENT. 3 Hours.

This is a comprehensive Java programming course that not only covers the fundamental object-oriented programming (OOP) topics but also includes advanced Java programming concepts. Topics include structured programming concepts like control structures and methods as well as OOP concepts like encapsulation, composition, inheritance, polymorphism, dynamic binding, and interfaces. The course will also cover Swing components, exception and error handling, and the basics of file processing. Prerequisite: INSY 3300.

INSY 4306. ADVANCED SYSTEMS DEVELOPMENT. 3 Hours.

This course will address systems development, testing and deployment using Java. Students will be exposed to advanced Java concepts, including networking, multithreading, JDBC, advanced file handling, and regular expressions. The course will also cover web services and test-driven development using JUnits. Prerequisite: INSY 4305 and INSY 3305. INSY 3305 may be taken concurrently.

INSY 4307. CLOUD COMPUTING. 3 Hours.

This course teaches fundamental aspects of Cloud Computing including Virtualization, Cloud Infrastructure, Networking, and Autoscaling. Students will be taught both concept and practical skills through hands-on assignments using a major Cloud provider's environment (a base for Cloud certifications). Prerequisite: INSY 3300 or equivalent.

INSY 4312. INTRODUCTION TO CYBERSECURITY. 3 Hours.

This course provides an introduction to the field of Information Security. It covers terminology, history, management, technology and practice of Information Security. It will address topics in many of the Security Domains specified by ISC2. Prerequisite: INSY 3303.

INSY 4313. BLOCKCHAIN TECHNOLOGY. 3 Hours.

Students are introduced to fundamental concepts of blockchain technology. First, second, and third generation blockchain technologies are discussed. Students are also assigned case studies and recent research on blockchain to learn the latest developments in the industry.

INSY 4315. ADVANCED WEB DEVELOPMENT. 3 Hours.

Concepts and techniques for Web application development. The course will emphasize the use of Web development tools and techniques to develop web applications. Topics include web application development using technologies such as HTML/DHTML/XHTML, client-side scripting, XML/XSL and server-side scripting. Prerequisite: INSY 3300.

INSY 4324. ENTERPRISE BUSINESS PROCESS DESIGN. 3 Hours.

This course introduces the concepts and practices of business process design and the execution of common business processes in enterprise resource planning (ERP) systems. Students will learn to describe key business processes, identify integration points across business processes, and understand the cross-functional nature of business processes. Prerequisite: Junior standing.

INSY 4325. ENTERPRISE SYSTEMS MANAGEMENT. 3 Hours.

Enterprise systems allow for the integration of firm-wide information. This course focuses on applying IT to satisfy the needs of an organization, and to improve its performance. Knowledge of enterprise systems and how to implement and manage them is essential for managers and for making better decisions. Through case studies and research projects, this course addresses various aspects of enterprise systems and their management, including data integration and standardization. It will also cover advanced topics such as data analytics, cloud computing, Blockchain, AI, and security and privacy. Prerequisite: Prerequisite or concurrent enrollment: INSY 3305 or BANA 4308.

INSY 4331. SEMINAR IN INFORMATION SYSTEMS. 3 Hours.

Readings and discussion of special topics in information systems. May be repeated for credit with consent of department. Prerequisite: 60 or 90 credit hours and consent of instructor.

INSY 4391. STUDIES IN INFORMATION SYSTEMS. 3 Hours.

Advanced studies, on an individual basis, in the various fields of information systems. May be repeated for credit with consent of department chair. Prerequisite: 90 credit hours and permission of instructor.

INSY 4393. INFORMATION SYSTEMS INTERNSHIP. 3 Hours.

Practical training in information systems. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

INSY 5182. INDEPENDENT STUDIES IN INFORMATION SYSTEMS. 1 Hour.

Extensive analysis of an information systems topic. Prerequisite: permission of instructor.

INSY 5199. GRADUATE INFORMATION SYSTEMS INTERNSHIP. 1 Hour.

Practical training in information systems. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

INSY 5299. GRADUATE INFORMATION SYSTEMS INTERNSHIP. 2 Hours.

Practical training in information systems. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

INSY 5309. OBJECT-ORIENTED BUSINESS PROGRAMMING. 3 Hours.

Topics include fundamental programming structures, objects and classes, inheritance, and other basic concepts related to OO programming.

INSY 5335. APPLIED DATABASE MANAGEMENT. 3 Hours.

Concepts, tools, and technologies associated with the design, implementation and management of large databases are presented. Topics include data models (with emphasis on E/R model and relational model), database design and implementation, database query language, transaction management, and distributed databases. Recent advances in data management are also discussed. Use of a commercial DBMS is required. Prerequisite: INSY 5309 or INSY 5336 or approval of MSIS Graduate Advisor.

INSY 5336. PYTHON PROGRAMMING. 3 Hours.

An introductory programming course that teaches students how to solve business problems using the scripting language, Python. Students will be exposed to object-oriented programming concepts, file handling, database access, and graphical user interfaces.

INSY 5337. DATA WAREHOUSING AND BUSINESS INTELLIGENCE. 3 Hours.

This course covers concepts, tools, and technologies associated with the design and implementation of data warehousing (DW) and business intelligence (BI) applications. Topics covered include data warehouse architecture and infrastructure, dimensional modeling, Extraction Transformation and Loading (ETL), On Line Analytical Processing (OLAP), data quality, and planning and implementation of a DW & BI application. The course objectives are met through a combination of lectures, class projects and homework assignments. Hands-on experience in developing and deploying a DW & BI application is provided. Prerequisite: INSY 5335 or consent of graduate advisor.

INSY 5339. PRINCIPLES OF BUSINESS DATA MINING. 3 Hours.

This course will cover the foundations of business data mining. It will examine tools and techniques from the fields of machine learning and statistics used in practical data mining for finding, and describing, structural patterns in data. Topics may include: Knowledge representation and different types of data; Techniques for data pre-processing, cleaning, reduction, transformation, and visualization; Methods for Classification, Clustering, and Association Rules, including Decision Trees, Rules, Naive Bayes, k Nearest Neighbor, Neural Networks, Regression (linear & logistic), A-Priori, K-means, and hierarchical and density-based clustering; Performance evaluation of data mining algorithms using metrics. This course uses real world data sets and widely used statistical packages and programming languages. Prerequisite: BSTAT 5325 or equivalent. May be taken concurrently.

INSY 5340. MANAGING THE DIGITAL ENTERPRISE. 3 Hours.

This course examines a wide variety of topics important to understanding and managing the Digital Enterprise. Topics may include: Internet infrastructure and related technologies; e-business models; security; ethical, legal, global, and social concerns; and managerial and marketing issues.

INSY 5341. ANALYSIS AND DESIGN. 3 Hours.

Analysis and design phase of systems development life cycle. Topics include systems survey, functional specification, interface specification, data design, program design, system testing, and implementation. Prerequisite: INSY 5335.

INSY 5342. ADVANCED SYSTEMS DESIGN. 3 Hours.

This course provides an understanding of state-of-the-art software development methodologies, including those that are fast emerging. The focus will be on how these new methods differ from traditional practices and what research opportunities they afford to IS researchers. There will be a strong emphasis on technical as well as on socio-technical aspects of software development in the context of these new methodologies. Prerequisite: INSY 5341.

INSY 5343. DATA COMMUNICATIONS AND NETWORKING. 3 Hours.

Technological and managerial issues related to design, operation and maintenance of computer networks. Topics include communication architectures and protocols, LANs and WANs, ATM and frame relay, cellular and satellite communication, the World Wide Web, the Internet, and electronic commerce.

INSY 5345. CLOUD COMPUTING - THEORY AND PRACTICE. 3 Hours.

Cloud Computing has become an important component in Digital Transformation and Analytics. This course covers technical aspects of Cloud Computing including Software Defined Networking, Virtual Machines, Data Storage, Cybersecurity, APIs, Load Balancing, Auto-Scaling, Containers, etc. In addition to learning concepts, students will also obtain the highly demanded technical skills through hands-on assignments using a major Cloud provider's environment (a base for Cloud certifications). Business aspects from the Cloud providers' and users' perspectives will also be addressed. Prerequisite: INSY 5336 or equivalent. May be taken concurrently.

INSY 5346. BUSINESS INNOVATION THROUGH BLOCKCHAIN TECHNOLOGY. 3 Hours.

This course covers topics on components of blockchains, cryptocurrencies, smart contracts, tokens, and blockchain governance. Issues such as whether, how, and why businesses in a variety of industries are exploring Blockchain technology to devise potentially disruptive business strategies are also discussed.

INSY 5347. PRINCIPLES OF INFORMATION SECURITY. 3 Hours.

Starting with an introduction to Information Security concepts, this course will address security terminology, history, management, technology and practice based on the Security Domains specified by ISC2. The course will address strategies and tools, managerial, technological, legal, ethical and operational issues related to Information Security. Topics in developing Security Blueprint, Incidence Response, Business Continuity planning and Disaster Recovery will be addressed. Prerequisite: INSY 5343.

INSY 5350. HEALTH CARE INFORMATION SYSTEMS. 3 Hours.

Addresses issues in the development, integration, and management of health care information systems. Specifically, topics in financial information systems, patient care systems, and health care delivery applications will be discussed. Both case studies and real life applications will be studied. Prerequisite: Cohort HCAD Major.

INSY 5352. TOPICS IN OBJECT TECHNOLOGY. 3 Hours.

Coverage of current topics in Object Technology to include the study of object-oriented agents, components, object request Brokers, distributed objects and related implementations of object-oriented software. Also includes the study of design patterns in object-oriented software design. Prerequisite: INSY 5309.

INSY 5357. ENTERPRISE RESOURCE PLANNING. 3 Hours.

An introduction to enterprise resource planning (ERP), a business management paradigm that integrates all facets of the business, including planning, manufacturing, sales, finance and marketing. Course will cover both the methodology and practice of ERP using commercial software packages.

INSY 5360. COMPUTATIONAL TECHNIQUES FOR BUSINESS ANALYTICS. 3 Hours.

Computer software is the primary analytical tool for business analytics and modern research methods. Data analysts, statisticians, and researchers need technologies and skills using the computer as a tool for structuring and cleaning data sets, creating validation samples, conducting analyses, fitting models, simulating stochastic systems, model validation, and model presentation. Emphasis is placed on the use of data analytic software. Cross-listed with INSY 5360. Prerequisite: BSTAT 5325 or equivalent.

INSY 5373. INFORMATION SYSTEMS PROJECT MANAGEMENT. 3 Hours.

This course introduces students to the concepts and practices of project management and their importance to improving the success of information technology projects. Distinct aspects or characteristics of IT projects which cause these projects to behave differently in the corporate world than do other, non-technical, projects will be discussed.

INSY 5375. MANAGEMENT OF INFORMATION TECHNOLOGIES. 3 Hours.

This course covers topics on the management of information technologies (IT) from the view point of senior managers. Subjects discussed include the strategic role of IT to gain competitive advantage, Internet-based business models, building a lean and agile organization through IT, managing IT security and reliability, evolving models of IT service delivery, such as cloud computing and open source, management of outsourcing, IT governance, and ethical issues in the digital era. In addition to classroom lectures, the course relies heavily on case analysis and discussion to provide a real world perspective of issues related to IT management.

INSY 5376. BIG DATA ANALYTICS. 3 Hours.

Machine Learning and Artificial Intelligence (AI) are transforming the way organizations harness data to draw business insights. This advanced course focuses on advanced machine learning techniques and deep learning algorithms. Students will receive hands-on training on deep learning models/architectures, including sequential and functional models, convolutional neural networks (CNNs), recurrent neural networks (RNNs), long-short term memory (LSTM), autoencoders, and adversarial networks. The foundations of distributed cluster-computing frameworks, including map-reduce and Spark will also be covered. Prerequisite: INSY 5378.

INSY 5377. WEB AND SOCIAL ANALYTICS. 3 Hours.

This course introduces the concepts, techniques, and tools of collecting and analyzing digital data on how users interface with an organization through the web and social media. The Internet and mobile technologies provide the vast sources of user data that describe or imply their behaviors, experiences, and attitudes. Analyzing these web (click) stream data and social media data serves the purposes of strengthening customer relationship management, improving online marketing (e.g. advertising, recommendation, pricing), and increasing the bottom line. The course will consist of lectures, case studies, hands-on exercises, and projects. Prerequisite: BSTAT 5325 or equivalent.

INSY 5378. DATA SCIENCE: A PROGRAMMING APPROACH. 3 Hours.

The world is awash in data and companies are now trying to discern patterns and predict behaviors of both consumers and competitors to gain and sustain a competitive advantage. This course provides an in-depth understanding of data preprocessing/feature engineering as well as machine learning concepts and algorithms using Python. Students will receive hands-on training on supervised learning algorithms such as KNN, Naïve Bayes, Linear and Logistic Regression, Support Vector Machines, Decision Trees and Ensembles, and Artificial Neural Networks (ANNs). The course will also cover the foundations of Natural Language Processing (NLP), Social Network Analysis, and unsupervised learning algorithms such as K-Means, Hierarchical Clustering, t-SNE, and DBSCAN. Prerequisite: INSY 5336 and INSY 5339.

INSY 5379. BUSINESS ANALYTICS CAPSTONE PROJECT. 3 Hours.

This is a hands-on, project-oriented course that gives students an opportunity to engage with the business community and apply their learning to a real-world problem. Students will draw on their repertoire of analytical to develop an appropriate solution to a problem faced by an organization. In addition to preparing a detailed report, students will present their findings to faculty and/or members of the business community. The course places considerable emphasis on problem-solving as well as on written and oral communication skills. Prerequisite: INSY 5378.

INSY 5380. SOCIAL NETWORK ANALYSIS. 3 Hours.

The enormous amount of data being generated by social networking sites as well as social media has the potential to provide insights into the behaviors of people and/or organizations. The course covers various aspects of social network analysis (SNA), including computation of structural characteristics of a network, analysis of ego and complete networks, position and role analysis, and statistical methods used in testing hypotheses related to social networks. In addition to covering the theoretical underpinnings of social networks, the course also emphasizes the analysis of real-world social network data using popular software applications/languages. Prerequisite: INSY 5336.

INSY 5382. INDEPENDENT STUDIES IN INFORMATION SYSTEMS. 3 Hours.

Extensive analysis of an information systems topic.

INSY 5392. SELECTED TOPICS IN INFORMATION SYSTEMS. 3 Hours.

In-depth study of selected topics in information systems. May be repeated when topics vary.

INSY 5398. THESIS. 3 Hours.

Graded F,R,P.

INSY 5399. GRADUATE INFORMATION SYSTEMS INTERNSHIP. 3 Hours.

Practical training in information systems. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

INSY 5698. THESIS. 6 Hours.

Graded F, R, P.

INSY 6182. INDEPENDENT STUDY IN INFORMATION SYSTEMS. 1 Hour.

Doctoral level study of information systems topics. Prerequisite: Doctoral standing.

INSY 6301. SEMINAR IN RESEARCH FOUNDATIONS. 3 Hours.

Integrative analysis of research in information systems, including research philosophies and methodologies, contemporary research topics, dissertation research and future directions for information systems research. Prerequisite: Doctoral standing.

INSY 6306. SEMINAR IN INFORMATION TECHNOLOGIES. 3 Hours.

Focuses on contemporary technology issues in IS development and deployment. Prerequisite: Doctoral standing and INSY 6301.

INSY 6307. SEMINAR IN IS MANAGEMENT. 3 Hours.

Focuses on managerial and organizational issues in IS. Prerequisite: Doctoral standing and INSY 6301.

INSY 6382. INDEPENDENT STUDIES IN INFORMATION SYSTEMS. 3 Hours.

Extensive analysis of an information systems topic.

INSY 6392. SELECTED TOPICS IN INFORMATION SYSTEMS. 3 Hours.

Advanced doctoral level topics in Information Systems. May be repeated when topics vary. Prerequisite: Doctoral standing.

COURSES**MASI 5182. INDEPENDENT STUDIES IN MANAGEMENT SCIENCES. 1 Hour.**

Extensive analysis of a management sciences topic.

MASI 5199. GRADUATE MANAGEMENT SCIENCES INTERNSHIP. 1 Hour.

Practical training in management science. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

MASI 5282. INDEPENDENT STUDIES IN MANAGEMENT SCIENCES. 2 Hours.

Extensive analysis of a management sciences topic.

MASI 5299. GRADUATE MANAGEMENT SCIENCES INTERNSHIP. 2 Hours.

Practical training in management science. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

MASI 5332. ADVANCED DATA COLLECTION. 3 Hours.

Surveys, audits, samples and experimental designs contrasted and compared as a basis for statistical inference. Emphasis is on the integration of techniques common to differing areas of business research. Prerequisite: BSTAT 5325.

MASI 5382. INDEPENDENT STUDIES IN MANAGEMENT SCIENCES. 3 Hours.

Extensive analysis of a management sciences topic.

MASI 5399. GRADUATE MANAGEMENT SCIENCES INTERNSHIP. 3 Hours.

Practical training in management science. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

MASI 6309. MULTIVARIATE STATISTICAL METHODS. 3 Hours.

Focuses on methods of analyzing mean and covariance structures. Topics include commonly applied multivariate methods such as multiple analysis of variance, repeated measures, discriminant analysis, profile analysis, canonical correlations, and factor analytic methods. The use of matrix algebra and available computer packages will be stressed. Prerequisite: Doctoral standing and BSTAT 5325.

COURSES**OPMA 3306. OPERATIONS MANAGEMENT. 3 Hours.**

Introduction to concepts and problem-solving techniques important in operations management and production management. Topics include demand forecasting, capacity management, resource allocation, inventory management, supply chain management, quality control, project management. Prerequisite: Concurrent enrollment with BSTAT 3321 or BSTAT 3322.

OPMA 3308. OPERATIONS PLANNING AND CONTROL. 3 Hours.

Course covers operations planning and control systems in manufacturing and service organizations. Topics include inventory control, material requirements planning, Just-in-Time and lean manufacturing, production scheduling, capacity planning, operations planning and control software. Prerequisite: OPMA 3306.

OPMA 3310. PROJECT MANAGEMENT. 3 Hours.

Course covers concepts and issues important in effectively managing projects. Topics include project selection, project planning, negotiation, budgeting, scheduling, resource allocation, project control, project auditing, and project termination. Corequisite: OPMA 3306.

OPMA 4191. STUDIES IN OPERATIONS MANAGEMENT. 1 Hour.

Advanced studies, on an individual basis, in the various fields of operations management. May be repeated for credit with consent of department chair. Prerequisite: 90 credit hours and permission of instructor.

OPMA 4291. STUDIES IN OPERATIONS MANAGEMENT. 2 Hours.

Advanced studies, on an individual basis, in the various fields of operations management. May be repeated for credit with consent of department chair. Prerequisite: 90 credit hours and permission of instructor.

OPMA 4301. COMPUTER MODELS IN OPERATIONS MANAGEMENT. 3 Hours.

Course covers applications of computer models used in operations management. Prerequisite: OPMA 3306.

OPMA 4302. SUPPLY CHAIN LOGISTICS. 3 Hours.

Physical supply, in-plant movement and storage, and physical distribution which comprise logistics systems in industry. Topics include facility location, transportation, warehousing, inventory control, distribution networks, and logistics information systems. Prerequisite: OPMA 3306.

OPMA 4303. INTRODUCTION TO MANAGEMENT SCIENCES. 3 Hours.

Introduction to optimization and quantitative analysis of business problems. Topics include applications of linear and integer programming, network analysis, simulation, game theory, queuing theory, and other operations research tools. Prerequisite: OPMA 3306, may be taken concurrently.

OPMA 4307. QUALITY PLANNING AND ANALYSIS. 3 Hours.

Quality of products and services needed by society, to include consideration of quality costs and improvements, designing for quality, process controls, inspections, testing, acceptance sampling, management controls, and quality information systems. Prerequisite: OPMA 3306 and BUSA 3321/STAT 3321.

OPMA 4309. GLOBAL SUPPLY CHAIN MANAGEMENT. 3 Hours.

Course covers concepts and issues important in managing supply chains. A strategic view is taken of the way companies coordinate their operations with suppliers and customers in a global marketplace. The strategic use of information systems to better manage supply chains is also covered.

Prerequisite: OPMA 3306 and OPMA 4302.

OPMA 4310. SUPPLY CHAIN ANALYTICS-THEORY AND PRACTICE. 3 Hours.

Analytics is used to assist decision makers to make well-informed data-driven decisions. The course covers Analytics techniques and tools used in Supply Chain. It covers various quantitative techniques and advanced technologies, such as data mining, big data, statistics, etc. In addition to learning concepts, students will also learn widely used advanced tools hands-on. Prerequisite: OPMA 3306 and basic computer knowledge.

OPMA 4312. PURCHASING MANAGEMENT. 3 Hours.

Examines the purchasing management role and responsibilities in the firm. This will cover issues of quality, solicitation techniques, source selection, pricing principles, legal aspects, value analysis, purchasing systems and ongoing administration of commercial, industrial and government contracts.

Prerequisite: OPMA 3306 and OPMA 4302.

OPMA 4314. SERVICE OPERATIONS. 3 Hours.

Service operations make up the fastest-growing segment in economies throughout the developed world. This course is intended to help emerging business leaders understand challenges and opportunities inherent in the unique nature of service operations. This course emphasizes both strategic and tactical decision-making, with a focus on the effective design, delivery and improvement of service outputs. Prerequisite: OPMA 3306.

OPMA 4331. SEMINAR IN OPERATIONS MANAGEMENT. 3 Hours.

Readings and discussion of special topics in operations management. May be repeated for credit with consent of department chair. Prerequisite: Junior or senior standing and consent of instructor.

OPMA 4391. STUDIES IN OPERATIONS MANAGEMENT. 3 Hours.

Advanced studies, on an individual basis, in the various fields of operations management. May be repeated for credit with consent of department chair.

Prerequisite: 90 credit hours and permission of instruction.

OPMA 4393. OPERATIONS MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in operations management. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

OPMA 5199. GRADUATE OPERATIONS MANAGEMENT INTERNSHIP. 1 Hour.

Practical training in operations management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

OPMA 5299. GRADUATE OPERATIONS MANAGEMENT INTERNSHIP. 2 Hours.

Practical training in operations management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

OPMA 5321. INTRODUCTION TO MANAGEMENT SCIENCES. 3 Hours.

Introduction to optimization and quantitative analysis of business problems. Topics include applications of linear and integer programming, network analysis, simulation, game theory, queuing theory, and other operations research tools.

OPMA 5361. OPERATIONS MANAGEMENT. 3 Hours.

Introduction to concepts and problem-solving techniques important in production management and operations management. Topics include demand forecasting, capacity management, resource allocation, inventory management, supply chain management, quality control, and project management.

Prerequisite: BSTAT 5301 or equivalent.

OPMA 5362. SERVICES OPERATIONS. 3 Hours.

Service operations make up the fastest-growing segment in economies throughout the developed world. This course is intended to help emerging business leaders understand challenges and opportunities inherent in the unique nature of service operations. This course emphasizes both strategic and tactical decision-making, with a focus on the effective design, delivery and improvement of service outputs. Prerequisite: OPMA 5361.

OPMA 5363. OPERATIONS PLANNING AND CONTROL. 3 Hours.

Course covers operations planning and control systems in manufacturing and service organizations. Topics include inventory control, material requirements planning, Just-In-Time and lean manufacturing, production scheduling, capacity planning, and operations planning and control software. Previous introductory course in operations management suggested.

OPMA 5364. PROJECT MANAGEMENT. 3 Hours.

Course covers concepts and issues important in effectively managing projects. Topics include project selection, project planning, negotiation, budgeting, scheduling, resource allocation, project control, project auditing, and project termination.

OPMA 5365. PURCHASING MANAGEMENT. 3 Hours.

Examines the purchasing management role and responsibilities in the firm. This will cover issues of quality, solicitation techniques, source selection, pricing principles, legal aspects, value analysis, purchasing systems and ongoing administration of commercial, industrial and government contracts. Prerequisite: OPMA 5361 and OPMA 5369.

OPMA 5367. QUALITY MANAGEMENT. 3 Hours.

Course focuses on quality of products and services needed by society. Topics include consideration of quality cost and improvements, designing for quality, process controls, inspections, testing, acceptance sampling, management controls, and quality information systems. Previous introductory course in statistics suggested.

OPMA 5368. GLOBAL SUPPLY CHAIN MANAGEMENT. 3 Hours.

Course covers concepts and issues important in managing supply chains. A strategic view is taken of the way companies coordinate their operations with suppliers and customers in a global marketplace. The strategic use of information systems to better manage supply chains is also covered. Previous introductory course in operations management suggested. Prerequisite: OPMA 5361 and OPMA 5369.

OPMA 5369. SUPPLY CHAIN LOGISTICS. 3 Hours.

Course covers physical supply, in-plant movement and storage, and physical distribution of materials, which comprise logistics systems in industry. Topics include facility location, transportation, warehousing, inventory control, distribution networks, and logistics information systems. Previous introductory course in operations management suggested. Prerequisite: OPMA 5361 or equivalent.

OPMA 5379. ORGANIZATIONAL RESEARCH PROJECT. 3 Hours.

Students conduct a research project at a local organization, focusing on applications of business concepts studied in their coursework. Prerequisite: Cohort MBA Major.

OPMA 5382. INDEPENDENT STUDIES IN OPERATIONS MANAGEMENT. 3 Hours.

Extensive analysis of an Operations Management topic.

OPMA 5389. INDEPENDENT STUDIES IN MILITARY ACQUISITION. 3 Hours.

This course is reserved for military officers in the Training with Industry or I-Grade programs at UT Arlington. Studies consist of an acquisition practicum with training at an assigned agency and a required seminar at UT Arlington.

OPMA 5392. SELECTED TOPICS IN OPERATIONS MANAGEMENT. 3 Hours.

In-depth study of selected topics in operations management. May be repeated when topics vary.

OPMA 5399. GRADUATE OPERATIONS MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in operations management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

OPMA 5689. INDEPENDENT STUDIES IN MILITARY ACQUISITION. 6 Hours.

This course is reserved for military officers in the Training with Industry or I-GRAD programs at UT Arlington. Studies consist of an acquisition practicum with training at an assigned agency and a required seminar at UT Arlington.

OPMA 5989. INDEPENDENT STUDIES IN MILITARY ACQUISITION. 9 Hours.

This course is reserved for military officers in the Training with Industry or I-Grade programs at UT Arlington. Studies consist of an acquisition practicum with training at an assigned agency and a required seminar at UT Arlington.

OPMA 6370. SEMINAR IN OPERATIONS MANAGEMENT. 3 Hours.

Doctoral seminar that is a comprehensive and integrative study of operations management that focuses on theoretical frameworks, applications of models, and methods of analysis. Prerequisite: Doctoral standing.

OPMA 6371. INTEGRATED OPERATIONS STRATEGY AND RESEARCH. 3 Hours.

Linkages between the manufacturing and strategy development functions. Research issues within production/operations management. Current techniques/designs for achieving effective research. Prerequisite: Doctoral standing and previous introductory course in operations management suggested.

OPMA 6380. RESEARCH IN OPERATIONS MANAGEMENT. 3 Hours.

Independent research under the supervision of a faculty member. May be repeated for credit. Prerequisite: Doctoral standing.

OPMA 6382. INDEPENDENT STUDIES IN OPERATIONS MANAGEMENT. 3 Hours.

Extensive analysis of an operations management topic.

OPMA 6392. SPECIAL TOPICS IN OPERATIONS MANAGEMENT. 3 Hours.

Advanced doctoral level topics in Operations Management. May be repeated when topics vary. Prerequisite: Doctoral standing.

Information Systems and Operations Management - Graduate Programs

The ISOM Department offers the MS in Business Analytics and the MS in Information Systems. These programs are AACSB-International accredited and STEM approved.

Our graduate students are prepared for advancement in rewarding and challenging careers in such fields as business analyst, systems analyst, project management, systems design, and business analytics. Other College of Business graduate students can enhance their expertise in specific areas by using Information Systems, Operations and Supply Management, and Business Statistics courses as electives.

Our advisors are:

Dr. Santoso Budiman, Graduate Advisor MS Business Analytics

Dr. Kay-Yut Chen, Ph.D. Coordinator

Statistics and Operations Management (Business Administration)

Dr. Sajib Datta, Graduate Advisor MS Information Systems

Dr. Jingguo Wang, Ph.D. Coordinator

Information Systems (Business Administration)

Master of Science in Business Analytics (MSBA)

Objective

The Master of Science in Business Analytics is designed to prepare graduates to identify and implement opportunities for the strategic use of business analytics with an emphasis on business. Students gain knowledge of a broad range of disciplines and functions in the business as well as specialized knowledge of business analytics and its accompanying skill set. An intensive curriculum covering business intelligence, data mining, econometrics, marketing research, statistical techniques prepares students for careers in the field of business analytics.

Admission Requirements

Admission to the M.S. in Business Analytics (MSBA) program is based on completion of the general admission requirements of the Graduate School as specified under the Graduate Admissions Requirements and Procedures in the Graduate Catalog.

Unconditional Admission Without Committee Review

Applicants qualify for unconditional admission without the need for review by the Graduate Studies Committee if they meet the following set of unconditional admission criteria:

Unconditional Admission

Individuals who meet each of the following two conditions are given unconditional admission:

- Applicant holds an earned bachelor's degree from an AACSB-accredited college or university, or equivalent, with a minimum GPA of 3.00 on the last 60 hours of undergraduate work, and
- GMAT/GRE must have verbal and quantitative scores at the 50th percentile or higher.

Admission with Committee Review

Applicants who require committee review are considered for admission using the following factors, with no single factor used as the primary criterion for making admission decisions.

- Undergraduate and graduate GPA (overall, major, and last 60 hours) and program accreditation status of the applicant's degree granting institution;
- Score on the GMAT/GRE (including separate scores on the verbal and quantitative portions);
- Applicant's professional work experience and professional certification/licensure; and
- Letters of reference and personal statement provided by the applicant.

By considering the totality of the applicant's circumstances, including the factors listed above, the Graduate Studies Committee will evaluate an applicant's readiness to successfully complete the graduate program. Depending on the judgment of the committee, the decision may be to grant unconditional admission, probationary admission, provisional admission, deferred admission, or to deny admission. The decision of the committee is final. An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in

graduate studies as defined under Admissions Requirements and Procedures in the Graduate Catalog. International applicants must submit a TOEFL score or IELTS score that meets the standards as listed in the admission requirements.

Degree Requirements

The MSBA is a non-thesis program consisting of 33 semester hours to include the following required courses in the areas of business acumen and communication, data acquisition and architecture, and statistics and analytics. Electives sufficient to complete the program are selected with approval of the MSBA Graduate Advisor. When there is equivalent work/course experience, the student must meet with the MSBA Graduate Advisor to select alternate coursework.

Select one of the following Statistics courses:

3

BSTAT 5325	ADVANCED METHODS FOR ANALYTICS	
ECON 5336	APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS I	
MANA 5329	HR METRICS AND ANALYTICS	

Plus the following required courses:

ECON 5337	BUSINESS & ECONOMIC FORECASTING	3
ACCT 5307	MEASUREMENT AND ANALYSIS FOR BUSINESS DECISION-MAKING	3
MANA 5344	EVIDENCE-BASED MANAGEMENT	3
INSY 5336	PYTHON PROGRAMMING	3
INSY 5337	DATA WAREHOUSING AND BUSINESS INTELLIGENCE	3
INSY 5339	PRINCIPLES OF BUSINESS DATA MINING	3
INSY 5378	DATA SCIENCE: A PROGRAMMING APPROACH	3
INSY 5379	BUSINESS ANALYTICS CAPSTONE PROJECT	3

Analytics elective courses approved by the Graduate Advisor	6
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Total Hours	33
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Transfer Credit

A maximum of 9 hours of advanced coursework may be transferred in from other AACSB-accredited schools if approved by the MSBA Graduate Advisor.

Master of Science in Information Systems (MSIS)

Objective

The Master of Science in Information Systems is designed to provide graduates with both a general knowledge of business and a specialized knowledge of information systems. Students are exposed to the theory, research, and practical applications of numerous information systems areas including management information systems, database management systems, systems analysis and design, and data communications; and may take electives in general systems concepts, electronic commerce, business analytics, problem formulation, computer science, management sciences, research, and other related fields. The program is designed to prepare students for information systems careers in business and industry, as well as in government and nonprofit organizations.

Admission Requirements

Admission to the M.S. in Information Systems (MSIS) program is based on completion of the general admission requirements as specified under the Graduate Admissions Requirements and Procedures in the Graduate Catalog.

Unconditional Admission Without Committee Review

Individuals who meet each of the following two conditions are given unconditional admission:

- Applicant holds an earned bachelor's degree from an AACSB-accredited college or university, or equivalent, with a minimum GPA of 3.00 on the last 60 hours of undergraduate work, and
- GMAT/GRE must have verbal and quantitative scores at the 50th percentile or higher.

Admission with Committee Review

Applicants who require committee review are considered for admission using the following factors, with no single factor used as the primary criterion for making admission decisions.

- Undergraduate and graduate GPA (overall, major, and last 60 hours) and program accreditation status of the applicant's degree granting institution;
- Score on the GMAT/GRE (including separate scores on the verbal and quantitative portions);

- Applicant's professional work experience and professional certification/licensure; and
- Letters of reference and personal statement provided by the applicant.

By considering the totality of the applicant's circumstances, including the factors listed above, the Graduate Studies Committee will evaluate an applicant's readiness to successfully complete the graduate program. Depending on the judgment of the committee, the decision may be to grant unconditional admission, probationary admission, provisional admission, deferred admission, or to deny admission. The decision of the committee is final. An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies as defined under Admissions Requirements and Procedures in the Graduate Catalog. International applicants must submit a TOEFL score or IELTS score that meets the standards as listed in the admission requirements.

Degree Requirements

The Department of Information Systems and Operations Management provides two Master's tracks: a Thesis Option for those intending to later pursue a Ph.D. in Information Systems, and a Non-Thesis track, a traditional flexible option. The thesis track program provides preparation for entry into a Ph.D. program. The second option is the flexible non-thesis program enabling a degree candidate greater flexibility in designing their program.

The thesis option consists of a minimum of 30 semester hours

Master of Science in Information Systems: Thesis Option

BSTAT 5325	ADVANCED METHODS FOR ANALYTICS	3
INSY 5337	DATA WAREHOUSING AND BUSINESS INTELLIGENCE	3
INSY 5339	PRINCIPLES OF BUSINESS DATA MINING	3
INSY 5373	INFORMATION SYSTEMS PROJECT MANAGEMENT	3
Elective courses approved by the Graduate Advisor. Foundation courses may not be used as advanced electives.		12
Thesis work taken in the last semester.		6
Total Hours		30

The thesis student must be enrolled in six hours of thesis. Once the student is enrolled in the thesis course, continuous enrollment is expected. The student must be enrolled in six hours of thesis during the semester in which the thesis is defended and the final Master's Examination is unconditionally passed. The degree candidate must defend the thesis in a final oral examination open to all members of the Faculty.

The non-thesis option consists of 33 semester hours.

Master of Science in Information Systems: Thesis-Substitute Option

BSTAT 5325	ADVANCED METHODS FOR ANALYTICS	3
INSY 5337	DATA WAREHOUSING AND BUSINESS INTELLIGENCE	3
INSY 5339	PRINCIPLES OF BUSINESS DATA MINING	3
INSY 5373	INFORMATION SYSTEMS PROJECT MANAGEMENT	3
INSY 5375	MANAGEMENT OF INFORMATION TECHNOLOGIES	3
Elective courses approved by the Graduate Advisor. Foundation courses may not be used as advanced electives.		18
Total Hours		33

The thesis-substitute option electives can be chosen from a variety of offerings and can be customized to the student's interest. The student must meet with the MSIS Graduate Advisor to determine the appropriate coursework for the electives.

When there is equivalent coursework, the student must meet with the MSIS Graduate Advisor to select alternate coursework. An approved 3-credit hour graduate internship (INSY 5399 (<https://catalog.uta.edu/search/?P=INSY%205399>)) may also be taken as an elective. Students who do not have coursework in information systems will be required to take INSY 5309 or INSY 5336, INSY 5335, and INSY 5341 as part of their electives.

Transfer Credit

A maximum of 9 hours of advanced coursework may be transferred in from other AACSB-accredited schools if approved by the MSIS Graduate Advisor.

Graduate Certificate in Business Analytics

Objective

The Graduate Certificate in Business Analytics is designed to enable students to acquire critical data science and analytics skills and apply these to solve traditional and new problems in their respective domains without having to enroll in a full Masters degree program.

Admission

Applicants qualify for admission into the Graduate Certificate in Business Analytics program if they meet the following admission criteria:

- An earned bachelor's degree from an accredited university, or equivalent, with a minimum GPA of 3.00 in the last 60 hours of undergraduate course work,
- 2 or more years of work experience in a related field, and
- Adequate quantitative skill demonstrated through college-level course work and/or work experience.

Course Requirements

Students must complete 15 graduate credit hours comprised of four required courses and one elective course, and maintain a grade point average of 3.0 or higher. All courses must be completed at UTA.

BSTAT 5325	ADVANCED METHODS FOR ANALYTICS	3
INSY 5336	PYTHON PROGRAMMING	3
INSY 5339	PRINCIPLES OF BUSINESS DATA MINING	3
INSY 5377	WEB AND SOCIAL ANALYTICS	3
Select one from the following list:		3
INSY 5337	DATA WAREHOUSING AND BUSINESS INTELLIGENCE	
INSY 5378	DATA SCIENCE: A PROGRAMMING APPROACH	
ECON 5337	BUSINESS & ECONOMIC FORECASTING	
FINA 5376	FINANCIAL DATA ANALYTICS	
MANA 5329	HR METRICS AND ANALYTICS	
MARK 5337	MARKETING ANALYTICS AND INFORMATION MANAGEMENT	
Other course upon approval of Graduate Advisor		
Total Hours		15

Course credit earned through the certificate can be used to meet course requirements for the MS Business Analytics if the student is accepted into the MSBA program.

Executive Certificate in Business Analytics

Objective

In keeping with the mission of The University of Texas at Arlington to provide lifelong learning opportunities, the Department of Information Systems and Operations Management now offers an Executive Certificate in Business Analytics. The Executive Certificate in Business Analytics program will prepare management practitioners in advanced data analytics methodologies and enable them to practice data-driven decision making. This post-baccalaureate Executive Certificate provides an educational opportunity that is narrower in scope, and shorter in duration, than graduate degree programs. The target audience of this certificate program includes working professionals who currently hold full-time employment and are interested in learning and applying business analytics techniques in their current roles but don't have the time or motivation to enroll in a full time traditional MS degree program. This program is usually offered in collaboration with a sponsoring organization.

Admission

Students must have the following:

- Bachelor's degree from an accredited university
- At least 3 years of relevant work experience
- Personal statement from the candidate
- Reference letter from supervisor/manager
- Successful interview with Program Advisor

Course Requirements

Students must complete 12 graduate credit hours and maintain a grade point average of 3.0 or higher. The certificate will be completed in about 6 months.

BSTAT 5325	ADVANCED METHODS FOR ANALYTICS	3
INSY 5339	PRINCIPLES OF BUSINESS DATA MINING	3
INSY 5376	BIG DATA ANALYTICS	3

INSY 5378	DATA SCIENCE: A PROGRAMMING APPROACH	3
Total Hours		12

Use of Courses Toward Degree Program

Students that initially enroll in the Executive Certificate in Business Analytics may later use up to 12 hours of coursework from the Certificate program toward the Master of Science in Business Analytics degree.

Information Systems and Operations Management - Undergraduate Programs

The Department of Information Systems and Operations Management offers the BBA in Information Systems, the BBA in Operations and Supply Chain Management, the BS in Business Analytics, the BS in Information Systems, and minors in Business Analytics and Information Systems. Students develop generalized business knowledge as well as specialized skills for addressing technical and operations needs of an organization. Students are prepared for a variety of jobs including business analyst, programmer/developer, systems designer, supply chain management, and operations process and control.

Requirements for a Bachelor of Science in Business Analytics

Advanced business electives should be selected with the advice of an academic advisor.

Students must meet all lower division requirements before enrolling in upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)		
General Core Requirements (p. 50)		42
Communication (minimum 6 hours required)		6
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)		6
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)		6
From Approved University General Core Requirement List		
Language, Philosophy & Culture (minimum 3 hours required)		3
From Approved University General Core Requirement List		
Creative Arts (minimum 3 hours required)		3
From Approved University General Core Requirement List		
US History (minimum 6 hours required)		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)		6
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)		3
Satisfied by completion of ECON 2305 in the Business Core.		
Foundational Component Area (minimum 3 hours required)		3
Satisfied by completion of ECON 2306 in the Business Core.		
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours)		3
Professional Courses- Business Core (39 hours)		
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science		
ECON 2306 satisfies the Foundational Component		
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS (Must earn a B or better)	3
FINA 3313	BUSINESS FINANCE	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322	STRATEGIC MANAGEMENT	3

OPMA 3306	OPERATIONS MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
Professional Courses- Advanced Business Analytics (15 hours)		
BANA 3308	INTRODUCTION TO BUSINESS ANALYTICS	3
BANA 3309	DATA VISUALIZATION AND BUSINESS INTELLIGENCE	3
BANA 4308	ADVANCED DATA SCIENCE	3
BANA 4311	ETHICAL AND SOCIAL ISSUES IN DATA SCIENCE	3
BANA 4326	CAPSTONE IN BUSINESS ANALYTICS	3
Advanced Business Courses and Electives (18 hours)		
BSTAT 3322	ADVANCED STATISTICS FOR BUSINESS ANALYTICS	3
INSY 3300	INTRODUCTION TO PROGRAMMING (Must earn a B or better)	3
INSY 4325	ENTERPRISE SYSTEMS MANAGEMENT	3
INSY 4331	SEMINAR IN INFORMATION SYSTEMS	3
Advanced business, economics, information systems, management, marketing, operations and supply chain management, or real estate. No BANA will apply.		6
Advanced Business Elective or Non-Business Elective (3 hours)		3
Total Hours		120
First Year		
First Semester	Hours	Second Semester Hours
ENGL 1301		3 ENGL 1302 3
MATH 1315		3 MATH 1316 3
HIST 1301		3 HIST 1302 3
Life & Physical Science		3 Life & Physical Science 3
MANA 1301		3 Creative Arts 3
UNIV 1101 (or)		1
UNIV 1131		
		16 15
Second Year		
First Semester	Hours	Second Semester Hours
ACCT 2301		3 ACCT 2302 3
ECON 2305		3 ECON 2306 3
INSY 2303		3 BSTAT 2305 3
POLS 2311		3 POLS 2312 3
Language, Philosophy, Culture		3 Non-Business Elective 2
		15 14
Third Year		
First Semester	Hours	Second Semester Hours
INSY 3300 (Must earn a B or better)		3 BANA 3308 3
BSTAT 3321 (Must earn a B or better)		3 BANA 3309 3
BLAW 3310		3 BSTAT 3322 3
FINA 3313		3 BCOM 3360 3
MANA 3318		3 MARK 3321 3
		15 15
Fourth Year		
First Semester	Hours	Second Semester Hours
BANA 4308		3 INSY 4325 3
BANA 4311		3 BANA 4326 3
INSY 4331		3 MANA 4322 3
Advanced Business Elective		3 OPMA 3306 3
Advanced Business Elective		3 Advanced Business or Non-Business Elective 3
		15 15
Total Hours: 120		

Requirements for a Bachelor of Business Administration in Information Systems

The student concentrating in information systems is encouraged to take a computer science course as an outside elective. Required information systems electives and advanced business electives should be selected with the advice of an academic advisor.

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)			
General Core Requirements (p. 50)			42
Communication (minimum 6 hours required)			6
ENGL 1301	RHETORIC AND COMPOSITION I		
ENGL 1302	RHETORIC AND COMPOSITION II		
Mathematics (minimum 6 hours required)			6
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS		
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS		
Life and Physical Sciences (minimum 6 hours required)			6
From Approved University General Core Requirement List			
Language, Philosophy & Culture (minimum 3 hours required)			3
From Approved University General Core Requirement List			
Creative Arts (minimum 3 hours required)			3
From Approved University General Core Requirement List			
US History (minimum 6 hours required)			6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865		
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT		
Government/Political Science (minimum 6 hours required)			6
POLS 2311	GOVERNMENT OF THE UNITED STATES		
POLS 2312	STATE AND LOCAL GOVERNMENT		
Social & Behavioral Sciences (minimum 3 hours required)			3
Satisfied by completion of ECON 2305 in the Business Core.			
Foundational Component Area (minimum 3 hours required)			3
Satisfied by completion of ECON 2306 in the Business Core.			
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours)			3
Professional Course Requirements - Business Core (39 hours)			
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT		3
ACCT 2301	PRINCIPLES OF ACCOUNTING I		3
ACCT 2302	PRINCIPLES OF ACCOUNTING II		3
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS		3
ECON 2305 satisfies the Social & Behavioral Science			
ECON 2306 satisfies the Foundational Component			
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING		3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION		3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS		3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS		3
FINA 3313	BUSINESS FINANCE		3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR		3
MANA 4322	STRATEGIC MANAGEMENT		3
MARK 3321	PRINCIPLES OF MARKETING		3
OPMA 3306	OPERATIONS MANAGEMENT		3
Professional Course Requirements - Advanced Information Systems (18 hours)			
INSY 3300	INTRODUCTION TO PROGRAMMING		3
INSY 3303	COMPUTER NETWORKS AND DISTRIBUTED COMPUTING		3
INSY 3304	DATABASE MANAGEMENT SYSTEMS		3
INSY 3305	INFORMATION SYSTEMS ANALYSIS AND DESIGN		3

Advanced Information Systems Elective (INSY 33xx or 43xx, INSY 3323 will not apply)	6
Advanced Business Electives (15 hours)	
Advanced accounting, business, economics, finance, management, marketing, operations and supply chain management, or real estate. No INSY will apply.	15
Advanced Business Elective or Non-Business Elective (3 hours)	3
Total Hours	120

Double Major

A Double Major option for the Bachelor of Business Administration (BBA) in Information Systems is available. Information Systems undergraduates who pursue the following Double Major program will not have the option of participating in the Fast Track Program in Business.

Completion of the Double Major is attained by including all of the following courses in the BBA Information Systems plan and completing with grades of C or better in each of the double major courses listed below:

BBA in Information Systems and Accounting

ACCT 3303	INTRODUCTION TO ACCOUNTING INFORMATION SYSTEMS
ACCT 3311	FINANCIAL ACCOUNTING I
ACCT 3312	FINANCIAL ACCOUNTING II
ACCT 3315	PRINCIPLES OF FEDERAL INCOME TAX
ACCT 4302	COST ANALYSIS AND DECISION MAKING
ACCT 4318	AUDITING
ACCT 4304	MANAGEMENT PLANNING AND CONTROL
or ACCT 4325	GOVERNMENTAL ACCOUNTING
Advanced Economics Elective (ECON 33xx or 43xx)	

Suggested Course Sequence

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15
Second Year			
First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14
Third Year			
First Semester	Hours	Second Semester	Hours
INSY 3300		3 INSY 3304	3
INSY 3303		3 INSY 4305 (Adv. INSY Elective)	3
BLAW 3310		3 BCOM 3360	3
FINA 3313		3 MARK 3321	3
MANA 3318		3 Advanced Business Elective	3
		15	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
INSY 3305		3 Advanced INSY Elective	3
BSTAT 3321		3 MANA 4322	3
Advanced Business Elective		3 OPMA 3306	3
Advanced Business Elective		3 Advanced Business Elective	3

Advanced Business Elective	3 Advanced Business or Non-Business Elective	3
	15	15
Total Hours: 120		

Requirements for a Bachelor of Science in Information Systems

The student studying information systems is encouraged to take a computer science course as an outside elective. Required information systems electives and advanced business electives should be selected with the advice of an academic advisor.

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)

General Core Requirements (p. 50)	42
Communication (minimum 6 hours)	6
ENGL 1301 RHETORIC AND COMPOSITION I	
ENGL 1302 RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)	6
MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)	6
From Approved University General Core Requirement List	
Language, Philosophy & Culture (minimum 3 hours required)	3
From Approved University General Core Requirement List	
Creative Arts (minimum 3 hours required)	3
From Approved University General Core Requirement List	
US History (minimum 6 hours required)	6
HIST 1301 HISTORY OF THE UNITED STATES TO 1865	
HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)	6
POLS 2311 GOVERNMENT OF THE UNITED STATES	
POLS 2312 STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)	3
Satisfied by completion of ECON 2305 in the Business Core.	
Foundational Component Area (minimum 3 hours required)	3
Satisfied by completion of ECON 2306 in the Business Core.	
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours required)	3

Professional Courses - Business Core (39 hours)

MANA 1301 BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301 PRINCIPLES OF ACCOUNTING I	3
ACCT 2302 PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305 INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science	
ECON 2306 satisfies the Foundational Component	
INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360 EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310 LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321 INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313 BUSINESS FINANCE	3
MANA 3318 MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322 STRATEGIC MANAGEMENT	3
MARK 3321 PRINCIPLES OF MARKETING	3
OPMA 3306 OPERATIONS MANAGEMENT	3

Professional Courses - Advanced Information Systems (27 hours)

INSY 3300	INTRODUCTION TO PROGRAMMING	3
INSY 3303	COMPUTER NETWORKS AND DISTRIBUTED COMPUTING	3
INSY 3304	DATABASE MANAGEMENT SYSTEMS	3
INSY 3305	INFORMATION SYSTEMS ANALYSIS AND DESIGN	3
INSY 4305	ADVANCED APPLICATION DEVELOPMENT	3
INSY 4306	ADVANCED SYSTEMS DEVELOPMENT	3
INSY 4325	ENTERPRISE SYSTEMS MANAGEMENT	3
Advanced Information Systems Electives (INSY 33xx or 43xx, INSY 3323 will not apply)		6
Advanced Business Electives (6 hours)		
Advanced accounting, business, economics, finance, management, marketing, operations and supply chain management, or real estate. No INSY will apply.		6
Advanced Business Elective or Non-Business Elective (3 hours)		3
Total Hours		120

Suggested Course Sequence

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15
Second Year			
First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14
Third Year			
First Semester	Hours	Second Semester	Hours
INSY 3300		3 INSY 3304	3
INSY 3303		3 INSY 4305	3
BLAW 3310		3 BCOM 3360	3
FINA 3313		3 MARK 3321	3
MANA 3318		3 Advanced Business Elective	3
		15	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
INSY 3305		3 INSY 4306	3
Advanced INSY Elective		3 INSY 4325	3
Advanced INSY Elective		3 MANA 4322	3
BSTAT 3321		3 OPMA 3306	3
Advanced Business Elective		3 Advanced Business or Non-Business Elective	3
		15	15
Total Hours: 120			

Requirements for a Bachelor of Business Administration in Operations and Supply Chain Management

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)

General Core Requirements (p. 50) 42

Communication (minimum 6 hours required) 6

ENGL 1301 RHETORIC AND COMPOSITION I

ENGL 1302 RHETORIC AND COMPOSITION II

Mathematics (minimum 6 hours required) 6

MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS

MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS

Life and Physical Sciences (minimum 6 hours required) 6

From Approved University General Core Requirement List

Language, Philosophy & Culture (minimum 3 hours required) 3

From Approved University General Core Requirement List

Creative Arts (minimum 3 hours required) 3

From Approved University General Core Requirement List

US History (minimum 6 hours required) 6

HIST 1301 HISTORY OF THE UNITED STATES TO 1865

HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT

Government/Political Science (minimum 6 hours required) 6

POLS 2311 GOVERNMENT OF THE UNITED STATES

POLS 2312 STATE AND LOCAL GOVERNMENT

Social & Behavioral Sciences (minimum 3 hours required) 3

Satisfied by completion of ECON 2305 in the Business Core.

Foundational Component Area (minimum 3 hours required) 3

Satisfied by completion of ECON 2306 in the Business Core.

Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours) 3

Professional Course Requirements - Business Core (39 hours)

MANA 1301 BUSINESS IN A GLOBAL ENVIRONMENT 3

ACCT 2301 PRINCIPLES OF ACCOUNTING I 3

ACCT 2302 PRINCIPLES OF ACCOUNTING II 3

BSTAT 2305 INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS 3

ECON 2305 satisfies the Social & Behavioral Science

ECON 2306 satisfies the Foundational Component

INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING 3

BCOM 3360 EFFECTIVE BUSINESS COMMUNICATION 3

BLAW 3310 LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS 3

BSTAT 3321 INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS 3

FINA 3313 BUSINESS FINANCE 3

MANA 3318 MANAGING ORGANIZATIONAL BEHAVIOR 3

MANA 4322 STRATEGIC MANAGEMENT 3

MARK 3321 PRINCIPLES OF MARKETING 3

OPMA 3306 OPERATIONS MANAGEMENT 3

Professional Course Requirements - Advanced Operations and Supply Chain Management (15 - 18 hours)

OPMA 4302 SUPPLY CHAIN LOGISTICS 3

OPMA 4303 INTRODUCTION TO MANAGEMENT SCIENCES 3

OPMA 4312 PURCHASING MANAGEMENT 3

OPMA 4309 GLOBAL SUPPLY CHAIN MANAGEMENT 3

Advanced Operations and Supply Chain Management Electives (OPMA 33xx or 43xx) 3

Advanced Business Courses and Electives (18 hours)

Advanced Accounting Elective (ACCT 33xx or 43xx) 3

Advanced accounting, business, economics, finance, information systems, management, marketing, or real estate. No OPMA will apply. 9

Advanced Operations Supply Chain Management or Advanced Business Elective (33xx-44xx) 3

BSTAT 3322 ADVANCED STATISTICS FOR BUSINESS ANALYTICS 3

Advanced Business Elective or Non-Business Elective. No OPMA (3 hours)**3**

Total Hours

120

Recommended Business Electives for Operations and Supply Chain Management Majors

ACCT 3309	ACCOUNTING FOR MANAGERS
or ACCT 4302	COST ANALYSIS AND DECISION MAKING
ACCT 4304	MANAGEMENT PLANNING AND CONTROL
ECON 3310	MICROECONOMICS
FINA 4320	CAPITAL BUDGETING
MANA 3320	HUMAN RESOURCE MANAGEMENT
MANA 4320	EMPLOYMENT LAW
MARK 4303	RETAIL MARKETING

Suggested Course Sequence**First Year**

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
OPMA 3306		3 OPMA 4302	3
BSTAT 3321		3 OPMA 4303	3
MANA 3318		3 FINA 3313	3
Advanced Accounting Elective		3 MARK 3321	3
Advanced Business Elective		3 Advanced Business Elective	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
OPMA 4312		3 OPMA 4309	3
BSTAT 3322		3 Advanced Operations Management Elective	3
BLAW 3310		3 MANA 4322	3
BCOM 3360		3 Advanced Operations Management or Advanced Business Elective	3
Advanced Business Elective		3 Advanced Business or Non-Business Elective	3
		15	15

Total Hours: 120

Minors

The College of Business:

- Requires half of the course work for a minor in business be completed in residence at UT Arlington. For an 18-hour minor requirement, this would require a minimum of 9 hours of business course work at UT Arlington.

- Requires a grade of C or better in all minor requirement courses, unless a different grade is designated below.
- Will not use vocational and technical courses (including WECM courses) toward any business minor.

Business Analytics

BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS ^{1,2}	3
INSY 3300	INTRODUCTION TO PROGRAMMING ^{1,2}	3
BANA 3308	INTRODUCTION TO BUSINESS ANALYTICS ¹	3
BANA 3309	DATA VISUALIZATION AND BUSINESS INTELLIGENCE ¹	3
BANA 4308	ADVANCED DATA SCIENCE ¹	3
BANA 4311	ETHICAL AND SOCIAL ISSUES IN DATA SCIENCE ¹	3
Total Hours		18

Information Systems

INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
INSY 3300	INTRODUCTION TO PROGRAMMING ¹	3
INSY 3304	DATABASE MANAGEMENT SYSTEMS ¹	3
INSY 3305	INFORMATION SYSTEMS ANALYSIS AND DESIGN ¹	3
INSY 33xx or 43xx ¹		3
INSY 33xx or 43xx ¹		3
Total Hours		18

¹ Mandatory Prerequisites: Prerequisites MUST be met before enrollment in the course. A student should consider this when selecting courses to satisfy the minor requirement and when registering. For a complete list of prerequisites see the Undergraduate Catalog or the Business Undergraduate Advising Office.

² Must earn a B or better in BSTAT 3321 (or equivalent) and INSY 3300.

For additional information or questions about the undergraduate certificate, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

Certificate in Business Analytics

Overview

The undergraduate Certificate in Business Analytics is designed to introduce data science and analytics knowledge and skills to College of Business majors. The certificate requires a total of twelve semester credit hours of course work, which can be completed in conjunction with an existing COB undergraduate degree.

Admission Requirements

Undergraduate students in good standing in the College of Business with a B in both BSTAT 3321 and INSY 3300.

Undergraduate Certificate Requirements

To receive the certificate, all courses must be completed at UT Arlington with at least a grade of C in each.

INSY 3300	INTRODUCTION TO PROGRAMMING ¹	3
BANA 3308	INTRODUCTION TO BUSINESS ANALYTICS	3
BANA 3309	DATA VISUALIZATION AND BUSINESS INTELLIGENCE	3
BANA 4311	ETHICAL AND SOCIAL ISSUES IN DATA SCIENCE	3
Total Hours		12

¹ Must earn a B in INSY 3300.

For additional information or questions about the undergraduate certificate, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

Management

The Management Department offers a BBA in Management, an MS in Human Resource Management, and a PhD in Business Administration with emphasis in Strategic Management, Organizational Behavior, Human Resource Management, and International Business. The department also offers courses that support the Master of Business Administration and Master of Health Care Administration degrees, as well as many of the College's other graduate programs.

The Department of Management is committed to providing a high quality educational experience for students to develop the knowledge and skills necessary for leadership roles in society. We are also committed to the creation and dissemination of new knowledge through active research agendas. Our dedicated and talented faculty regularly publish in some of the field's leading journals and serve on a number of editorial boards.

COURSES

LSHP 1101. INTRODUCTION TO LEADERSHIP. 1 Hour.

A continuation of the Goolsby BNSF Early Leader Freshman Interest Group that will strengthen students' skills that lead to success in business. Faculty and staff will assist in implementing individualized corrective measures. Technical writing will be taught and evaluated. Elective only; does not count as a part of the professional certification requirements. Pass-fail grades will be awarded. For entering freshmen or entering transfer students.

LSHP 2302. LEADERSHIP AND COMMUNICATION IN ORGANIZATIONS. 3 Hours.

This course focuses on the development of leadership and interpersonal business communication skills. The following topics are also addressed: verbal and nonverbal communication, dyadic and organizational communications, communication roles and relationships, small-group work, networking, and the diagnosis and improvement of organizational communications. Credit will not be granted for both MANA 2302 and LSHP 2302. Prerequisite: Admission to the BNSF Early Leaders Program of the Goolsby Leadership Academy.

LSHP 4191. STUDIES IN LEADERSHIP. 1 Hour.

Advanced studies, on an individual basis, in the various fields of leadership and management. Prerequisite: MANA 4322; LSHP 4313.

LSHP 4311. LEADER AS COMMUNICATOR. 3 Hours.

Helps students excel in written and oral communication skills. Assignments include writing short papers, making oral presentations, and learning to critique one another. This course provides a perspective on leadership in formal organizations with emphasis on communication, exercising influence, decision-making, and conflict management. Prerequisite: Admission to the Goolsby Leadership Academy.

LSHP 4312. LEADER ETHICS. 3 Hours.

Addresses rule-based, consequential, and virtue ethics by examining intentions, actions, and consequences of individual behavior. The course emphasizes the development of character and personal integrity. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

LSHP 4313. SENIOR EXECUTIVE LEADERSHIP. 3 Hours.

Course consists of a series of lectures by executives who provide insight into their own unique leadership skills and development. Prerequisite: Admission to the Goolsby Leadership Academy.

LSHP 4314. GLOBAL MARKET PLACE. 3 Hours.

Designed to assist Goolsby Fellows to be competent in an intercultural world. The heart of the course is aimed at appreciating human diversity and variance. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

LSHP 4315. EXECUTIVE INTERNSHIP. 3 Hours.

This internship experience places Goolsby Fellows in field settings with executives from the college's Advisory Council and other executive leaders in specialized areas for students. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

COURSES

MANA 1301. BUSINESS IN A GLOBAL ENVIRONMENT. 3 Hours.

This course provides a survey of economic systems, forms of business ownership, and considerations for running a business. Students will learn various aspects of business, management of organizations, leadership, and decision-making. Financial topics are introduced including accounting, money and banking, and securities markets. Also included are discussion of business challenges in the legal and regulatory environment business ethics, social responsibly and international business. Emphasis is the dynamic role of business in everyday life.

MANA 2302. COMMUNICATIONS IN ORGANIZATIONS. 3 Hours.

This course focuses on the development of interpersonal business communication skills in the following areas: group communication, written communication (collaborative writing and business letters, memorandums and reports), oral communication (business presentation, meetings and interviews), and listening. The following topics are also addressed: verbal and nonverbal communication, dyadic and organizational communications, communication roles and relationships, small-group communication, communication networks, and the diagnosis and improvement of organizational communications. MANA 2302 will satisfy the cultural and social studies requirement in the College of Business Administration.

MANA 3318. MANAGING ORGANIZATIONAL BEHAVIOR. 3 Hours.

This course is an introduction to the factors that influence individual and group behavior in organizations. Emphasizing findings from the field of organizational behavior, topics covered include: individual differences and diversity, social information processing, work attitudes, stress, work motivation, power and influence, negotiation, teams, leadership, and organizational research. Prerequisite: 30 credit hours.

MANA 3319. CONTEMPORARY MANAGERIAL CHALLENGES. 3 Hours.

This course will provide students the opportunity to evaluate and provide solutions for some of the most challenging managerial issues facing organizations today. Students will engage in discussion, analyze cases, conduct verbal and written presentations, and participate in other experiential activities to explore topics that help organizations effectively manage people to meet these challenges. Emphasis on developing applied skills required in contemporary organizations. Prerequisite: 60 credit hours.

MANA 3320. HUMAN RESOURCE MANAGEMENT. 3 Hours.

This course is a survey of the human resource management function in organizations. Topics include HR planning, job design, recruitment, selection, training, compensation, performance appraisal, and employee relations. The course focuses on how these practices can be crafted to help support business strategy and develop competitive advantage. Prerequisite: 60 credit hours.

MANA 3321. NONPROFIT AND VOLUNTEER MANAGEMENT. 3 Hours.

This course focuses on leadership and management of nonprofit staff and volunteers. Nonprofit and philanthropic organizations have unique challenges in strategic staffing and stakeholder management. This course addresses topics related to selection, motivation, and retention of volunteers and staff including development officers. Prerequisite: 30 credit hours.

MANA 3325. ENTREPRENEURSHIP: THE NEW VENTURE CREATION PROCESS. 3 Hours.

This course provides an introduction to the principles of entrepreneurship. Topics include the role of the entrepreneur, self-analysis of entrepreneurship readiness, opportunity recognition, market research and product development activities, legal issues, sources of capital, budgeting, and cash flow. Upon completion, students should have an understanding of the entrepreneurial process and issues faced by entrepreneurs. Prerequisite: 60 credit hours.

MANA 4191. STUDIES IN MANAGEMENT. 1 Hour.

Advanced studies, on an individual basis, in the various fields of management. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

MANA 4291. STUDIES IN MANAGEMENT. 2 Hours.

Advanced studies, on an individual basis, in the various fields of management. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

MANA 4320. EMPLOYMENT LAW. 3 Hours.

An introduction to employment law and labor relations for managers and human resource professionals. Topics include: the nature of the employment relationship, fair labor standards, workplace health and safety, collective bargaining, equal employment opportunity and unlawful discrimination, sexual harassment, and workplace privacy. Prerequisite: 60 credit hours.

MANA 4321. INTERNATIONAL MANAGEMENT. 3 Hours.

With greater globalization of economies and industries, managers are being increasingly challenged to manage organizations within a global context. This course seeks to provide students with the skills, knowledge and sensitivity required to be successful managers in organizations and organizational units within a multinational environment. Topics covered include the analysis of environmental forces, the characteristics of international strategies and the importance of organizational design and strategic control in the management of multinational enterprises. Prerequisite: 60 credit hours.

MANA 4322. STRATEGIC MANAGEMENT. 3 Hours.

An integrative learning experience that focuses on the role of top management in integrating an organization's internal functional activities and external environmental forces. Emphasis is placed on defining economic, technological, ethical, political, and social factors affecting an organization and their consideration in setting goal, strategies, and operating policies. This course serves as the capstone offering for the business major. Prerequisite: ACCT 2301 and ACCT 2302, BUSA/STAT/BSTAT 3321, ECON 2305 and ECON 2306, FINA 3313, MANA 3318, and MARK 3321. One of the following junior level courses may be taken concurrently: BSTAT 3321, FINA 3313, MANA 3318 or MARK 3321.

MANA 4325. LEADERSHIP IN ORGANIZATIONS. 3 Hours.

This course provides a managerial perspective on leadership in formal organizations. Emphasis is placed on team-building, exercising influence, decision-making, and conflict management. Prerequisite: MANA 3318.

MANA 4326. DIVERSITY IN ORGANIZATIONS. 3 Hours.

This course examines the implications of employee diversity in organizations, an issue of increasing importance. It includes study of the changing demographics of workers, including multiple demographic groups and areas of difference important to organizational treatment and outcomes. This course examines research on treatment, access, and customer discrimination. Legislation related to diversity is also reviewed. This course also provides suggestions for individuals and organizations to increase opportunities and outcomes for workers of all backgrounds. Offered as MANA 4326, AAST 4326 and WOMS 4326; credit will be granted in only one department. Prerequisite: Junior standing.

MANA 4328. HUMAN RESOURCE STAFFING AND PERFORMANCE MANAGEMENT. 3 Hours.

Covers the areas of employee selection and performance management systems. Topics include: recruitment strategies, methods of selection, development and validation of selection and employee appraisal instruments, and implementation of performance management processes. Prerequisite: MANA 3318 and MANA 3320.

MANA 4329. DISABILITY & WORK. 3 Hours.

Explores the complex relationship between disability and work within the United States from a current and historical perspective. Topics include study of the Americans with Disabilities Act; research on the diversity, population, and changes in proportions of people with disabilities; employment rates and experiences of people with disabilities; attitudes and perspectives surrounding and affecting the employment opportunities and experiences of people with disabilities; and ways to provide inclusive, non-discriminatory workplaces. Offered as MANA 4329 and DS 4329; credit will only be granted once. Prerequisite: 60 hours or MANA 4326 or Disability Studies permission.

MANA 4330. TEAM MANAGEMENT. 3 Hours.

This course examines the critical input, process and outcomes variables in the design of and maintenance of highly effective work teams. Topics include: team composition, team norms, team decision-making strategies, intra-team and inter-team conflict, team building, management of effective work teams, and team-based organizational structures. Prerequisite: MANA 3318.

MANA 4331. SEMINAR IN MANAGEMENT. 3 Hours.

Readings and discussion of special topics in management. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

MANA 4333. MANAGEMENT OF TECHNOLOGICAL INNOVATION. 3 Hours.

Waves of innovations are disrupting nearly every sphere of modern life. This course helps you understand and experience just how creative entrepreneurs in either start-up or corporate environments do it. Working with others, using cutting-edge case studies, experiential exercises, and field research, you will consider how innovations across a broad range of emerging technologies meet the market, financial, and environmental demands of a diverse set of current and future stakeholders. Prerequisite: 60 credit hours.

MANA 4338. DIRECTED STUDIES IN ENTREPRENEURSHIP. 3 Hours.

The subject matter of this course will vary from semester to semester, but will not duplicate existing entrepreneurship courses. Prerequisite: MANA 3325 or with permission of the instructor.

MANA 4339. PITCHING THE ENTREPRENEURIAL IDEA. 3 Hours.

The course is designed to assist students in developing high quality business ideas, plans and pitches. The course also seeks to provide students with the resources, not only to develop comprehensive, complete and concise business strategies, but to assist students in actually launching their new businesses. Students are expected to participate in the Maverick Entrepreneurship Program and Award (MavPitch) and to compete for a share of cash prizes when offered. Prerequisite: MANA 3325 or with permission of the instructor.

MANA 4340. BUSINESS AND SOCIETY. 3 Hours.

Explores the roles of business organizations and their relationships with individuals, governments, and other businesses from the perspectives of ethics, ideology, and corporate responsibility. Prerequisite: 60 credit hours.

MANA 4341. NEGOTIATIONS AND CONFLICT RESOLUTION. 3 Hours.

This course is designed to better understand the nature of conflict and its resolution through persuasion, collaboration, and negotiation. Students will learn theories of interpersonal and organizational conflict and its resolution as applied to personal, corporate, historical, and political contexts. Students will assess their own styles, skills, and values, and develop techniques to better resolve disputes, achieve objectives, and exert influence. Prerequisite: MANA 3318.

MANA 4342. COMPENSATION AND BENEFITS MANAGEMENT. 3 Hours.

This course is an introduction to compensation and benefits administration. Attention will be given to the means by which compensation equity is achieved in organizations. Topics covered include job analysis and design, job evaluation, development, the use of wage and salary surveys, and benefit policies and practices. The benefits part of the course will include a discussion of public and private benefit programs and pension plans. Prerequisite: MANA 3318 and MANA 3320.

MANA 4343. TRAINING AND DEVELOPMENT. 3 Hours.

This course provides students with a practical approach to training and development in contemporary business environments. Components of training design, including needs assessment, objectives, and evaluation and control of the training and development functions. Prerequisite: MANA 3318 or MANA 3319.

MANA 4345. SOCIAL ENTREPRENEURSHIP. 3 Hours.

Social entrepreneurship has its roots in the broader field of entrepreneurship, but differs in the fact that social entrepreneurs have a primary goal of creating social impact rather than personal or shareholder wealth. This course is intended for students from any discipline who have an interest in making a difference in communities locally and throughout the world. The course will introduce entrepreneurial concepts including social enterprise, impact investing/SROI, social marketing/movements, behavioral economics, strategic CSR practices and legal formation. This course includes a self-directed project to address a societal problem using the disciplines taught in class. Prerequisite: 60 credit hours.

MANA 4391. STUDIES IN MANAGEMENT. 3 Hours.

Advanced studies, on an individual basis, in the various fields of management. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

MANA 4393. MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in management. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing, declared major in the College of Business, 2.5 GPA, and permission of undergraduate business advisor.

MANA 5182. INDEPENDENT STUDIES IN MANAGEMENT. 1 Hour.

Extensive analysis of a management topic.

MANA 5199. GRADUATE MANAGEMENT INTERNSHIP. 1 Hour.

Practical training in management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Admission to a College of Business graduate degree program, 9 graduate credit hours, and 3.0 GPA.

MANA 5299. GRADUATE MANAGEMENT INTERNSHIP. 2 Hours.

Practical training in management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Admission to a College of Business graduate degree program, 9 graduate credit hours, and 3.0 GPA.

MANA 5312. MANAGING THE ENTERPRISE. 3 Hours.

Basic exploration of organizations in their environments. The elementary tools of management, which include: organizational objectives, social responsibility and ethics, policies, plans, and decision making; the design of organizations and jobs; the production and technology aspects of organization; the elements of leadership, behavior, and communication; and the elements of control and performance evaluation.

MANA 5320. ORGANIZATIONAL BEHAVIOR. 3 Hours.

Systematic study of behavioral problems in the complex organization. Analyzes the interaction of environmental and internal factors and their effects upon organizational behavior. The course is placed within the context of the organization process.

MANA 5321. COMPLEX ORGANIZATIONS. 3 Hours.

Provides the foundation for an in-depth knowledge of several important theories of management and organization. Attention to study of organizations, organizational effectiveness, comparative analysis of organizations, and the organization and its environment. Relates empirical findings and theoretical hypotheses with applied management concepts. Prerequisite: MANA 5312.

MANA 5322. COMPENSATION & REWARD SYSTEMS. 3 Hours.

Management of compensation systems in business and other organizations; concepts models and practices related to wage and salary levels and structures; perceived equitable pay; individual performance appraisal, rewards and satisfaction; benefits and employee services.

MANA 5323. TRAINING AND DEVELOPMENT. 3 Hours.

Examines the components of training systems. Topics include assessing training needs and establishing objectives, developing training programs, selecting appropriate training techniques, and evaluating training outcomes.

MANA 5324. TEAM AND GROUP BEHAVIOR. 3 Hours.

A study in team and group dynamics, critical processes and practices. Topics include team composition and development, problem solving strategies and performance, conflict management, leadership process and work team strategies.

MANA 5325. LABOR AND EMPLOYEE RELATIONS. 3 Hours.

Examines union-management relations and considers the structure and functioning of the economic and social forces of importance at the policy level within both the firm and the union. Also considers non-union employee relationships.

MANA 5326. ORGANIZATION DEVELOPMENT AND CHANGE. 3 Hours.

Theories and applications associated with organization development and change with specific focus on improving organizational effectiveness. Topics include changing organizational culture with an understanding of ethical and value considerations, role of the organization development practitioner; processes associated with organization change, employee empowerment, developing high performance teams and high performing systems, and learning organizations.

MANA 5327. HUMAN RESOURCE LAW. 3 Hours.

Coverage of statutory and case law in the employment setting. Emphasis placed on employment discrimination, compensation and benefits law; government agencies which administer and enforce employment laws are also reviewed.

MANA 5329. HR METRICS AND ANALYTICS. 3 Hours.

Research design, data collection, and hypothesis testing applied to human resource management. The class focuses on basic statistics, quantitative decision-making, and data presentation skills using Human Resource metrics and analytics examples.

MANA 5330. NEGOTIATIONS & CONFLICT MANAGEMENT. 3 Hours.

This course focuses on developing students negotiating skills in a variety of contexts. Throughout the course students will diagnose negotiation situations, strategize and plan for negotiations, and learn how to engage in more effective negotiations. The course also focuses on developing interpersonal conflict resolution skills and strategies.

MANA 5331. MANAGEMENT OF MULTINATIONAL ENTERPRISES. 3 Hours.

Focuses on the international dimensions of strategy and organization and provides a framework for formulating strategies in an increasingly complex global economy. The course seeks to provide students with an understanding of the cultural, political, competitive, technological, legal, and demographic environments in which multinational firms operate. It then examines the nature of global competition by exploring the characteristics of global industries and strategies that have been successful in an international context. Also covered are issues related to organizational design and strategic control in the management of multinational enterprises.

MANA 5332. MANAGING DIVERSITY IN ORGANIZATIONS. 3 Hours.

Examines implications of employee diversity in organizations, including human resource and organizational behavior issues related to aspects of diversity. Includes study of the changing demographics of workers, effects of diversity on organizational performance, and ways of effectively managing in organizations having applicants, employees, and customers from diverse backgrounds. Research on diversity issues is examined, as are process of stereotyping and myths and misperceptions about diversity issues. Legislation related to diversity is also reviewed.

MANA 5333. MANAGEMENT OF TECHNOLOGICAL INNOVATION. 3 Hours.

Waves of innovations are disrupting nearly every sphere of modern life. This course helps you understand and experience just how creative entrepreneurs in either start-up or corporate environments do it. Working with others, using cutting-edge case studies, experiential exercises, and field research, you will consider how innovations across a broad range of emerging technologies meet the market, financial, and environmental demands of a diverse set of current and future stakeholders. You will have an opportunity to put learning into practice.

MANA 5334. ORGANIZATION CONSULTING & RESEARCH. 3 Hours.

Explores internal and external consulting to business organizations. Emphasis on the management of the change process through the stages of data gathering, diagnosis, analysis, and recommendation. Prerequisite: 3 graduate credits in MANA or department permission.

MANA 5336. STRATEGIC MANAGEMENT. 3 Hours.

Strategic management uses a general management perspective in addressing issues related to the formulation and implementation of corporate and business level strategy. The course involves developing the ability to identify issues, evaluate strategic options and understand the organizational process by which strategies get formed and executed. It builds on the knowledge gained in functional area courses and uses case studies and projects to improve students' analytical and decision-making skills. Prerequisite: Must be taken in last semester or with permission of the Graduate Advisor.

MANA 5337. ETHICS AND THE BUSINESS ENVIRONMENT. 3 Hours.

Uses a strategic perspective to examine ethics, government and the world economy, and how they may affect relationships between business organizations and other institutions of our society. Particular attention is paid to issues such as leadership, technology, and internationalization concordant with the breadth requirements of the UTA MBA plus public policy concerns involving the natural environment, gender and minority issues. Course activities will include class discussion and analysis of societal dilemmas, contemporary cases and current news stories.

MANA 5338. CAREERS & MANAGING IN A CHANGING ENVIRONMENT. 3 Hours.

Presents practical and theoretical perspectives on careers and managing in a changing work environment. Includes self assessment, career plan development, informational interviews, readings and exercises designed to lead to a better understanding of managing self and others.

MANA 5339. ENTREPRENEURSHIP. 3 Hours.

New venture opportunity assessment, formation, and development in startup and corporate environments. Students will understand the role of entrepreneurship in the economy and the attributes of entrepreneurial behavior. Students will learn how to assess the market and financial feasibility of a new venture as well as understand how to use equity and debt financing, how to select between starting up, franchising, or buying a business, how to lead the growing company, and how to address family business dilemmas. The cornerstone of the course will be a feasibility assessment project that leads to a business plan for a new venture of the student's choice. For the project, students can explore either an original new venture idea, an already existing venture concept (for example, a franchise), or a new business opportunity in need of assessment for an existing firm or their current employer.

MANA 5340. STRATEGIC HUMAN RESOURCE MANAGEMENT. 3 Hours.

Emphasizes strategic perspective of modern human resource management theory and practice. Topics include human resource planning, staffing, training and development, compensation, performance appraisal, and labor and employee relations.

MANA 5341. STAFFING AND PERFORMANCE MANAGEMENT. 3 Hours.

This course covers employee recruitment, selection and performance appraisal. Topics include: recruitment strategies and methods, methods of employee selection, performance planning, development and validation of appraisal instruments, implementation and conduct of performance appraisal, and performance feedback and counseling.

MANA 5342. PREVENTIVE STRESS MANAGEMENT. 3 Hours.

Examines the organizational demands that cause stress. Identifies the psychophysiology of the stress response and the individual/organizational costs of distress. Emphasis is placed on the principles and methods of preventive stress management, such as social support, exercise, and the relaxation response.

MANA 5344. EVIDENCE-BASED MANAGEMENT. 3 Hours.

Evidence-based management is the process of translating principles and findings based on best evidence into organizational practice. This class covers the organizational and interpersonal sides of data and information. You will develop the skills and knowledge necessary to use data and analytics to inform management practice and make better decisions. Through case examples and classroom discussion you will learn skills in internal consulting, issue selling, data interpretation and presentation. While the focus is on the practical application of business intelligence, the skills learned in this course will allow all managers to make evidence based decisions through data collection, analysis and presentation.

MANA 5345. SOCIAL ENTREPRENEURSHIP. 3 Hours.

Social entrepreneurship has its roots in the broader field of entrepreneurship, but differs in the fact that social entrepreneurs have a primary goal of creating social impact rather than personal or shareholder wealth. This course is intended for students from any discipline who have an interest in making a difference in communities locally and throughout the world. The course will introduce entrepreneurial concepts including social enterprise, impact investing/SROI, social marketing/movements, behavioral economics, strategic CSR practices and legal formation. This course includes a self-directed project to address a societal problem using the disciplines taught in class.

MANA 5348. HUMAN RESOURCE BUSINESS STRATEGY. 3 Hours.

Designed with the human resource professional in mind, this course analyzes the role of human resource management in developing and executing business strategy. Central to this course is an examination of how contemporary organizations use human resource management to enhance organizational capabilities and achieve strategic objectives.

MANA 5350. EFFECTIVE LEADERSHIP. 3 Hours.

This graduate course uses self-assessment testing with feedback, case studies, selected readings, and guest lectures from successful leaders and top executive coaches to create a learning laboratory for mature and motivated graduate students of leadership.

MANA 5360. LEADERSHIP AND TEAMS. 3 Hours.

One of the most difficult challenges that organizations face is acquiring developing, and retaining high talent human capital. This course is concerned with effective leadership, team-based work systems, and talent management for building high performance organizations.

MANA 5382. INDEPENDENT STUDIES IN MANAGEMENT. 3 Hours.

Extensive analysis of a management topic.

MANA 5392. SELECTED TOPICS IN MANAGEMENT. 3 Hours.

In-depth study of selected topics in management. May be repeated when topics vary.

MANA 5398. THESIS. 3 Hours.

Thesis MANA 5398 graded "R" (Research) or "P" (Pass) or "F" (Fail) only. Prerequisite: Permission of Graduate Advisor required.

MANA 5399. GRADUATE MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Admission to a College of Business graduate degree program, 9 graduate credit hours, and 3.0 GPA.

MANA 5698. THESIS. 6 Hours.

Thesis MANA 5698 graded "R" (Research) or "P" (Pass) or "F" (Fail) only. Prerequisite: Permission of Graduate Advisor required.

MANA 6182. INDEPENDENT STUDIES IN MANAGEMENT. 1 Hour.

Extensive analysis of a management topic.

MANA 6282. INDEPENDENT STUDIES IN MANAGEMENT. 2 Hours.

Extensive analysis of a management topic.

MANA 6318. SEMINAR IN ORGANIZATIONAL THEORY. 3 Hours.

Advanced study in the theory and research of organizations.

MANA 6328. SEMINAR IN BUSINESS POLICY. 3 Hours.

Advanced study in the theory and research bases of business policy and strategic management.

MANA 6329. ADVANCED RESEARCH METHODS. 3 Hours.

In-depth coverage of selected topics in the design of research and analysis of data; topics include philosophy of science, theory of measurement, complex experimental and quasi-experimental designs.

MANA 6338. SEMINAR IN ORGANIZATIONAL BEHAVIOR. 3 Hours.

Advanced study in the theory and research of organizational behavior.

MANA 6348. SEMINAR IN HUMAN RESOURCE MANAGEMENT. 3 Hours.

Advanced study in employee selection, performance appraisal, compensation, training and development, human resource policy and strategy, and other areas of human resource management.

MANA 6382. INDEPENDENT STUDIES IN MANAGEMENT. 3 Hours.

Extensive analysis of a management topic.

MANA 6390. ADVANCED TOPICS IN MANAGEMENT. 3 Hours.

In-depth study of selected topics in management. May be repeated when topics vary.

MANA 6392. RESEARCH IN ADMINISTRATION. 3 Hours.

Independent research under supervision of a faculty member.

Management - Graduate Programs

Objective

The Master of Science degree program in Human Resource Management combines the experience of industry leaders with the expertise of renowned scholars to offer entry-level and mid-career human resource professionals with the tools they need to enhance their professional practice and career trajectories. The graduate-level professional degree program offers a responsive, research-based, and practice-oriented curriculum that combines a breadth of study in business management strategy with deep study in the functional areas of human resource management. The coursework in this content-rich curriculum is taught by distinguished scholars and industry-leading professionals who lead students in bridging the gap between cutting-edge management theory and the real-world demands of professional human resource practice. The program prepares students for human resource management careers in business and industrial firms, as well as government and nonprofit organizations.

Accreditation

The Master of Science in Human Resource Management is accredited by the AACSB-International (Association to Advance Collegiate Schools of Business-International).

The Master of Science in Human Resource Management curriculum aligns with the Society for Human Resource Management's recommended requirements for Human Resource degree programs.

The Master of Science in Human Resources Management curriculum is certified to meet the guidelines for the HRCI re-accreditation.

Admission Requirements to the Master of Science in Human Resource Management

Admission to the Master of Science in Human Resource Management (MSHRM) program is based upon the completion of the general admission requirements of Graduate Admissions. For admission into the MSHRM program an acceptable score on the Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) and acceptable academic undergraduate performance are required. The GMAT is strongly preferred.

Students for whom English is not their native language must also take the Test of English as a Foreign Language Internet Based Test (TOEFL iBT), or International English Language Testing System (IELTS).

A standardized test score (GMAT or GRE) will not be used as the sole criterion or the primary criterion for determining an applicant's admission to the MSHRM program. Specifically, multiple criteria are used to make admission decisions. Unconditional acceptance is based on consideration of all the information listed below and the decision to deny admission is not based on any single criterion.

Applicants are encouraged to submit with the application a résumé that highlights professional and personal accomplishments, linguistic abilities, computer expertise and HR experience.

Along with the grade point average and GMAT or GRE scores, admission criteria include the following:

1. An undergraduate grade point average of 3.00 on a 4.0 scale, as calculated by Graduate Admissions, is typical of a successful candidate. This will be integrated into a formula or index that multiplies approximately the last 60 hours of the undergraduate GPA by 200 and adds the resulting value to the GMAT Score. An index score greater than 1100 is typical of a successful candidate.
2. GMAT sub scores (verbal and quantitative) are also considered in the admission decision. A GMAT total score greater than 500 is typical of a successful candidate.
3. A GRE quantitative percentile greater than 50% and Verbal percentile greater than 50% is typical of a successful applicant.
4. An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies as defined in the TOEFL and IELTS Test Score Minimums section under Admissions Requirements and Procedures in the Graduate Catalog.
5. Grades in specified undergraduate business and non-business courses (math, accounting, economics, statistics, for example)
6. Educational objectives and quality of written expression of the 200 word application essay.
7. Letters of recommendation from three persons familiar with the applicant's academic background and/or work experience who can assess the applicant's potential success in graduate school.
8. General and specific program accreditation status of degree-granting institution.
9. Professional work experience.
10. Professional certification or licensure.

Unconditional Admission

For unconditional admission, the applicant's composite total from the index must be 1100 or higher.

Students who are unconditionally admitted, have a minimum undergraduate grade point average of 3.00 as calculated by Graduate Admissions (or 3.00 at the graduate level), and enroll for a minimum of six semester credit hours will be eligible for available fellowship and/or scholarship support. A standardized test score (GMAT) will not be used as the sole criterion or the primary criterion for determining fellowship and/or scholarship eligibility.

Probationary Admission

Applicants with demonstrated English proficiency and either 1) an undergraduate grade point average of 3.00 on a 4.0 scale as calculated by Graduate Admissions, or 2) GMAT or GRE quantitative and verbal sub-scores at or above the 30th percentile respectively may be considered for probationary admission. Probationary admission requires the student to maintain a 3.00 grade point average for the first two semesters of enrollment.

Provisional, Deferred and Denied Admission

A provisional decision to admit may be granted when the applicant meets criteria for unconditional or probationary status but one or more applicant credentials are incomplete. A deferred decision may be made when an applicant's file is not sufficiently complete to make an admit or deny decision.

Degree Requirements

The program requires 36 graduate semester hours as described below.

Most students complete the non-thesis track toward the degree. For students who are accepted into the thesis track, six hours of thesis (taken in the final semester) will involve working closely with one or more members of the graduate faculty from the Department of Management on a research project in a specialized area of interest in human resource management.

The curriculum is as follows:

Required Advanced Courses in Human Resource Management		24
MANA 5322	COMPENSATION & REWARD SYSTEMS	
MANA 5323	TRAINING AND DEVELOPMENT	
MANA 5327	HUMAN RESOURCE LAW	
MANA 5329	HR METRICS AND ANALYTICS	
MANA 5332	MANAGING DIVERSITY IN ORGANIZATIONS	
MANA 5334	ORGANIZATION CONSULTING & RESEARCH	
MANA 5341	STAFFING AND PERFORMANCE MANAGEMENT	
MANA 5348	HUMAN RESOURCE BUSINESS STRATEGY	
Required Elective Courses: Nine graduate semester hours as agreed with the program's graduate advisor.		9
Required Capstone Course		3
MANA 5336	STRATEGIC MANAGEMENT	
Total Hours		36

Transfer Credit

A maximum of 9 hours of advanced coursework may be transferred in from other AACSB-accredited schools if approved by program advisor. Transfer of graduate classes from other universities will be considered on a case-by-case basis.

Management - Undergraduate Programs

OVERVIEW

Management focuses on general management, entrepreneurship, human resources and international management. Programs strive to provide students with the planning, problem-solving, critical thinking, and interpersonal skills needed to be successful in their roles as managers and leaders in business. The College of Business provides several options for individuals pursuing an undergraduate degree in Management.

The BBA in Management has three optional tracks: Human Resource Management, Entrepreneurship/Small Business, and International Management.

In addition to the BBA, the department also offers two undergraduate certificates: Certificate in Entrepreneurship and Certificate in Managing Diversity and Inclusion in Organizations.

Requirements for a Bachelor of Business Administration Degree in Management

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)

General Core Requirements	45
Communication (minimum 6 hours required)	6
ENGL 1301 RHETORIC AND COMPOSITION I	
ENGL 1302 RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)	6
MATH 1315 COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316 MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)	6
From Approved University General Core Requirement List	
Language, Philosophy & Culture (minimum 3 hours required)	3
From Approved University General Core Requirement List	
Creative Arts (minimum 3 hours required)	3
From Approved University General Core Requirement List	
US History (minimum 6 hours required)	6
HIST 1301 HISTORY OF THE UNITED STATES TO 1865	
HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)	6
POLS 2311 GOVERNMENT OF THE UNITED STATES	
POLS 2312 STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)	3
Satisfied by completion of ECON 2305 in the Business Core	
Foundational Component Area (minimum 3 hours required)	3
Satisfied by completion of ECON 2306 in the Business Core.	
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours)	3

Professional Course Requirements - Business Core (39 hours)

MANA 1301 BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301 PRINCIPLES OF ACCOUNTING I	3
ACCT 2302 PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305 INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 PRINCIPLES OF MACROECONOMICS (satisfies the Social & Behavioral Science)	
ECON 2306 PRINCIPLES OF MICROECONOMICS (satisfies the Foundational Component)	
INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360 EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310 LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321 INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313 BUSINESS FINANCE	3
MANA 3318 MANAGING ORGANIZATIONAL BEHAVIOR	3

MANA 4322	STRATEGIC MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
OPMA 3306	OPERATIONS MANAGEMENT	3
Professional Course Requirements - Management (12-15 hours)		
MANA 3319	CONTEMPORARY MANAGERIAL CHALLENGES	3
MANA 3320	HUMAN RESOURCE MANAGEMENT	3
Advanced Management Electives (MANA 33xx or 43xx)		6
Advanced Business Courses and Electives (24 hours)		
Advanced Accounting Elective (ACCT 33xx or 43xx)		3
Advanced accounting, business, economics, finance, information systems, marketing, operations management, or real estate. No MANA courses apply.		15
Advanced Economics Elective (ECON 33xx or 43xx)		3
Advanced Management or Advanced Business Elective		3
Total Hours		120

Double Major

A Double Major option for the Bachelor of Business Administration (BBA) in Management is available. Management undergraduates who pursue the following Double Major program will not have the option of participating in the Fast Track Program in Business.

Completion of the Double Major is attained by including all of the following courses in the BBA Management plan and completing with grades of C or better in each of the double major courses listed below:

BBA IN MANAGEMENT AND MARKETING

MARK 3324	CONSUMER BEHAVIOR
MARK 4311	MARKETING RESEARCH
MARK 4322	ADVANCED MARKETING MANAGEMENT AND STRATEGY
Advanced Marketing Elective (MARK 33xx or 43xx)	
Advanced Marketing Elective (MARK 33xx or 43xx)	
Advanced Marketing Elective (MARK 33xx or 43xx)	

First Year

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 or 1131		1	
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
BLAW 3310		3 MANA 3319	3
FINA 3313		3 MANA 3320	3
MANA 3318		3 BCOM 3360	3
MARK 3321		3 BSTAT 3321	3
Advanced Economics Elective		3 Advanced Business Elective	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
Advanced Management Elective		3 Advanced Management Elective	3
OPMA 3306		3 MANA 4322	3
Advanced Business Elective		3 Advanced Accounting Elective	3
Advanced Business Elective		3 Advanced Business Elective	3
Advanced Management or Advanced Business Elective		3 Advanced Business Elective	3
		15	15

Total Hours: 120

Optional Tracks for Management Majors

Management Track Options are suggestive; other course sets may be chosen for use by Management students.

HUMAN RESOURCES MANAGEMENT/ORGANIZATIONAL BEHAVIOR

Students are limited to 9 hours of management beyond the mandatory MANA 3318, MANA 3319, MANA 3320.

Recommended Advanced Management and Business Electives

MANA 4320	EMPLOYMENT LAW
MANA 4328	HUMAN RESOURCE STAFFING AND PERFORMANCE MANAGEMENT
MANA 4342	COMPENSATION AND BENEFITS MANAGEMENT
MANA 4343	TRAINING AND DEVELOPMENT

Additional Options

BLAW 3311	LAW I
ECON 4330	HUMAN RESOURCE ECONOMICS
MANA 4325	LEADERSHIP IN ORGANIZATIONS
MANA 4326	DIVERSITY IN ORGANIZATIONS
MANA 4330	TEAM MANAGEMENT
MANA 4340	BUSINESS AND SOCIETY
MANA 4341	NEGOTIATIONS AND CONFLICT RESOLUTION

INTERNATIONAL MANAGEMENT TRACK

See requirements for Bachelor of Business Administration Degree in International Business/Modern Language Option.

Students are limited to 9 hours of management beyond the mandatory MANA 3318, MANA 3319, MANA 3320.

Recommended Advanced Management and Business Electives

MANA 4321	INTERNATIONAL MANAGEMENT
FINA 4324	INTERNATIONAL CORPORATE FINANCE
MARK 4325	INTERNATIONAL MARKETING
BLAW 4310	BASIC INTERNATIONAL LAW FOR BUSINESS
ECON 4306	COMPARATIVE ECONOMIC SYSTEMS
ECON 4321	INTERNATIONAL TRADE
ECON 4322	INTERNATIONAL FINANCE

Additional Options

MANA 4325	LEADERSHIP IN ORGANIZATIONS
MANA 4326	DIVERSITY IN ORGANIZATIONS
MANA 4330	TEAM MANAGEMENT
MANA 4340	BUSINESS AND SOCIETY

ENTREPRENEURSHIP/SMALL BUSINESS

Students are limited to 9 hours of management beyond the mandatory MANA 3318, MANA 3319, MANA 3320.

Recommended Advanced Management and Business Electives

MANA 3325	ENTREPRENEURSHIP: THE NEW VENTURE CREATION PROCESS
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MANA 4338	DIRECTED STUDIES IN ENTREPRENEURSHIP
MANA 4339	PITCHING THE ENTREPRENEURIAL IDEA
MANA 4341	NEGOTIATIONS AND CONFLICT RESOLUTION

Additional Options

MANA 4325	LEADERSHIP IN ORGANIZATIONS
MANA 4340	BUSINESS AND SOCIETY
MARK 4303	RETAIL MARKETING
OPMA 3308	OPERATIONS PLANNING AND CONTROL

GENERAL MANAGEMENT

Students are limited to 9 hours of management beyond the mandatory MANA 3318, MANA 3319, MANA 3320.

Recommended Advanced Management and Business Electives

MANA 4325	LEADERSHIP IN ORGANIZATIONS
MANA 4341	NEGOTIATIONS AND CONFLICT RESOLUTION

Additional Options

MANA 3325	ENTREPRENEURSHIP: THE NEW VENTURE CREATION PROCESS
MANA 4321	INTERNATIONAL MANAGEMENT
MANA 4326	DIVERSITY IN ORGANIZATIONS
MANA 4330	TEAM MANAGEMENT
MANA 4340	BUSINESS AND SOCIETY

Undergraduate Certificate in Entrepreneurship

The Certificate in Entrepreneurship provides students with skills and training in: identifying innovations and market opportunities, writing a business plan, obtaining funding, and launching a new company. The certificate enhances a student's general education, academic major and/or career preparation in innovation and entrepreneurship. All students will take a common course that will present the fundamentals of entrepreneurship. Two additional courses will be taken, based on the students' interests, drawn from a list of approved courses across academic disciplines. This certificate is designed for current UT Arlington students and can be earned as part of a degree program at both the undergraduate and graduate level. It can also be earned by non-degree seeking students as a stand-alone certificate.

The undergraduate certificate requires a total of nine semester credit hours of coursework, which can be completed in conjunction with an existing undergraduate degree in any field or independently as a special student.

Admission Requirements

Undergraduate students in good standing at UT Arlington.

For non-enrolled students (special, certificate only students):

- High school degree or GED, and
- 1100 on the SAT

Certificate Requirements

To receive the certificate, all courses must be completed at UT Arlington with a grade of B or higher.

MANA 3325	ENTREPRENEURSHIP: THE NEW VENTURE CREATION PROCESS	3
Select two from the following list reflecting appropriate area of study for a total of six hours		
ART 4382	ENTREPRENEURSHIP IN THE ARTS	3
ENGR 4302	ENGINEERING ENTREPRENEURSHIP	3
MANA 4333	MANAGEMENT OF TECHNOLOGICAL INNOVATION	3
MANA 4345	SOCIAL ENTREPRENEURSHIP	3
MANA 4338	DIRECTED STUDIES IN ENTREPRENEURSHIP	3
MANA 4339	PITCHING THE ENTREPRENEURIAL IDEA	3

For additional information or questions about the undergraduate certificate, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

Undergraduate Certificate in Managing Diversity and Inclusion in Organizations

The Managing Diversity and Inclusion in Organizations Undergraduate Certificate will provide students with an in-depth look at diversity in areas such as race, gender, sexual orientation, ethnicity, age, disability, and family status among individuals, organizations, and society from a business perspective. The certificate equips students with knowledge and skills related to developing and managing diverse applicants, employees, customers, and constituents. The certificate is established in response to a growing demand for awareness in all areas of diversity and its impact on individuals, organizations, and society. The certificate is available to business and non-business majors as well as non-degree seeking students as a stand-alone certificate.

Admission Requirements

- Undergraduate students in good standing (meeting a minimum cumulative GPA of 2.0) at UT Arlington
- Non-enrolled (special, stand-alone certificate) students must have gained admission to UT Arlington as a non-degree/non-enrolled seeking student

Certificate Requirements

The Managing Diversity and Inclusion in Organizations Certificate requires nine (9) credit hours, which can be completed in conjunction with an existing undergraduate degree in any field or independently by a non-degree seeking student. Students must complete the appropriate prerequisites before enrolling in program courses. All nine hours must be completed at UT Arlington with a 2.50 average GPA. A minimum of two B's and one C must be earned to reach the required 2.5 GPA in certificate coursework. A grade of D or F will not be accepted for any certificate courses.

All students will complete a common course that will present the foundation for the study of diversity in organizations, and two additional business electives based on their interest.

MANA 4326	DIVERSITY IN ORGANIZATIONS	3
Select two from the following list for a total of six hours		
ECON 4305	THE ECONOMICS OF DISCRIMINATION	3
MANA 4321	INTERNATIONAL MANAGEMENT	3
MANA 4329	DISABILITY & WORK	3
MARK 4325	INTERNATIONAL MARKETING	3
MARK 4335	MULTICULTURAL MARKETING	3

For additional information or questions about the undergraduate certificate, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

Marketing

Marketing is critically important to businesses. Top management realizes that a company must understand the marketplace and buyer needs and wants if it is to grow and compete effectively. Marketing centers on the customer and focuses on processes aimed at creating, delivering, and communicating value to customers.

The discipline of marketing will provide you with outstanding career opportunities in professional selling, marketing research, advertising, purchasing, distribution management, product development, wholesaling, and product management. The demand for marketing professionals continues to grow as today's organizations place greater emphasis on effective marketing as a means of achieving their goals.

Ever increasing worldwide competition, expanding global market, and accelerating technological advancements provide exciting business challenges that UTA's marketing curriculum is uniquely designed to address. With a diverse faculty experienced in both practical and theoretical applications, the marketing department at UTA provides insightful learning opportunities that will equip you with the knowledge to meet the challenges of the new economy.

COURSES

BCOM 3360. EFFECTIVE BUSINESS COMMUNICATION. 3 Hours.

Principles and practice of effective communication with business organizations. Students will be exposed to theories of persuasion, argumentation and advocacy. Techniques to achieve group compromise and conflict resolution are also emphasized. A business professionalism lab is required. The grade for this course requires the completion of both the lecture component and the professionalism lab. Prerequisite: 30 credit hours.

BCOM 4380. ADVANCED COMMUNICATIONS FOR BUSINESS. 3 Hours.

Students develop written and oral communication skills. Multiple individual professional writing projects will be produced and critiqued. Grammar, sentence structure, and word choice in the business setting will be developed. Students will deliver multiple oral presentations and learn their strategy, techniques, and tips for succinct communications. Non-verbal communication will be reviewed. Prerequisite: BCOM 3360.

BCOM 5175. BUSINESS COMMUNICATIONS. 1 Hour.

Course focuses on effective oral and written communication skills for business leaders. Discusses advanced techniques for improved business writing and presentation skills. Also stresses presentation media and computer graphics for reports and presentations.

BCOM 5375. ADVANCED BUSINESS COMMUNICATION THEORY & PRACTICE. 3 Hours.

Examines theories of effective oral and written communication for managers, including conflict resolution, emotional intelligence, and others. Discusses techniques for improved research, report writing and presentation. Integrates presentation media and computer graphics for reports and presentations.

COURSES

MARK 3321. PRINCIPLES OF MARKETING. 3 Hours.

Principles of marketing explores the theory and application of marketing concepts. The marketing variables of products, channels, prices, and promotion and how they relate to marketing decisions about assessing the marketing environment, segmentation, targeting, and positioning, new product introduction, managing brands, and social media marketing among others are discussed. Students learn these concepts through a mix of discussions, lectures, and assignments. Prerequisite: 30 credit hours.

MARK 3322. PROFESSIONAL SELLING. 3 Hours.

Presents sales principles and skills required by today's professional salesperson, with emphasis on the business-to-business selling environment. Students will enhance development of a variety of skills that will serve for a lifetime. These lifetime skills include the following: communication skills, critical thinking, building relationships with customers, and ethical decision making. Prerequisites: MARK 3321 with a grade of C or better.

MARK 3323. INTEGRATED MARKETING COMMUNICATION / ADVERTISING. 3 Hours.

A managerial approach to coordinating all promotional activities including advertising, direct marketing, sales promotion, personal selling, public relations/publicity, and internet marketing/social media, to produce a unified, market-focused message. Message development and media analysis/ placement are examined within the context of the role each promotional tool plays in marketing strategy development. Prerequisite: MARK 3321 with grade of C or better.

MARK 3324. CONSUMER BEHAVIOR. 3 Hours.

Examine how consumers decide and engage in the acquisition, consumption, and disposition of goods and services. In doing so, develop a better understanding of how a firm's marketing efforts can be optimally deployed to create value for consumers. Understand the role of consumer behavior in your life, business strategy, policy making, and society. Students will learn several internal and external influences of consumer behavior motivation, cognition, and learning. Prerequisite: MARK 3321 with a grade of C or better.

MARK 3332. PHILANTHROPY, FUNDRAISING, AND PROFESSIONAL SELLING. 3 Hours.

Presents known and effective selling techniques required by today's development officers in their efforts to cultivate relationships with donors. Students will enhance skills that will serve for a lifetime, including communications skills, critical thinking, building donor relationships, and ethics-based decision making. Students will learn how to address the key differences between for-profit and non-profit organizations' view of their mission and bottom line focus. Prerequisite: MARK 3321 with a grade of C or better and junior standing.

MARK 3342. MARKETING AND PHILANTHROPIC STRATEGY. 3 Hours.

This course applies the principles of marketing to the promotion of philanthropic initiatives. Consumer behavior theories are used to explain why individuals and corporations give and help others. Precepts from strategic marketing are also applied as students learn how to design and implement a strategic giving program. Prerequisite: MARK 3321 with a grade of C or better and junior standing.

MARK 3370. SOCIAL MEDIA MARKETING. 3 Hours.

Go behind the scenes and discover the marketing side of social media. Learn how to manage your personal and professional brand online. Understand how organizations are utilizing social media platforms to engage in social listening, social media advertising, influencer marketing, social media marketing campaigns, and more. A conceptual foundation and practical approach for developing a social media plan and tracking social media metrics will be presented. Students will gain hands-on experience using social media strategically to achieve desired marketing goals through an immersive-learning simulation project. Students will also earn relevant online certifications to build their resume. Prerequisite: MARK 3321 grade of C or better.

MARK 4191. STUDIES IN MARKETING. 1 Hour.

Advanced studies, on an individual basis, in the various fields of marketing. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

MARK 4291. STUDIES IN MARKETING. 2 Hours.

Advanced studies, on an individual basis, in the various fields of marketing. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

MARK 4303. RETAIL MARKETING. 3 Hours.

Students are introduced to the world of retailing through the consumer's perspective and from a managerial viewpoint. Topics studied include types of retailers, consumer buying behavior, retail site locations, merchandising, store layout and design and customer service. Students gain practical knowledge through projects, retail site visits, and relevant case studies. Special attention is paid to the retail mix, multichannel retailing, and retail marketing strategies. Prerequisite: MARK 3321 with grade of C or better.

MARK 4308. MANAGEMENT AND LEADERSHIP OF THE SALES FORCE. 3 Hours.

This course covers topics ranging from strategic solutions to tactical sales. It focuses on sales management and leadership targeted toward implementation of complex sales solutions. The course concerns sales managers' roles of planning and executing go-to-market strategy. Hiring, motivation, decision-making, conflict/negotiation strategies, coaching, ethical decision making, and retaining a high-performance team are examined in an interpersonal context with a focus on expanding and retaining long-term profitable customer relations as vital to the impact on firm performance. Prerequisites: MARK 3321 and MARK 3322 with grades of C or better.

MARK 4310. DIGITAL MARKETING. 3 Hours.

Students will examine how organizations are adapting to new interactive digital strategies for online research, development of digital strategy, and implementation of marketing online. Topics include search engine optimization, online advertising, web analytics, social media, email marketing, web development, mobile marketing, and reputation management. Upon completion, students will be able to understand 1) how consumers utilize digital technology, 2) the impact of digital marketing on the decision-making process, and 3) how to integrate digital marketing and technology with existing marketing practices. Prerequisite: MARK 3321 with grade of C or better.

MARK 4311. MARKETING RESEARCH. 3 Hours.

Designed to make students intelligent users of marketing research data. Students will explore the interrelationship between marketing research and marketing management for both the client and supplier. Upon completion of this course, students will understand methods for designing research projects, utilizing secondary data, generating primary data, sampling of human populations, questionnaire design, and data analysis. Prerequisite: MARK 3321 with a grade of C or better and BSTAT 3321.

MARK 4320. PRODUCT AND BRAND STRATEGY. 3 Hours.

This course is about understanding product and brand strategy adopted by firms, existing and new. We will begin the journey by understanding new product design and innovation with examples [including prototyping] and culminate in how new products become established brands through the product life cycle by way of strategic components such as price, distribution, packaging, promotion and brand extensions. Prerequisite: MARK 3321 with a grade of C or better.

MARK 4322. ADVANCED MARKETING MANAGEMENT AND STRATEGY. 3 Hours.

Advanced marketing management and strategy helps students look at marketing strategy in light of the strategy of the firm. It is helpful for students pursuing careers in marketing and management. Students will learn how to 1) develop marketing strategies for creating customers, 2) evaluate an organization's opportunities for creating customer value, 3) create a defensible position for the organization, and 4) evaluate competitive advantage in terms of financial value. Prerequisite: MARK 3321, MARK 3324 and MARK 4311 with grades of C or better, and 90 credit hours.

MARK 4325. INTERNATIONAL MARKETING. 3 Hours.

This class examines the impact of sociocultural, economic, technological, governmental, and demographic factors on the international marketing mix. Students will develop a culturally intelligent perspective of environmental factors that must be taken into consideration when formulating marketing strategies of businesses operating in the global marketplace. Prerequisite: MARK 3321 with a grade of C or better.

MARK 4331. SEMINAR IN MARKETING. 3 Hours.

Readings and discussion of special topics in marketing. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

MARK 4335. MULTICULTURAL MARKETING. 3 Hours.

This course involves readings and discussion of topics related to multicultural marketing. The primary focus will be on how to apply the principles of marketing to identify and reach the growing ethnic subcultures in the U.S. population. Careful consideration will be given to the historical context and ethical implications of these marketing activities. Practical aspects of business development will also be emphasized. Prerequisite: MARK 3321 with a grade of C or better.

MARK 4391. STUDIES IN MARKETING. 3 Hours.

Advanced studies, on an individual basis, in the various fields of marketing. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

MARK 4393. MARKETING INTERNSHIP. 3 Hours.

Practical training in marketing. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

MARK 5142. ADVANCED TOPICS IN MARKETING RESEARCH. 1 Hour.

Presentation and analysis of cutting edge topics in marketing research.

MARK 5182. INDEPENDENT STUDIES IN MARKETING. 1 Hour.

Extensive analysis of a marketing topic.

MARK 5199. GRADUATE MARKETING INTERNSHIP. 1 Hour.

Practical training in marketing. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

MARK 5282. INDEPENDENT STUDIES IN MARKETING. 2 Hours.

Extensive analysis of a marketing topic.

MARK 5299. GRADUATE MARKETING INTERNSHIP. 2 Hours.

Practical training in marketing. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

MARK 5311. MARKETING. 3 Hours.

Survey of activities involved in marketing. Emphasis is on developing a managerial point of view in planning and evaluating marketing decisions of the firm. Analyzes decisions with respect to products, price, channel, and promotional variables and considers questions relating to cost efficiency, demand, social responsibility and regulations.

MARK 5320. BUYER BEHAVIOR. 3 Hours.

Marketing begins and ends with the customer. This course introduces students to the study of consumer behavior. It is taught from the perspective of a marketing consultant who requires knowledge of consumer behavior in order to create, implement, and evaluate effective marketing strategies for clients. The course examines many concepts and theories from the behavioral sciences and analyzes their value in crafting marketing strategies. The course combines lecture and discussion of research based literature, both of which are aimed at providing an in-depth understanding of customer marketplace behavior with a focus on application to consumption and marketing decision making situations.

MARK 5326. INTEGRATED MARKETING COMMUNICATION. 3 Hours.

A managerial approach to coordinating all promotional activities, including direct marketing, advertising, sales promotion, personal selling, public relations, publicity and packaging to produce a unified market-focused message. Message development, placement and timing are examined within the context of the role each type of promotion plays in marketing strategy development. Additional topics examined include media definition and analysis, the communication process, legal and ethical considerations, and budgeting. Prerequisite: MARK 5311.

MARK 5327. RESEARCH FOR MARKETING DECISIONS. 3 Hours.

Overview of information needs of the marketing decision-maker. Emphasis on methods and techniques that may be employed for the collection and analysis of primary data. Major topics include design of research projects, generating primary data, questionnaire design, samplings for survey research, experimental design, controlling data collection, and data analysis.

MARK 5328. PRODUCT MANAGEMENT. 3 Hours.

Management of the firm's product or service offerings. Topics include new product development, new product screening, evaluation of existing products, product line and mix analysis, product abandonment decisions, the brand manager's role, the new product planning department, and others. Emphasis on the development of meaningful criteria for decision-making in the product area and on the development of information systems to suggest, screen, and monitor products. Prerequisite: MARK 5327.

MARK 5329. SALES AND SALES MANAGEMENT. 3 Hours.

Examines the skills required for successful personal selling and sales management in today's world, with emphasis on industrial markets. Discusses the links between business trends and the resulting need for new approaches to the sales management challenges of planning, implementing, and evaluating a sales program. Special topics include the strategic importance of the sales force, customer/supplier partnering, multi-function collaboration, technology's role in altering traditional customer-access channels, the organization of the sales function for profitability vs. revenue, and the development of effective major account strategies.

MARK 5330. SERVICES MARKETING MANAGEMENT. 3 Hours.

Examines conceptual frameworks and management practices particularly relevant to organizations in service industries, including health care, education, financial services, retailing, non-profit organizations, and others in which the core product is a service instead of a good. The course examines many concepts and theories from the service marketing industry and analyzes their value in crafting marketing strategies. Emphasis is on problem solving unique to these types of organizations. Prerequisite: MARK 5311.

MARK 5331. INTERNATIONAL MARKETING. 3 Hours.

Management of marketing in international business. Includes marketing research, pricing, promotion, and distribution in the international environment. Examines marketing problems arising from various degrees of foreign involvement (exports, licensing, foreign subsidiaries). Prerequisite: MARK 5311.

MARK 5332. BUSINESS-TO-BUSINESS MARKETING. 3 Hours.

Marketing strategies for businesses targeting other businesses. Included are frameworks for analysis of marketing opportunities. Business-to-business e-commerce is examined. Prerequisite: MARK 5311.

MARK 5334. STRATEGIC INTERNET MARKETING. 3 Hours.

Through theoretical investigation, brainstorming, and case analysis, students develop the skills and strategies that are necessary for effective marketing via electronic media. With particular emphasis on Internet-based media, topics include developing an online corporate identity, online market research, interactive and database Web site strategies, creating and maintaining Web site content, proactive marketing tactics, analysis of Web site statistics, measuring online marketing results, and development of a strategic Internet marketing plan. Prerequisite: MARK 5311.

MARK 5335. RETAILING, FRANCHISING, AND ENTREPRENEURSHIP. 3 Hours.

Course offers exposure to elements of retail management, franchising, and entrepreneurship, including planning, promotion, pricing, and merchandising. Prerequisite: MARK 5311.

MARK 5337. MARKETING ANALYTICS AND INFORMATION MANAGEMENT. 3 Hours.

Course focuses on the fundamental concepts of customer relationship management and application of analytics approaches to solve real world problems. The course covers topics including marketing data bases and computer-based research systems designed for the collection, storage, usage, and reporting of disaggregated data. Students will be instructed on how to increase customer profitability based on insights gained from customer data. Case studies and data analysis projects are utilized. Prerequisite: MARK 5311 or equivalent.

MARK 5338. CUSTOMER EXPERIENCE AND QUALITATIVE RESEARCH. 3 Hours.

Examines the nature and cycle of the customer experience, employing qualitative and quantitative research techniques to develop a full understanding of the functional and emotional components in the relationship. Students will conduct some combination of observational research, intercept interviews, depth interviews, focus groups, feedback (text) analysis, and social media analysis. Discussions will cover the relative strength and value of research techniques, their role in understanding the customer experience, and utilization of multi-dimensional data in development of business strategy. Prerequisite: MARK 5327.

MARK 5340. MARKETING STRATEGY. 3 Hours.

A case course designed to give the student an opportunity to utilize the managerial and analytical tools that he or she has acquired. Uses case studies which require a realistic diagnosis of company problems, development of alternative courses of action, and the formulation of specific recommendations. Prerequisite: MARK 5311 and two additional MARK graduate courses.

MARK 5341. ADVANCED TOPICS IN MARKETING RESEARCH I. 3 Hours.

As the marketing research industry evolves the scale requirements for industry participants change. This course offers the student introduction to a variety of qualitative topics and includes hands-on experience with appropriate software. The pedagogy includes lectures and presentations from experts in each of the topics. Typical topics include: -text mining -neuro-marketing -focus groups -depth interviews -projective techniques. Prerequisite: Consent of Program Director.

MARK 5342. ADVANCED TOPICS IN MARKETING RESEARCH II. 3 Hours.

This companion course to MARK 5341 focuses on quantitative topics in marketing research. Typical topics include geographical information systems, non-parametric statistics, data mining, measurement issues and questionnaire design and neuro-marketing. Prerequisite: consent of Program Director.

MARK 5343. ADVANCED RESEARCH ANALYSIS I. 3 Hours.

Focuses on problems of data analysis in marketing research. Introduces the concept of multivariate data and emphasizes application of core statistical techniques including factor analysis, multiple regression, discriminant analysis and logistic regression. Also covered are cluster analysis and ratings based conjoint analysis. Application of statistical software is stressed including interpretation of statistical output. Prerequisite: MARK 5327 or permission of the MSMR Program Director.

MARK 5344. ADVANCED RESEARCH ANALYSIS II. 3 Hours.

Advanced Research Analysis II - Continues from MARK 5343 on problems of data analysis in marketing research. Advanced multivariate applications include MANOVA (Multivariate analysis of variance), multidimensional scaling and correspondence analysis, choice based conjoint studies, confirmatory factor analysis, and structural equations modeling. Application of appropriate statistical software is emphasized including the interpretation of statistical outputs. Prerequisite: MARK 5343.

MARK 5350. MULTICULTURAL RESEARCH METHODS. 3 Hours.

This course extends the student's knowledge beyond traditional survey research concepts to include specific knowledge about the common sources of bias associated with studies of U.S. multicultural populations, such as Blacks, Hispanics and Asians. The topical coverage is multi-disciplinary and focuses on cultural and linguistic biases related to sampling, translations, questionnaire design, data collection methods, weighting, and statistical analysis. Attention is also devoted to issues related to focus group research and GIS analysis. Assignments will include readings, exercises, analysis of survey data files and Census data, and reporting of results. Prerequisite: BSTAT 5301 or equivalent.

MARK 5370. SOCIAL MEDIA MARKETING. 3 Hours.

The course studies social media as a tool for listening to engaging with customers and other significant audiences and for delivering marketing communications. Through interactive class projects students will learn best practices for managing social media channels and platforms. The course discusses examines the fundamentals for developing crafting a social media marketing plan and examines including metrics for monitoring and evaluating the effectiveness of social media campaigns. Ethical and legal issues related to privacy, security, content and crowdsourcing are also presented.

MARK 5382. INDEPENDENT STUDIES IN MARKETING. 3 Hours.

Extensive analysis of a marketing topic.

MARK 5396. MARKETING RESEARCH INTERNSHIP I. 3 Hours.

The internship involves part-time or full-time training and work experience in a company approved by the MSMR program advisor.

MARK 5397. MARKETING RESEARCH INTERNSHIP II. 3 Hours.

This is a continuation of Internship I and involves part-time or full-time work experience in a company approved by the MSMR program advisor. The student will be assigned primary responsibility for at least one marketing research project during Internship I or II. At the completion of the course, the student will present a research paper to the MSMR faculty.

MARK 5398. THESIS. 3 Hours.

Prerequisite: STAT 5325 and approval of Graduate Advisor.

MARK 5399. GRADUATE MARKETING INTERNSHIP. 3 Hours.

Practical training in marketing. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

MARK 5698. THESIS. 6 Hours.

Prerequisite: STAT 5325 and approval of Graduate Advisor.

MARK 6302. CONSUMER BEHAVIOR I. 3 Hours.

Study of current thought and research underlying individual and group marketplace behavior. Theories from the behavioral sciences are applied to consumer behavior from descriptive, predictive and normative perspectives. Topics include consumer knowledge, attitude theory, persuasion, affect, and social influence. The course draws from the literature in marketing, psychology, and behavioral economics. The course will enable students to conceptualize, operationalize, and develop research ideas.

MARK 6303. CONSUMER BEHAVIOR II. 3 Hours.

This course complements the Consumer Behavior I doctoral seminar. Building on a portion of that seminar, the course focuses on a few topics (e.g. automaticity in consumer behavior, consumer choice processes) that have the following characteristics: 1) the topics are the subjects of emerging research in consumer behavior, 2) students can gain an in-depth understanding of the theoretical underpinnings of these topics, and 3) the materials are such that students can develop innovative research projects on marketing and consumer behavior related to the topics covered in the class. Prerequisite MARK 6302.

MARK 6305. MARKETING MODELS I. 3 Hours.

Study of basic models of market and consumer behavior with particular attention to the use of classical statistical methods such as ordinary and generalized least squares, factor analysis, discriminant analysis and correspondence analysis, cluster analysis, and canonical correlation. Applications include perceptual mapping, multiattribute modeling, conjoint analysis, and product planning models. Prerequisite: STAT 5325.

MARK 6310. MARKETING STRATEGY AND MANAGEMENT. 3 Hours.

Examination of the latest research and thought in marketing and business strategy. Topics include marketing programming; product, price, promotion, and distribution decisions, marketing audits, and the design, implementation and evaluation of marketing strategies and tactics. An objective of the course is the development of innovative research ideas on marketing strategy related to the topics covered in the class.

MARK 6311. MARKETING STRATEGY AND MANAGEMENT II. 3 Hours.

In increasingly global and competitive markets, sustainable competitive advantage takes on increasing importance. Further, in many industries, product differentiation no longer provides a decisive edge over competition. This course complements the Marketing Strategy and Management I doctoral seminar. Building on a portion of that seminar, the course focuses on a few topics (e.g. transformation of a product-centric organization to a customer centric organization, organizational change, organizational agility, and technology-enabled relationship management) that will allow students to examine areas of emerging research in marketing strategy, gain an in-depth understanding of the theoretical underpinnings of the selected topics, and develop innovative research projects on marketing strategy related to the topics covered in the class. Prerequisite: MARK 6310.

MARK 6327. ADVANCED MARKETING RESEARCH METHODS. 3 Hours.

Major topics include design of research projects, generating primary data, questionnaire design, sampling for survey research, experimental design, controlling data collection, and data analysis. Coverage of scientific techniques for collecting and analyzing data; includes research paradigms, measurement, and design. Emphasis on theory and application of survey research including classical test theory, item response theory, sampling, questionnaire construction, validity and reliability assessment and data reduction.

MARK 6331. ADVANCED GLOBAL MARKETING THEORY. 3 Hours.

Examines the antecedents and consequences of global marketing. Includes the politics of global marketing, emerging global strategies, the latest concepts of market entry and development, and global marketing performance and evaluation.

MARK 6390. TOPICS IN MARKETING. 3 Hours.

Advanced doctoral level work in special topics in marketing. May be repeated when topics vary.

MARK 6392. INDEPENDENT STUDY IN MARKETING. 3 Hours.

Doctoral level analysis of marketing topic.

Marketing - Graduate Programs

Objective: Master of Science in Marketing Research

The objective of the Master of Science in Marketing Research (MSMR) is to prepare students for successful careers in marketing research, marketing planning, product and brand management, and related fields. The program is project oriented; many of the required advanced courses conduct client projects as a part of the course requirements. Most projects are team-based with class members working together to accomplish project objectives.

Assistantships

Graduate Teaching Assistantships may be offered to students who have been accepted in the program. The Marketing Department will request and evaluate applications and select applicants for positions based on departmental needs and university requirements. Graduate Research Assistantships may be offered on an as needed basis. When GRA positions are available, Marketing faculty involved in the project solicit applications from students who have been admitted to the program. Applicants are evaluated by the appropriate faculty.

Scholarships

Students who have been accepted into the program are encouraged to pursue scholarship opportunities within the College of Business and the University by registering with Scholarshop (<https://uta.academicworks.com/>).

Scholarships are funded by donations from MSMR Advisory Board member firms, the MSMR Alumni Association, and individual private and corporate donors. Available funds are reserved for students who have been accepted into the program, enrolled full-time, and in good standing with the University.

A faculty committee and, if appropriate, MSMR alumni review applications and select recipients from among eligible applicants based on composite scoring system.

Accreditation

The Master of Science in Marketing Research degree is accredited by the AACSB International - The Association to Advance Collegiate Schools of Business.

Master of Science in Marketing Research

Objective

The MSMR Program is one of only a few in the country that offer a broad-based education of research methods and analytic techniques that put our graduates at the forefront of marketing research candidates. Students complete coursework in research methodology, analytical techniques, and specialized business topics along with two internships, all of which are designed to produce professional researchers capable of developing insight-driven strategy to support business decisions.

Admissions

Admission to the Master of Science in Marketing Research (MSMR) program is based on completion of the general admission requirements of the Graduate School as specified under the Graduate Admissions Requirements and Procedures in the Graduate Catalog.

Admission to any graduate program is limited and competitive. Decisions for the MSMR Program are based on consideration of several factors:

1. Graduate Index Score
 - The MSMR Program employs an index score to estimate candidates' likelihood of success in business graduate programs.
 - The index score is calculated as $GMAT + (GPA * 200)$.
 - An index score of 1,200 or higher is typical of a successful candidate.
2. Academic Performance: Grade Point Average (GPA)
 - An undergraduate GPA of 3.25 (on a 4-point scale, as calculated by Graduate Admissions) is typical of a successful candidate. GPA calculation is based on the last 60 hours of the applicant's undergraduate program.
 - A graduate GPA of 3.00 based on at least 24 hours will also be considered.
3. Graduate Performance Indicator: GMAT/GRE Component & Composite Scores
 - The following test scores are strong predictors of graduate success:
 - GMAT/GRE Quantitative and Verbal scores above the 50th percentile
 - GMAT composite score of 580 or higher
 - Although there is no commonly accepted method for conversion of GRE to GMAT composite scores, the algorithm provided by the Educational Testing Service (ETS) has proven to be a useful tool (<https://www.ets.org/s/gre/flash/bschool/comparison/17302/170/>) in estimating a comparable GMAT composite score.
4. Communication Skills
 - The MSMR Program has established communication standards designed to ensure that all students are eligible to perform as Graduate Teaching/Research Assistants.

- All candidates must complete a face-to-face interview (in-person or online) with the MSMR Program Director.
 - Applicants whose native language is not English must demonstrate a sufficient level of skill with the English language to engender confidence in success in graduate studies. The MSMR Program accepts several forms of assessment, providing that scores meet or exceed the following criteria:
 - IELTS: Band scores of 6.5 on all skills
 - TOEFL iBT: Total Composite 81, with preferred section scores of Listening (16), Reading (20), Speaking (23), and Writing (22).
5. Personal Statement/Accomplishments
- Statement of Purpose: A thoughtful, well-written statement clearly expressing educational objectives, communicating a passion for marketing research, and providing a glimpse of the applicant's personality.
 - Letters of Recommendation: Letters from three persons familiar with the applicant's academic background and/or work experience who can speak to the applicant's potential for success in graduate school.
6. Academic & Professional Experience
- Academic Institution: General quality and specific program accreditation of degree-granting institution.
 - Professional Experience: Work experience, professional certification or licensure.

Unconditional Admission

In order to be considered for Unconditional Admission, the applicant must meet criteria 1 through 5 and criterion 6 will be assessed for additional evidence of potential to be successful in this program.

Probationary Admission

Applicants who do not meet the index score requirement (1,200) may be granted probationary admission when other criteria favor admission. Students admitted on probationary status must meet probationary admission conditions as specified by the MSMR Program Director.

Provisional & Deferred Admission

A provisional or deferred admission decision may be granted when the criteria for unconditional or probationary admission are met, but the applicant file is missing one or more credentials

Admission Denial

Following careful review of all available information, if an applicant's record does not provide sufficient evidence to support admission to the program, admission will be denied.

MSMR Degree Requirements

The MSMR program consists of 36 semester hours of advanced courses. The program is open to all applicants with at least a bachelor's degree, but is particularly well-suited for those with an undergraduate degree in one of the following areas:

- Behavioral Sciences (Anthropology / Psychology / Sociology)
- Business (Accounting / Economics / Finance / Management)
- Computer Science / Data Science / Information Systems
- Marketing / Marketing Research
- Mathematics / Statistics

All MSMR students will complete a one week Boot Camp, designed to provide basic knowledge of the following business areas:

- Accounting
- Economic Analysis
- Marketing
- Management

The MSMR curriculum consists of the following courses.

Advanced Courses (Nine Courses Required)

BSTAT 5325	ADVANCED METHODS FOR ANALYTICS
MARK 5327	RESEARCH FOR MARKETING DECISIONS
MARK 5338	CUSTOMER EXPERIENCE AND QUALITATIVE RESEARCH
MARK 5340	MARKETING STRATEGY
MARK 5341	ADVANCED TOPICS IN MARKETING RESEARCH I
MARK 5343	ADVANCED RESEARCH ANALYSIS I
MARK 5344	ADVANCED RESEARCH ANALYSIS II

MARK 5396	MARKETING RESEARCH INTERNSHIP I
MARK 5397	MARKETING RESEARCH INTERNSHIP II
Elective Courses (Three Courses Required)	
MARK 5320	BUYER BEHAVIOR
MARK 5328	PRODUCT MANAGEMENT
MARK 5330	SERVICES MARKETING MANAGEMENT
MARK 5337	MARKETING ANALYTICS AND INFORMATION MANAGEMENT
MARK 5342	ADVANCED TOPICS IN MARKETING RESEARCH II
MARK 5382	INDEPENDENT STUDIES IN MARKETING
ECON 5313	DECISIONS AND STRATEGY
ECON 5314	ECONOMIC ANALYSIS FOR BUSINESS DECISIONS
ECON 5315	COMPETITION, INNOVATION, AND STRATEGY
ECON 5331	PROJECT EVALUATION AND FEASIBILITY ANALYSIS
ECON 5336	APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS I
ECON 5337	BUSINESS & ECONOMIC FORECASTING
ECON 5338	APPLIED TIME SERIES
ECON 5339	APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS II
ECON 5341	ADVANCED BUSINESS AND ECONOMIC DATA ANALYTICS
ECON 5343	CAUSAL INFERENCE FOR BUSINESS DECISIONS
INSY 5309	OBJECT-ORIENTED BUSINESS PROGRAMMING
INSY 5335	APPLIED DATABASE MANAGEMENT
INSY 5336	PYTHON PROGRAMMING
INSY 5337	DATA WAREHOUSING AND BUSINESS INTELLIGENCE
INSY 5339	PRINCIPLES OF BUSINESS DATA MINING
INSY 5360	COMPUTATIONAL TECHNIQUES FOR BUSINESS ANALYTICS
INSY 5376	BIG DATA ANALYTICS
INSY 5377	WEB AND SOCIAL ANALYTICS
INSY 5378	DATA SCIENCE: A PROGRAMMING APPROACH
INSY 5380	SOCIAL NETWORK ANALYSIS
MANA 5326	ORGANIZATION DEVELOPMENT AND CHANGE
MANA 5330	NEGOTIATIONS & CONFLICT MANAGEMENT
MANA 5333	MANAGEMENT OF TECHNOLOGICAL INNOVATION
MANA 5334	ORGANIZATION CONSULTING & RESEARCH
MANA 5339	ENTREPRENEURSHIP
MANA 5344	EVIDENCE-BASED MANAGEMENT
MANA 5350	EFFECTIVE LEADERSHIP
MANA 5360	LEADERSHIP AND TEAMS

Total Hours

36

Marketing Research Internship

The Marketing Research Internships (MARK 5396 and MARK 5397) represent an integrative component of the MSMR program. Although the program has built relationships with some companies, MSMR students are ultimately responsible for securing their own internships.

Students must have completed nine hours of graduate marketing coursework (three MARK courses) prior to enrolling in an internship course. Most students enroll in their first internship during the summer term following their first year in the program.

Internships must meet criteria established to ensure the opportunity to apply research skills developed in the MSMR curriculum. Basic internship criteria include the following:

- Intern tasks and responsibilities must include marketing research; duties may also include marketing, sales, and/or database management
- There must be an experienced research professional on staff, providing guidance and direction on the design and execution of research in a business context.

- Interns should have the opportunity to be involved in all aspects of research, including design, planning, management, and delivery of results, providing them with experience with research from start to finish.
- Employment must...
 - Be for a minimum of 240 hours (six weeks full-time, 12 weeks part-time).
 - Align with one term on the University academic calendar (fall, spring, summer).
 - Include compensation sufficient to provide student with income beyond the costs of enrollment in the marketing research internship course.

The MSMR Program Director will...

- Review and approve internship opportunities in advance.
- Secure an intern performance assessment from the employer at the close of the internship.
- Provide the intern with feedback and direction based on the performance assessment.

Admission and Degree Requirements

Please see the Ph.D.in Business Administration (p. 278) section of this catalog for admission and degree requirements for the Ph.D.in Business Administration (Marketing emphasis)

Marketing - Undergraduate Programs

The Department of Marketing offers a Bachelor of Business Administration (B.B.A.) in Marketing and an undergraduate Sales Certificate. Students will develop knowledge centered on a customer centric view of the market, long-term customer satisfaction, and the development of mutually beneficial relationships. The discipline of marketing prepares students for exciting and rewarding career opportunities where they serve their internal and external customers.

Requirements for a Bachelor of Business Administration Degree in Marketing

Students must meet all lower division requirements before enrolling for upper division courses. Specified prerequisites are designated for certain courses.

Pre-Professional Course Requirements - Fulfill the University General Core Requirements (42 hours and 3 elective hours)		
General Core Requirements (p. 50)		42
Communication (minimum 6 hours required)		6
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
Mathematics (minimum 6 hours required)		6
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	
Life and Physical Sciences (minimum 6 hours required)		6
From Approved University General Core Requirement List		
Language, Philosophy & Culture (minimum 3 hours required)		3
From Approved University General Core Requirement List		
Creative Arts (minimum 3 hours required)		3
From Approved University General Core Requirement List		
US History (minimum 6 hours required)		6
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
Government/Political Science (minimum 6 hours required)		6
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
Social & Behavioral Sciences (minimum 3 hours required)		3
Satisfied by completion of ECON 2305 in the Business Core.		
Foundational Component Area (minimum 3 hours required)		3
Satisfied by completion of ECON 2306 in the Business Core.		
Non-Business Elective/UNIV 1101 or UNIV 1131 (3 hours)		3
Professional Course Requirements - Business Core (39 hours)		
MANA 1301	BUSINESS IN A GLOBAL ENVIRONMENT	3
ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II	3
BSTAT 2305	INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS	3
ECON 2305 satisfies the Social & Behavioral Science		
ECON 2306 satisfies the Foundational Component		
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
FINA 3313	BUSINESS FINANCE	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4322	STRATEGIC MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
OPMA 3306	OPERATIONS MANAGEMENT	3
Professional Course Requirements - Marketing (18 hours)		

MARK 3324	CONSUMER BEHAVIOR	3
MARK 4311	MARKETING RESEARCH	3
MARK 4322	ADVANCED MARKETING MANAGEMENT AND STRATEGY	3
Advanced Marketing Electives (MARK 33xx or 43xx)		9
Advanced Business Courses and Electives (18 hours)		
Advanced Accounting Elective (ACCT 33xx or 43xx)		3
Advanced accounting, business, economics, finance, information systems, management, operations and supply chain management, or real estate. No MARK.		12
Advanced Economics Elective (ECON 33xx or 43xx)		3
Total Hours		120

Double Major

A Double Major option for the Bachelor of Business Administration (BBA) in Marketing is available. Marketing undergraduates who pursue the following Double Major program will not have the option of participating in the Fast Track Program in Business.

Completion of the Double Major is attained by including all of the following courses in the BBA Marketing plan and completing with grades of C or better in each of the double major courses listed below:

BBA in Marketing and Management

MANA 3319	CONTEMPORARY MANAGERIAL CHALLENGES
MANA 3320	HUMAN RESOURCE MANAGEMENT
Advanced Management Elective (MANA 33xx or 43xx)	
Advanced Management Elective (MANA 33xx or 43xx)	

Suggested Course Sequence

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1315		3 MATH 1316	3
HIST 1301		3 HIST 1302	3
Life & Physical Science		3 Life & Physical Science	3
MANA 1301		3 Creative Arts	3
UNIV-BU 1101 (or)		1	
UNIV-BU 1131			
		16	15
Second Year			
First Semester	Hours	Second Semester	Hours
ACCT 2301		3 ACCT 2302	3
ECON 2305		3 ECON 2306	3
INSY 2303		3 BSTAT 2305	3
POLS 2311		3 POLS 2312	3
Language, Philosophy & Culture		3 Non-Business Elective	2
		15	14
Third Year			
First Semester	Hours	Second Semester	Hours
BLAW 3310		3 MARK 3324	3
FINA 3313		3 Advanced Marketing Elective	3
MANA 3318		3 BCOM 3360	3
MARK 3321		3 BSTAT 3321	3
Advanced Economics Elective		3 Advanced Business Elective	3
		15	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
MARK 4311		3 MARK 4322	3
Advanced Marketing Elective		3 Advanced Marketing Elective	3
OPMA 3306		3 MANA 4322	3
Advanced Accounting Elective		3 Advanced Business Elective	3

Advanced Business Elective	3 Advanced Business Elective	3
	15	15

Total Hours: 120

Minor in Business Philanthropy.

- For an 18 hour requirement, this would require a minimum of 9 hours of business coursework completed in residence at UT Arlington.
- Requires a grade of C or better in all minor requirement courses.
- Will not use vocational and technical courses (including WECM courses) toward any business minor.

This minor is also part of the BA in Philanthropy degree offered in the Department of Communication

Complete all of the following courses:

ACCT 2303	ACCOUNTING AND COMPLIANCE OF NON-PROFIT ORGANIZATIONS	3
FINA 4326	WEALTH AND EXCHANGE	3
MANA 3321	NONPROFIT AND VOLUNTEER MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
MARK 3332	PHILANTHROPY, FUNDRAISING, AND PROFESSIONAL SELLING	3
MARK 3342	MARKETING AND PHILANTHROPIC STRATEGY	3

For additional information or questions about the undergraduate minor, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

Certificate in Business Philanthropy

The Certificate in Business Philanthropy requires a total of twelve semester credit hours of course work, which can be completed in conjunction with an existing undergraduate degree in any field.

This certificate is also part of the BA in Philanthropy degree offered in the Department of Communication.

Certificate Requirements

To receive the Certificate in Business Philanthropy, all course work (12 hours) must be completed at UT Arlington with a grade of C or higher.

Complete any four of the following courses for a total of 12 hours:

ACCT 2303	ACCOUNTING AND COMPLIANCE OF NON-PROFIT ORGANIZATIONS	3
MANA 3321	NONPROFIT AND VOLUNTEER MANAGEMENT	3
MARK 3321	PRINCIPLES OF MARKETING	3
MARK 3332	PHILANTHROPY, FUNDRAISING, AND PROFESSIONAL SELLING	3
MARK 3342	MARKETING AND PHILANTHROPIC STRATEGY	3
FINA 4326	WEALTH AND EXCHANGE	3

Total Hours	18
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For additional information or questions about the undergraduate certificate, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

Sales Certificate Program

The Sales Certificate program prepares students for a challenging and rewarding career in the sales profession. The program will enhance students' abilities to sell themselves, their ideas, as well as products and services. It also equips students with knowledge and skills related to developing and managing mutually beneficial relationships with customers. The Sales Certificate program stresses the ethical, technological, and global aspects of professional sales, deemed a necessary prerequisite for sustainable growth. The Sales Certificate program is built on a strong theoretical background but emphasizes applications and practice. The Sales Certificate program responds to the growing demand for students with a sales education and is available to both business and non-business majors.

Admission and Eligibility Requirements

Students seeking admission to the Sales Certificate program must have completed 45 hours of college credit with a minimum UTA GPA of 2.0.

To remain eligible for the Sales Certificate program, a student must maintain a 2.0 or better GPA in program coursework and earn a grade of C or better in every Sales Certificate course.

A student who receives any combination of grades of D or F in more than one Sales Certificate course or in two attempts of the same Sales Certificate course will be dismissed from the program.

Certificate Requirements

The Sales Certificate requires 18 credit hours for all majors with 12 credit hours from required courses and an additional 6 credit hours from elective options as listed.

Required (Complete all courses for a total of 12 hours)

BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
MARK 3321	PRINCIPLES OF MARKETING	3
MARK 3322	PROFESSIONAL SELLING	3
MARK 4308	MANAGEMENT AND LEADERSHIP OF THE SALES FORCE	3

Electives (Select two of the following courses for a total of 6 hours)

MARK 3323	INTEGRATED MARKETING COMMUNICATION / ADVERTISING	3
MARK 3370	SOCIAL MEDIA MARKETING	3
MARK 4303	RETAIL MARKETING	3
MARK 4325	INTERNATIONAL MARKETING	3
MARK 4393	MARKETING INTERNSHIP	3

MARK 4393 is for Marketing majors only. Other majors must enroll in sales internships through their respective departments. To receive credit towards the Sales Certificate program, the actual work performed in the internship must be sales focused.

For additional information or questions about the undergraduate certificate, please contact the College of Business Undergraduate Advising Office at 817-272-3368 or ugadvise@uta.edu.

College of Education

Mission

The mission of the College of Education (COEd) is to be a global leader of excellence in the education sciences.

History and Overview

In 1979, The Center for Professional Teacher Education, now the College of Education, began offering coursework at the graduate level. In the late 1980s, a Master of Education and Teaching degree (M.Ed.T.) was approved. This degree served teachers who wanted the opportunity to extend their knowledge base in education and related fields with graduate coursework. The degree enabled students to combine graduate coursework in education with study in an academic discipline related to their teaching field or specialization. Its success led to the expansion of education offerings to include additional certifications in Reading and Educational Administration as well as supplemental certification in Bilingual Education (BIL), English as a Second Language (ESL), and Gifted and Talented (G/T).

As one of only a few Texas universities authorized to offer post baccalaureate teacher certification at the graduate level, the College of Education began offering graduate level teacher certification with an M.Ed.T. in the summer of 1998. With expansion of program offerings, the M.Ed.T. no longer met the needs of all degree-seeking students. In 1999, the College of Education added two new master's degree programs, a Master of Education (M.Ed.) in Educational Leadership and Policy Studies and a Master of Education (M.Ed.) in Curriculum and Instruction. In 2021, the Master of Education (M.Ed.) in Special Education was added.

The M.Ed. in Curriculum and Instruction (C&I) is for educators wanting to extend their knowledge in education and related fields, including science and mathematics. The C&I M.Ed. - Literacy Studies serves students wanting to earn a master's degree along with a Reading Specialist Certificate. Supplemental certification in English as a Second Language may also be added to the C&I M.Ed. - Literacy Studies. The C&I Department also offers M.Ed. emphasis areas in Science Education and Mathematics Education and a master of Education in Mind, Brain, and Education. The M.Ed.T. is offered for students seeking teacher certification (early childhood - grade 6, middle level, secondary, and all level) at the graduate level. The M.Ed. in Special Education includes a heavy emphasis on teaching and learning with assistive technology, evidence-based behavioral strategies, and research and has multiple emphasis areas such as options for initial teacher certification preparation, high incidence disabilities, and low incidence disabilities. Students may pursue Principal Certification or Higher Education Administration emphasis courses in the M.Ed. in Educational Leadership and Policy Studies. Superintendent and principal certification programs also are available. The Department of Educational Leadership and Policy Studies offers a Doctor of Philosophy (Ph.D.) degree in Educational Leadership and Policy Studies.

College of Education: Conceptual Framework

Vision and Values

A shared vision of Educator Preparation at UTA was developed in collaboration with colleagues across four academic colleges, colleagues in PK-12 education, and other stakeholders. This shared vision is rooted in the mission of the University of Texas at Arlington to serve the citizens of Texas, the United States, and the world through research, teaching, and service. The large scales of these visions and missions reflect the scope of the university and its educator preparation programs. The educator preparation programs are dedicated to the development of education professionals who are intellectual leaders; who are prepared to participate in professional, social, and technological change; who are collaborative with PK-12 education colleagues and others who are committed to improving learner outcomes; who promote the advancement of the field through ongoing professional development, the use of evidence-based practices, the confidence to question and use innovative instructional strategies, and the skill to assess their impact on student learning; who advocate on behalf of all learners and the education profession; and who are education leaders in their classroom, school, and community.

Coherence

Because educator preparation at University of Texas at Arlington is a large, complex and strategic enterprise, the dean of the College of Education is administratively responsible for the preparation of all candidates in educator preparation. Although much of the responsibility for educator preparation is vested in the faculty of the College of Education, who have a primary mission to prepare education professionals, educator preparation also is a function of three other academic colleges: Liberal Arts; Nursing and Health Innovations; and Science as well as our PK-12 partners. A campus-wide entity known as the Education Professions Council (EPC) serves as the curriculum review authority for all programs leading to licensure and as a policy advisory board to the College of Education dean.

Professional Knowledge and Dispositions

Educator preparation programs at UTA view schools as complex social, political, cultural, and interpersonal organizations and teaching as a highly complex activity in which teachers apply knowledge to develop curriculum, carry out instruction, and assess learning. Prospective teachers must develop subject matter knowledge, a core strength of educator preparation at UTA, pedagogical knowledge, and knowledge of context. From this foundation they can form pedagogical content knowledge, the knowledge about how to teach specific subject matter (Harris & Hofer, 2014). Together, these competencies distinguish teachers from subject matter specialists (e.g., Darling-Hammond & Bransford, 2005). An inquiry-oriented approach to educator

preparation, where teaching is made problematic and students of teaching engage in reflection to develop their understandings of teaching and learning, characterizes UTA's programs (e.g., Calderhead, 2012; Savery, 2015).

In addition to developing knowledge of content and pedagogy, candidates are expected to develop the dispositions to become caring and dedicated education professionals who are sensitive to community and cultural norms, demonstrate willingness to work with others, take responsibility for establishing a positive climate, respect students as individuals, treat students fairly, show concern for students' well-being, and demonstrate appropriate professional practice (e.g., Kea, Campbell-Whatley, & Richards, 2006; Nelson, 2014). We also expect our candidates to think critically and engage in discovery (research) and the use of evidence-based practices, be responsive to education issues related to social justice and diversity, and integrate technology literacy throughout. These commitments and dispositions are reflected in institutional, state, and professional standards by which candidates are informed and assessed (e.g., CAEP, 2013; InTASC, 2011; NBPTS, 1994). This conceptual framework embodies educator preparation at University of Texas at Arlington's commitment to these principles.

One primary theme woven across programs that guides educator preparation at UTA is **Sustainable Urban Communities**. Located in the heart of the Texas/Fort Worth metroplex, UTA is a predominately Hispanic serving urban institution. Our faculty, staff, and students value this urban community and seek to harness its diverse population and geographic advantage to strengthen educator preparation and prepare education professionals skilled in educating PK-12 children, supporting local families, and ensuring that every student is college or career ready following secondary education. To ensure sustainable urban communities, a UTA student body equipped to serve in such settings must be developed. Thus, faculty and staff at UTA are committed to leading the nation in the preparation of education professionals skilled in bilingual education. As well, preparing education professionals who are highly skilled to serve children in grades PK through 12, school counselors, and education leaders in urban settings are hallmarks of UTA's College of Education.

Our programs also embrace three additional UTA strategic themes, **Health and Human Condition** in which educated populations are physically healthier. The preparation of highly skilled education professionals who serve our local schools and Texas results in educated communities who are equipped to meet their health needs and improve overall human conditions. **Data-Driven Discovery** in which education professionals create knowledge through research and discovery and use evidence-based practices in their daily lives. They also assess their effectiveness through analysis of their practices and the learning and behavioral outcomes of their students. **Global Environmental Impact** where instructional innovations derived from data-driven discovery are examined, replicated, and disseminated globally to positively impact educational practices.

Four key values are integrated throughout programs and guide educator preparation at UTA:

- **Professionalism** represents the expectation that candidates develop an expertise and specialized knowledge of their field. A high quality of work, standard of professional ethics and behaviors, as well as work morale and motivation are all necessary factors of a developed interest and desire to excel in job performance.
- **Collaboration** is the cornerstone of our educator preparation program. Our partnerships with PK-12 education colleagues foster collaborative planning and experiences for future and current teachers (CAEP, 2013, Standard 2) and education leaders. This collaboration extends to include research and professional development with our PK-12 partners to improve learner outcomes.
- **Advancement** ensures that our candidates engage in reflective practices and continuously seek to improve their skills as education professionals. This includes a commitment to ongoing professional development, the use of evidence-based practices, the confidence to question the validity of practices and the ability to use innovative instructional strategies, and the skill to assess their impact on student learning.
- **Leadership** development prepares our candidates not only to serve as leaders in their classroom, but also their school and across a global community as they advocate for their students and the profession. Leadership also represents a candidate's ability to organize, assist, and support others in the achievement of a common task. Candidates develop and refine their leadership skills within the context of their interactions with PK-20 students, curricula, faculty, and other professionals.

Alignment with State and Professional Standards

Initial teacher preparation programs are based on performance-based standards including the Interstate New Teacher Assessment and Support Consortium (InTASC) principles and the Texas Teacher Standards (Texas Education Association, TEA). In addition to these standards, faculty of the various program areas use professional standards in the development of specific programs, such as those included as Specialized Professional Association (SPAs), the Council for Accreditation of Educator Preparation (CAEP), and the National Board for Professional Teaching Standards (NBPTS).

Initial Preparation Programs

In addition to the key programmatic features, the professional preparation programs highlight key features and programmatic emphases that are interrelated and addressed throughout. All of the components of the educator preparation programs include professional, state, and institutional standards. Academic content and evidence-based-practice are the core of professional preparation:

Initial (Undergraduate) Preparation. In addition to the core principles, nine areas of competency are emphasized during the initial preparation programs:

- **Understands learner development, learning differences, and learning environments:** Candidates understand how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas and designs and implement developmentally appropriate and challenging learning experiences (InTASC, 2011, Standard #1). Candidates

use understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards (InTASC, 2011, Standard #2). Candidates work with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation (InTASC, 2011, Standard #3). Candidates work to ensure high levels of learning, social-emotional development, and achievement outcomes for all students, taking into consideration each student's educational and developmental backgrounds and focusing on each student's needs and teachers interact with students in respectful ways at all times, maintaining a physically and emotionally safe, supportive learning environment that is characterized by efficient and effective routines, clear expectations for student behavior, and organization that maximizes student learning (TEA, 2014, Standards 2 and 4).

- **Focus on the learner and assess growth and outcomes:** The candidate understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making (InTASC, 2011, Standard #6). Candidates use formal and informal methods to assess student growth aligned to instructional goals and course objectives and regularly review and analyze multiple sources of data to measure student progress and adjust instructional strategies and content delivery as needed (TEA, 2014, Standard 5).
- **Teach effectively by integrating content and pedagogy:** The candidate understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues (InTASC, 2011, Standard #5). The candidate understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways (InTASC, 2011, Standard #8). Candidates demonstrate their understanding of instructional planning and delivery by providing standards-based, data-driven, differentiated instruction that engages students and makes appropriate use of technology, and makes learning relevant for today's learners. Candidates also exhibit a comprehensive understanding of their content, discipline, and related pedagogy as demonstrated through the quality of the design and execution of lessons and their ability to match objectives and activities to relevant state standards (TEA, 2014, Standards 1 and 3).
- **Differentiates instruction to diverse learners:** The candidate engages in ongoing professional learning and uses evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner (InTASC, 2011, Standard #9). The candidate uses understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards (InTASC 2011, Standard #2).
- **Apply current and emerging technologies:** The candidate effectively applies relevant technologies to enhance students' learning experiences, and actively seeks out opportunities to capitalize on emerging technologies (InTASC, 2011, Standards 3g, 3m, 4g, 5l, 6i, 7k, 8g, 9d, 9f, 10g).
- **Engage in early and articulated field experiences:** The candidate is actively engaged in early and articulated field experiences throughout key elements of the program (CAEP 2013, Standard #2).
- **Collaborate with teachers, parents and community:** The candidate seeks opportunities to take responsibility for student learning and development, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession (InTASC 2011, Standard #10). Candidates consistently hold themselves to a high standard for individual development, pursue leadership opportunities, collaborate with other educational professionals, communicate regularly with stakeholders, maintain professional relationships, comply with all campus and school district policies, and conduct themselves ethically and with integrity (TEA, 2014, Standard 6).
- **Commit to diversity:** The candidate understands how learner diversity can affect communication and knows how to communicate effectively in differing environments (InTASC, 2011, Standard 3[i]). The candidate understands learning theory, human development, cultural diversity, and individual differences and how these impact ongoing planning (InTASC, 2011, Standard 7[i]).
- **Think critically and reflectively:** The candidate is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community). (InTASC, 2011, Principle #4; NBPTS, 1994, Proposition #4)

Advanced (Graduate) Preparation Programs

Advanced programs are designed to help experienced practitioners move beyond the basic mastery of content and practice that characterizes initial licensure to develop deeper understandings, more sophisticated practice, and the knowledge and dispositions that characterize leaders in the educational community. Upon completion of an advanced program of study, candidates are accomplished educators whose practices are consistent with the standards of professional associations and the National Board for Professional Teaching Standards (NBPTS). Advanced preparation extends initial preparation and emphasizes five more areas:

- **Communicate knowledge:** The advanced candidate speaks, writes, and employs relevant media to effectively communicate knowledge on substantive topics to others (InTASC, 2011, Standards 3, 5, 6, 8, and 10).
- **Synthesize knowledge:** The candidate integrates knowledge from multiple sources to address pertinent questions and issues (InTASC, 2011).
- **Create and discover knowledge:** The candidate creates and discovers knowledge to further the state of the art and science of education.
- **Engage in professional development:** The candidate actively seeks out learning opportunities to grow professionally. (InTASC, 2011, Standard #9) and teachers consistently hold themselves to a high standard for individual development, pursue leadership opportunities, collaborate with other educational professionals, communicate regularly with stakeholders, maintain professional relationships, comply with all campus and school district policies, and conduct themselves ethically and with integrity (TEA, 2014, Standard 6).
- **Participate actively in the profession:** The candidate actively participates in the profession through communicating scholarly discoveries, offering learning opportunities to others, and engaging in efforts to promote social justice and equity in educational opportunities and outcomes (NBPTS, 1994, Proposition #5).

Scholarly Activity and Research Interests of the Faculty

College of Education faculty members strive to model the characteristics of the most proficient professional educators for all students aspiring to membership in the education professions. Faculty members in the College of Education have consistently achieved recognition for their excellence in teaching in the University and beyond. They have received numerous honors, including the University of Texas System Board of Regents Outstanding Teaching Award, UT System Chancellor's Council Teaching Award, election to UT Arlington's Academy of Distinguished Teachers, and the Piper Professor Award at the state level. They have also served as guest lecturers at universities across the country. In addition, numerous faculty members have received recognition for their scholarly publications and professional contributions.

The College of Education values faculty scholarship for its potential impact on the increased effectiveness of teaching and learning in professional education preparation programs and in public and private school settings. Scholarly and research activities cover a variety of areas represented by the expertise of each individual faculty member.

Evidence of service to the College of Education, the University, the community and the practicing profession is also expected of the faculty. This includes service to local constituencies such as school districts, education service centers, parent-teacher groups, professional associations, and/or other agencies and organizations dedicated to the improvement of teaching and learning. It also encompasses outreach programs, community events, civic leadership, and the promotion of alumni support and involvement. The extensive service activities of faculty members in the various departments have garnered additional awards from the University, the community, the state, and a variety of professional organizations.

Department of Curriculum and Instruction (p. 375)

Curriculum and Instruction faculty members focus on a wide range of topics associated with teaching and learning. These include improving the effectiveness of instruction in various content areas; studying family support for learning; addressing issues associated with social sciences; using technology to enhance distance education instruction and student mentoring; online supplemental student teacher supervision; the effectiveness of service learning; and the connections among brain physiology, cognition, and education. Funded projects include providing UT Arlington students as mentors to high school students for college success, math and science cohorts and camps, improving retention in post-secondary education, including college success strategies in educator preparation coursework. For more information about programs in Curriculum and Instruction in the College of Education, go to <https://www.uta.edu/coed/curricandinstruct/>.

Department of Educational Leadership and Policy Studies (p. 408)

Educational Leadership and Policy Studies faculty research activities and publications have focused on school leadership trends, developing collaborations among the University, public, private and charter schools; fostering creativity in learning organizations; studying legal, policy, and governance issues; and other education concerns. Current focus is on transition research relative to students, faculty, and leadership across PK-16 school settings, between high school and beyond, and transitions between leadership levels. Other research examines how the media portrays educators and the education profession. See <https://www.uta.edu/coed/educleadership/index.php> for additional information about programs in Educational Leadership and Policy Studies in the College of Education.

Resources

College of Education Advising Office

Advising Services helps students succeed by providing the information and support services needed to achieve their academic and career goals. The Academic Advisors are available to assist students in various stages of preparing for or furthering their careers as educators and school administrators.

Advising Services also provides information and advising regarding admission requirements and degree plan options, as well as the academic content areas.

Call 817.272.2956 to schedule an advising appointment. For advising questions email coedadvising@uta.edu (coehpadvising@uta.edu).

Certification

Information concerning state licensure examinations and educator preparation program application procedures is provided by Christine Pruitt, Assistant Director of Certification (christine.pruitt@uta.edu).

To be eligible for certification under all programs, a candidate must meet specific criteria set by the program, College of Education, University, and State Board for Educator Certification. See the College of Education website for additional information.

Educational Field Experience

The Office of Educational Field Experience supports partnerships between the College of Education and PK-16 schools and their communities. Partner public school districts and the College of Education collaborate to provide high-quality learning environments for future teachers. Prospective teacher candidates apply their knowledge of content and pedagogy during both a Field-Based Experience semester and a Student Teaching semester arranged through the Office of Educational Field Experience. The Field-Based Experience semester gives teacher education candidates the opportunity to observe and interact with diverse student populations in variety of formal and informal educational settings at partnership schools. During the Clinical Teaching semester, these pre-service teachers refine their teaching skills by working directly with students in classrooms, at designated public schools

in the candidate's area of certification, guided by a cooperating mentor teacher and supervising university faculty. Contact: Dr. Denise Collins, Assistant Dean, 817.272.7448, dacollins@uta.edu.

Education Career Services

www.uta.edu/coed/career (<https://www.uta.edu/coed/academics/career/>), 817.272.2831, or careerservices@uta.edu.

The Education Career Services office assists education students who are seeking positions as teachers and administrators. Positive collaborative relationships with partners in the various school districts are important to the College, the districts and students. The annual College of Education Career Day typically hosts over 50 school districts. Employers can list position vacancies as well as district job fairs with Education Career Services. In addition, Education Career Services offers career planning seminars, which include guidance on resume writing and developing strong interviewing and networking skills. The ultimate goal is to prepare UT Arlington students for the next step in their career development as professional educators and administrators.

UTeach Arlington

UTeach Arlington is the undergraduate science and mathematics secondary teacher preparation program jointly offered by the College of Science and the College of Education. The program features early field experiences in K-12 schools, courses taught by faculty in both Colleges, guidance from Master Teachers, and scholarship and internship opportunities. Secondary teacher certification that may be earned through UTeach Arlington includes (grades 7-12) Life Science, Physical Science, Chemistry, Physics, Science (Composite), Physics/Mathematics, and Mathematics. UTeach provides teaching kits for science and mathematics teacher education students, as well as certification exam preparation materials, books, journals, and a resource room/student lounge. The UTeach Arlington main office is located in 224 Science Hall. For information, contact: Erin Gonzales, UTeach Arlington Academic Advisor, 817.272.0784, egonzales@uta.edu; or contact Dr. Ann Cavallo, Co-director, College of Education, cavallo@uta.edu; Dr. Greg Hale, Co-director, College of Science, greg@hale.uta.edu; or Dr. Ramon Lopez, Co-director, College of Science, relopez@uta.edu. Visit the UTeach Arlington website at: <http://www.uta.edu/cos/uteach/index.html> (<http://www.uta.edu/cos/uteach/>).

COURSES

EDUC 2101. EXPLORING TEACHING. 1 Hour.

An opportunity to experience a mentorship with public school students while exploring the impact Gardner's Multiple Intelligences and personality profiles play in the learning environment. Ten hours of mentorship required. Academic credit awarded. Service Learning course.

EDUC 2302. THE PROFESSIONAL EDUCATOR. 3 Hours.

This course introduces students to the teaching profession. Professionalism, ethics, learning theory and historical foundations, advocacy, and current trends and issues in education will be examined. Students will develop a personal philosophy of education. This course fulfills the University requirement for either UNIV 1101 or UNIV 1131.

EDUC 2330. STUDENT LEADER EFFECTIVENESS TRAINING. 3 Hours.

Identifies the philosophy and theories of leadership, leadership styles, and contemporary leadership issues for any student who desires to pursue their leadership education. Practical application of leadership skills are developed through interactive class discussions, analyzing case studies, and group problem-solving and role-playing experiences. Elective only and does not count as part of the professional education certification requirements.

EDUC 3301. TEACHING DIVERSE LEARNERS. 3 Hours.

A survey course that focuses on effective differentiated instruction, assessment, and management strategies for working with diverse learners to build capacity for constructing a culturally responsive learning environment. Designed to provide increased self-awareness and insight into issues of diversity. Additionally, students will examine education law and models related to diverse learners as well as strategies for working with parents and families of diverse learners. Students will evaluate multicultural context, demographics, and practices at a local school. This course requires students to spend a minimum of 20 hours a semester in a K-12 classroom.

EDUC 3333. STEM EDUCATION IN THE PK-12 CONTEXT. 3 Hours.

Methods and materials for integrated STEM teaching and learning in the PK-12 context. Emphasis on developing best practices for an integrated context that combines and makes connections between science, technology, engineering, and mathematics. This includes, but is not limited to, project and problem-based learning, real world problem solving, inquiry-based instruction, computational thinking, and engineering design. Includes field-experience in a PK-12 STEM setting.

EDUC 3390. SPECIAL TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4316. FOUNDATIONS OF EDUCATION. 3 Hours.

The course introduces students to the teaching profession. Historical foundations, professionalism, school law (including special education law), diversity in education, effective communication, family involvement, and current trends and issues in education will be examined. Students will also examine personal reasons for wanting to teach and will create a personal philosophy of education. Field observation required. (2-1).

EDUC 4318. POSITIVE CLASSROOM MANAGEMENT. 3 Hours.

A survey of effective strategies of classroom management based on contemporary research. Particular attention will be paid to creating proactive learning environments through positive behavioral interventions and supports. Outcomes students will demonstrate include: instructional management and application of positive behavioral supports, procedures of assessment for planning classroom management; understanding of functional behavior assessment, a continuum of behavioral support, and the role of behavioral strategies in instructional classroom management; and understanding classroom management systems and instructional formats.

EDUC 4319. CLASSROOM ASSESSMENT. 3 Hours.

This course will introduce students to classroom assessment strategies that are used to inform teaching. Focus will include ways to interpret standardized test results and also create and use authentic classroom-based assessments to design and deliver differentiated instruction. Data-based instructional decisions will also be introduced. Course will include a field-based component.

EDUC 4325. WOMEN IN SCIENCE. 3 Hours.

Explores the role of women in science. Emphasis on gender and science, the history of women in science, gender equity in the classroom, strategies for the retention of women scientists, the current culture/climate for women in science, and contemporary women in science. Offered as EDUC 4325, SCIE 4325, and WOMS 4325. Credit will be granted only once.

EDUC 4331. KNOWING AND LEARNING IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program. Psychological foundations of learning; problem solving in mathematics and science education utilizing technology; principles of expertise and novice understanding of subject matter; implications of high-stakes testing; and foundations of formative and summative assessment. Three lecture hours a week for one semester; additional hours may be required. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment in either.

EDUC 4332. CLASSROOM INTERACTIONS. 3 Hours.

Restricted to students in the UTeach Arlington program. Principles of delivering effective instruction in various formats (lecture, lab activity, collaborative settings); examination of gender, class, race, and culture in mathematics and science education; overview of policy related to mathematics and science education. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in SCIE 1202 or C or better in SCIE 1334; C or better in EDUC 4331 or concurrent enrollment.

EDUC 4333. MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program who have earned a passing score on the preliminary portfolio. Multiple research-based teaching practices including foundations of project-based, case-based, and problem-based learning environments; principles of project-based curriculum development in mathematics and science education; classroom management and organization of inquiry-based, problem-based/project-based learning classrooms. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in EDUC 4332; formal admission to program.

EDUC 4340. HUMAN GROWTH AND DEVELOPMENT. 3 Hours.

Prerequisite to subsequent courses in teacher education. Physical, social, emotional, and cognitive growth patterns from conception to early adulthood, emphasizing familial, cultural, societal, and genetic determinants of behavior. Topics include developmental characteristics of children and adolescents including exceptional learners and students with special needs.

EDUC 4341. ORGANIZATION AND MANAGEMENT OF INSTRUCTION IN SECONDARY SCHOOLS. 3 Hours.

Emphasizes the importance of organizing, developing, and adapting management systems to enhance learning in classroom environments. Managing the teaching-learning process, applying a variety of assessment techniques, motivation, and adapting management styles to meet student needs. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4342. APPLICATIONS OF INSTRUCTION IN MIDDLE/SECONDARY SCHOOL CLASSROOMS. 3 Hours.

Field-based applications of inquiry-based curriculum planning and instructional theory and methods. Includes writing and implementing unit and instructional goals and objectives, using instructional lesson models to meet teacher appraisal criteria including utilization of classroom technology and audiovisual aids, planning for individual needs, and evaluating student progress. This course involves a lecture and application of lecture/theory. The application of lecture/theory will require students to spend time in a Grades 4-12 classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4343. TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL. 3 Hours.

Methods and materials for social studies teaching and learning at the secondary school level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a social studies classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a grades 7-12 social studies classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4344. TEACHING IN MIDDLE/SECONDARY SCHOOL SCIENCE CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based science teaching and learning at the middle/secondary level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a science classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a Grades 4-12 science classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4345. TEACHING IN MIDDLE/SECONDARY SCHOOL MATHEMATICS CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based mathematics teaching and learning at the middle/secondary school level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a mathematics classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a Grades 4-12 mathematics classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4346. SECONDARY SCHOOL CULTURE AND THE TEACHING PROFESSION. 3 Hours.

School cultures, effective schools and teaching practices, stages of professional development, foundations of American schools, legal and ethical aspects, and societal demands on the school.

EDUC 4347. SECONDARY SCHOOL INTERNSHIP WITH TECHNOLOGY APPLICATIONS. 3 Hours.

Supervised and directed professional practice in a local secondary school. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. Internship must be taken the semester prior to residency. Theory from technology will be applied during internship assignment.

EDUC 4352. TEACHING DIVERSE POPULATIONS. 3 Hours.

Effective instruction, assessment, and management strategies for working in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a project or a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor.

EDUC 4647. CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theories/backgrounds/strategies to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice. Prerequisite: Office of Educational Field Experiences approval required.

EDUC 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5263. READING AND DEVELOPMENT. 2 Hours.

This course will focus on the acquisition of reading skills in the typically developing child. Sub-skills and precursors of reading such as visual and phonological processing will be examined from a neurological point of view. This foundational knowledge will then be applied to researching reading difficulties as well as the teaching and learning in the classroom for typically developing students and those with reading difficulties.

EDUC 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5305. EFFECTIVE TEACHING AND LEARNING FOR 21ST CENTURY EC-12 STUDENTS. 3 Hours.

Students gain understanding of the nature of learning and the purpose of education as the pedagogical foundation to teaching in any discipline. Students develop knowledge of state and national standards and apply these standards vertically and horizontally in preparing high quality teaching and learning experiences. Students gain experience critically analyzing disciplinary content, instructional models, lessons, curricula, and research literature. Students learn to construct and test instructional models using activities that focus attention on diversity, authentic assessments, intellectual, social and emotional development, interdisciplinary connections, and technology. Must be taken prior to EDUC 5309.

EDUC 5309. ADVANCED TEACHING MODELS FOR DIVERSE LEARNERS. 3 Hours.

Students engage in the advanced study and design of curriculum models with an understanding of cognitive development, pedagogical content knowledge (PCK), and learning progressions. Students learn in-depth analyses of how students learn and how to appropriately differentiate instruction. Students learn culturally responsive teaching practices and gain skill in developing learning experiences that attend to teaching diverse learners. Prerequisite: EDUC 5305.

EDUC 5310. DIVERSE POPULATIONS IN TODAY'S SCHOOLS. 3 Hours.

An overview of the diverse populations in today's schools and effective instruction, assessment, and management strategies for working in diverse educational settings. Urban, suburban, and rural school communities and populations will be addressed with special attention to issues of human growth and development, culture, ethnicity, exceptionality, gender, language, religion and socioeconomic status. This course application of lecture/theory which will require students to spend a minimum of 20 hours in a K-12 classroom during normal school hours.

EDUC 5314. EFFECTIVE CLASSROOM INSTRUCTION. 3 Hours.

Designed to provide teachers with skills and competencies based on research findings on effective teaching and instruction related to promoting student academic achievement. Includes identifying, developing, and practicing instructional variables that affect teacher performance and student learning tasks. Includes field-experience in a local middle or high school based on teacher candidate's certification program. The application of lecture/theory will require candidates to spend time in a grades 7-12 classroom during normal school hours, Monday-Friday.

EDUC 5315. CLINICAL TEACHING. 3 Hours.

Supervised clinical teaching in candidate's area of certification. Candidates will be assigned full-time according to school district calendar. Required seminars provide candidates with theory to integrate and apply during clinical teaching. This experience will help candidates apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis.

EDUC 5321. EDUCATIONAL RESEARCH. 3 Hours.

Examination of basic concepts and procedures necessary for empirical research investigations within classroom contexts, experimental design, data collection and interpretation, and statistical analysis.

EDUC 5322. EDUCATIONAL RESEARCH AND EVALUATION. 3 Hours.

An overview of basic concepts and procedures necessary for analyzing, designing, and conducting quantitative and qualitative educational studies. A focus on educational research, including empirical research, investigations data collection and interpretation, and statistical analysis. Also, a focus on educational evaluation including accreditation, personnel appraisal, and educational programs and materials.

EDUC 5329. CLASSROOM MANAGEMENT AND DISCIPLINE. 3 Hours.

Analysis of the variables that affect teacher and student behavior in the classroom. Survey of effective strategies of classroom management and discipline based on contemporary research. Particular attention to individual student differences in settings such as gifted and talented, handicapped, and learning disabled.

EDUC 5330. LEADERSHIP IN THE INSTRUCTIONAL SETTING. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement.

EDUC 5358. THEMATIC SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Professional development program for elementary and secondary science teachers who will examine a variety of instructional strategies. The course will provide a broad spectrum of content from all areas of science and provide opportunities to participate in investigations, field trips and seminars. The course will facilitate the implementation of a thematic science curriculum in elementary and secondary schools through research-based practices.

EDUC 5359. ENVIRONMENTAL SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Designed for elementary, middle and high school teachers who will examine a variety of environmental education issues and instructional strategies for classroom and outdoor settings. The course will provide a broad spectrum of content from all areas of science and will provide opportunities to participate in field trips, science investigations and seminar sessions. It will facilitate the implementation of an environmentally based curriculum in schools using best practices.

EDUC 5360. INTRODUCTION TO MIND, BRAIN, AND EDUCATION. 3 Hours.

Students will explore and integrate five themes central to the emerging field of Mind, Brain and Education (MBE): development as seen by cognitive scientists and neuroscientists; the conceptual and technical tools used in MBE; and specific educational issues (e.g., dyscalculia, dyslexia, attention deficits, role of emotions etc.). This course also offers a number of exercises to help students become researchers as well as consumers of research. This iterative work is intended to support the longer-term goal of helping students develop and complete a capstone project for the master degree in Mind, Brain and Education. The capstone project is addressed in numerous courses in the masters program and concludes in EDUC 5368.

EDUC 5361. INTRODUCTION TO EDUCATIONAL NEUROSCIENCE. 3 Hours.

This course is designed to provide an introduction to foundational areas of neuroscience such as brain anatomy and brain mapping techniques and its applications to education. Students will study different viewpoints of links between education and neuroscience and develop their own notions of what educational questions might be answered with brain-based techniques.

EDUC 5362. THE NEUROSCIENCE OF TYPICAL & ATYPICAL LANGUAGE DEVELOPMENT. 3 Hours.

This course will examine the many levels of language including phonetics, phonology, semantics, syntax and pragmatics from both functional and neuroscientific perspectives. This will be closely tied to language acquisition and early language development. The focus on the pre-reading years will provide a solid basis for further study of literacy-related skills and overall learning. Sub-skills and precursors of reading will be examined from a neurological point of view and applied to researching reading difficulties as well as the teaching and learning in the classroom. Course offered as EDUC 5362 and SPED 5309; co-list credit will be granted only as one.

EDUC 5363. THE NEUROSCIENCE OF TYPICAL & ATYPICAL DEVELOPMENT OF MATHEMATICAL AND REASONING ABILITY. 3 Hours.

The course focuses on the development of problem-solving, logical, numeracy, and mathematical skills from a cognitive neurocognitive perspective. Woven throughout the course is attention to cognitive biases in scientific thinking. Two prominent features of the course include neuroplasticity as a result of organic and environmental pressures and brain-based disorders (dyscalculia, ADHD, autism) and adaptive strategies.

EDUC 5364. EPISTEMOLOGY AND NEUROSCIENCE. 3 Hours.

Students will explore the basic principles of reasoning and knowledge construction as well as their psychological and neurobiological underpinnings. Students compare and contrast the deductive and inductive methods used in decision-making and belief-forming processes. The course also highlights the role of the frontal cortex and limbic system in how learners address and resolve questions and challenges in varying contexts. The goal of the course is to offer students the theoretical structures and critical strategies necessary for assessing their own work toward the completion of the capstone project as well as for analyzing the outcomes it generates. The skills acquired in this course are widely transferrable and can help the student to become a better consumer and producer of pedagogical and scientific research.

EDUC 5365. THEORETICAL AND CONCEPTUAL MODELS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course is designed to help students connect cognitive science to instructional practice. Students examine the roles that cognitive models play in learning and in designing lessons and curricula. The cognitive models in this course are used to provide a framework for recognizing possible strategies for improving or re-designing curricula, as well as build lessons or interventions that fit their working context. Students are expected to take part in a prototype curriculum, analyze how it was constructed and to use their insights to build a modest curriculum over the course of the semester.

EDUC 5366. EVALUATING AND DEBUNKING EDUCATIONAL INTERVENTIONS. 3 Hours.

This course focuses on making sense of the impact of interactions between educational variables in complex systems like classrooms and schools. Being able to predict outcomes in dynamic environments requires understanding that the variables themselves can change as a result of interacting with each other, which influences how we understand systems from neural networks to school districts. The general sense of the course will be to understand certain behaviors/characteristics of dynamic systems from the examination and analysis of exemplars from multiple domains. We also examine how areas of the brain demonstrate these characteristics and use them to implement certain functionalities, and in turn examine the implications of these functionalities on curriculum and instruction.

EDUC 5367. RESEARCH METHODS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course presents an overview of the process of scientific inquiry, while fostering an understanding of research paradigms used by researchers in MBE. The primary course goals are to support students in developing a framework for their capstone project in MBE, and help them identify the research tools and methods necessary to carry out the capstone project. To support this work students analyze research from MBE as well as the wider literature to identify relevant tools, techniques and methodologies. As students develop expertise with the tools and techniques that are relevant to their capstone project they are expected to share that knowledge with their peers.

EDUC 5368. CONDUCTING RESEARCH IN MIND, BRAIN, AND EDUCATION. 3 Hours.

The goal of this course is to help students in the Mind, Brain and Education program complete their capstone project. Students work collaboratively with fellow students and with faculty oversight to prepare a poster presentation that summarizes their capstone work, as well as choose a local, national or international conference to present their work.

EDUC 5370. INTRODUCTION TO GIFTED AND TALENTED CHILDREN. 3 Hours.

Psychological characteristics of gifted and talented children. Introduction to identification techniques, educational programs, instructional approaches, and special problems.

EDUC 5371. MEASUREMENT AND ASSESSMENT OF GIFTED AND TALENTED CHILDREN. 3 Hours.

Tests, formal and informal measures, and systems for identification and selection of the gifted and talented student. Basic test construction theory, test interpretation, and test uses.

EDUC 5372. METHODS, MATERIALS, AND CURRICULUM FOR THE GIFTED AND TALENTED. 3 Hours.

Curriculum theory and curriculum design for the gifted student. Methodology for implementing practical and theoretical objectives for gifted instruction.

EDUC 5373. CREATIVITY: THEORIES, MODELS, AND APPLICATION. 3 Hours.

The concept of and current research on creativity, the nature and assessment of creative thinking, as well as methods of fostering creativity.

EDUC 5374. PRACTICUM. 3 Hours.

Participation in a gifted and talented setting supervised by a university and/or school district representative. A wide range of practical experiences will be emphasized. Graded P/F/R.

EDUC 5380. DIVERSITY IN EDUCATIONAL SETTINGS. 3 Hours.

Effective leadership, instruction, and management strategies for work in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. Demographic issues along with urban and suburban educational settings will also be addressed.

EDUC 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5394. UNDERSTANDING AND DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this introductory course, students learn about different types of educational research methods and study designs that can be applied to real-world settings. Furthermore, students learn about how to write measurable research questions, ethically collect data, and be introduced to qualitative, quantitative, and mixed methods study designs. At the conclusion of this course, students should be able to understand the basics of educational research to determine whether it would be appropriate for implementation in a real-world authentic setting. This course is to be taken after at least 3 hours of graduate course work and preceding EDUC 5397 or EDUC 5368.

EDUC 5395. DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this course, students will develop their own classroom educational research project. Their designed study will be based in the literature in their educational field and focus on classroom research questions and problems that will inform teaching practices. In this course, students will develop an individual research problem statement, argue the significance of the problem, complete a written literature review and logical chain of reasoning related to the stated problem, write specific research questions to investigate the problem in educational settings, and design a research study (methodology) that will effectively investigate their research questions. Students design a research study that shows promise for improving education, written as the first three chapters of a scholarly classroom action research project. Prerequisite: EDUC 5394. For M.Ed.T. students, this course is to be taken in the final semester of the masters' degree program. For M.Ed. students, this course is to be taken in the semester just prior to the final semester of the masters' degree program, and in the semester immediately preceding EDUC 5397.

EDUC 5396. EEG Laboratory and Experimental Design. 3 Hours.

This course is an introduction to EEG technique, covering experimental design, recording, analysis, and interpretation of brainwaves.

EDUC 5397. IMPLEMENTING AND DISSEMINATING CLASSROOM RESEARCH. 3 Hours.

In this advanced course, students will build on the knowledge gained in EDUC 5394/EDUC 5367 to specifically focus on how to collect, analyze, and interpret different types of data grounded in a variety of educational research methods. This course is split into three sections focusing on quantitative data analyses/interpretations (e.g., correlations, t-tests, and regressions), qualitative data analyses/interpretations (e.g., thematic analysis, content analysis, and summative analysis), and mixed methods analyses/interpretations. At the conclusion of this course, students should be able to collect, analyze, and interpret different types of data commonly used in educational classrooms to make data driven decisions. Prerequisite: EDUC 5394 or EDUC 5367.

EDUC 5600. COUNSELING STUDENTS IN SCHOOLS. 6 Hours.

The focus of this capstone course will be individual and group counseling theories and techniques for pre k-12 students in an educational setting. Special techniques are included for substance abuse, and for using group play therapy. Knowledge of Diagnostic and Statistical Manual of Mental Disorders, 4th. Edition (DSM IV) will be covered for purposes of diagnosis and for outside referral when necessary. Three hours in a supervised counseling practicum in area schools or with school children will be required.

Curriculum and Instruction

Undergraduate Degrees

- Bachelor of Arts in Education with EC-6 Bilingual Teacher Certification (p. 395)
- Bachelor of Arts in Education with EC-6 ESL Teacher Certification (p. 395)
- Bachelor of Arts in Education with 4-8 Middle-Level English Language Arts/Social Studies Teacher Certification (p. 395)
- Bachelor of Science in Education with 4-8 Middle-Level Math/Science Teacher Certification (p. 395)
- Bachelor of Science in Education with EC-12 Special Education and EC-6 Core Subjects Teacher Certification (p. 395)

Graduate Degrees

- Master of Education in Teaching (M.Ed.T.) with Teacher Certification (p. 390)
- Master of Education in Curriculum and Instruction (p.)
- Master of Education in Curriculum and Instruction - Science Education (p.)
- Master of Education in Curriculum and Instruction - Mathematics Education (p.)
- Master of Education in Curriculum and Instruction - Literacy Studies (p. 390)
- Master of Education in Mind, Brain, and Education (p. 390)
- Master of Education in Special Education (<https://catalog.uta.edu/education/curriculum/graduate/#masterstext>)

Professional Certification Preparation

- Initial Teacher Certification (p.)
- Reading Specialist Certification (p.)
- English as a Second Language (ESL) (p.)
- Bilingual Education (BIL) (p.)

COURSES

BEEP 3381. INTRODUCTION TO SPECIAL LANGUAGE PROGRAMS. 3 Hours.

Legal foundations and historical development of bilingual education, dual language, and special language programs will be introduced. Various models of bilingual education and English as a Second Language will be examined. An overview of special education, gifted and talented, and compensatory education legislation and its impact on the implementation of special language programs will be examined.

BEEP 4302. IMPLEMENTATION OF EC-6 DUAL LANGUAGE CURRICULUM MODELS. 3 Hours.

This course addresses programmatic, cultural, academic and linguistic considerations for the creation, implementation and maintenance of dual language curriculum models in EC-6 settings. In the course students will explore and implement various research-based teaching methods and strategies used in effective programs. It will also cover key components of dual language teaching and learning, including curriculum alignment (e.g., horizontal, vertical, spiral), language separation, and parent collaboration. Prerequisite: BEEP 4305.

BEEP 4305. BILITERACY DEVELOPMENT IN DUAL LANGUAGE PROGRAMS. 3 Hours.

Analysis of the structure of English and Spanish including phonology, morphology, syntax, semantics, lexicon, and pragmatics. Topics also include language interference and cross-linguistic transfer to promote biliteracy.

BEEP 4306. FAMILY LITERACY AND SECOND LANGUAGE ACQUISITION. 3 Hours.

Examines the relationships among family literacy, second-language acquisition, and literacy development in children. The course provides opportunities for students to explore a variety of home-school literacy programs designed to facilitate the development of literacy skills in parents and support reading and writing at home. Specific focus on theories regarding the relationship between first and second language acquisition and early education. Prerequisite: BEEP 3381.

BEEP 4311. MATH IN DUAL LANGUAGE SETTINGS. 3 Hours.

Integration of mathematic concepts in relation to the cognitive and linguistic development of English learners (ELs). Analysis of the State curriculum for mathematics in K-6. Design and implementation of instruction in dual language settings. Field experience required. Prerequisite: BEEP 3381.

BEEP 4312. SCIENCE AND HEALTH EDUCATION IN DUAL LANGUAGE SETTINGS. 3 Hours.

Integration of science and health concepts in relation to the cognitive and linguistic development of English learners (ELs). Analysis of the State curriculum for health and science in K-6. Design and implementation of instruction in dual language settings. Field experience required.

BEEP 4314. CREATIVE ARTS AND SOCIAL STUDIES IN DUAL LANGUAGE SETTINGS. 3 Hours.

Integration of visual arts, music, and social studies with a focus on instructional processes and skills for increasing children's understanding and appreciation of aesthetics. Implementation of the Texas Curriculum in Social Studies and Art Education in EC-6 dual-language classrooms; field experience required.

BEEP 4319. ASSESSMENT OF CULTURALLY AND LINGUISTICALLY DIVERSE STUDENTS IN EC-6 SETTINGS. 3 Hours.

Study of formal and informal assessment instruments and techniques for assessing the language development and literacy of English Learners(ELs) in EC-6 classrooms. Also, focus on diagnosing literacy learning strengths and needs.

BEEP 4366. SPANISH FOR TEACHERS IN DUAL LANGUAGE PROGRAMS: AN IMMERSION APPROACH. 3 Hours.

Development of Spanish proficiency for bilingual education teacher candidates through an immersion approach. Emphasis on concepts, functions and the scenarios used in the Spanish proficiency examination required for bilingual education teacher candidates.

BEEP 4382. LITERACY INSTRUCTION IN SPANISH FOR THE BILINGUAL CLASSROOM. 3 Hours.

Focuses on the development of literacy for bilingual children. Specific emphasis will be placed on the rationale, methods, and materials for literacy instruction in Spanish. The successful transition from first-language literacy instruction to literacy instruction in English will also be addressed. The course will be delivered in Spanish and students will be exposed to content and techniques to master the oral and written components of the Spanish language proficiency test required to become certified in bilingual education. Prerequisite: BEEP 4305, BEEP 4302.

BEEP 4384. LITERACY METHODS FOR ESL/BILINGUAL CLASSROOMS. 3 Hours.

The rationale and implementation of various instructional methods for English learners (ELs) will be discussed. Examination of language instruction for students at different stages of development. Sheltered English instruction for the teaching of content areas will also be presented. Students will be assigned to a special language program to examine methods of instruction and modifications for language minority children. Prerequisite: BEEP 3381, BEEP 4306.

BEEP 4385. SHELTERED ENGLISH INSTRUCTION. 3 Hours.

Analysis of the linguistic, cognitive, academic and cultural considerations required to provide meaningful and developmentally appropriate content area instruction to English language learners (ELLs) in PK-6. Prerequisite: BEEP 3381.

BEEP 4687. CLINICAL TEACHING IN EC-6 BILINGUAL/ESL CLASSROOMS. 6 Hours.

Full-time supervised and directed clinical teaching in EC-6 bilingual and ESL classrooms. Clinical teaching must immediately follow the field experience semester. Prerequisites: BEEP 4311, BEEP 4312, and BEEP 4314.

BEEP 5315. CLINICAL TEACHING. 3 Hours.

Clinical teaching in candidate's certification area(s). This semester-long experience will help candidates apply theory and research to practice.

BEEP 5318. FOUNDATIONS IN BILINGUAL EDUCATION. 3 Hours.

Analyzes the development of bilingual education in the United States. Introduces bilingual education program models and discusses research findings on their effectiveness.

BEEP 5321. ESL METHODS FOR EC-6 LEARNERS. 3 Hours.

Compares first and second-language acquisition processes. Identifies effective teaching practices to meet the needs of English learners (ELs). Analyzes elements from Spanish that can affect the acquisition of literacy in English. Offered as BEEP 5321 and LIST 5361. Credit will only be counted towards one program.

BEEP 5361. LANGUAGE LEARNING: EDUCATIONAL PERSPECTIVES PRACTICUM II. 3 Hours.

The practicum provides opportunities to apply effective instructional practices in teaching ESL students. Deals with the relationship between first and second language acquisition and literacy, dialect, linguistics, culture; nature and definition of language; overview of linguistic science and language with pedagogical applications.

BEEP 5362. LITERACY INSTRUCTION IN ESL/BILINGUAL SETTINGS. 3 Hours.

This course bridges theory to practice, stressing how the relationship between first and additional language acquisition and development can inform teaching ESL/bilingual students. Provides opportunities to apply effective instructional practices in teaching students to foster development in speaking, listening, reading, and writing within a framework of cultural understanding.

BEEP 5363. LITERACY DEVELOPMENT IN ENGLISH AND SPANISH. 3 Hours.

Focuses on the development of literacy in bilingual students with specific emphasis on the rationale, methods, and materials for literacy instruction in the student's home language. Attention to evaluating and supplementing first-language literacy materials and supporting the successful transition from first-language literacy instruction to literacy instruction in English.

BEEP 5364. LITERACY INSTRUCTION IN SPANISH IN THE CONTENT AREAS. 3 Hours.

Focuses on methods and materials for teaching content-area subjects in the student's home language. Additional focus on supporting the transition from home-language instruction to English-language instruction.

BEEP 5365. ORGANIZATION & ADMINISTRATION OF DUAL LANGUAGE PROGRAMS. 3 Hours.

Analysis of the research background and implementation of various models of dual language instruction. Insight of the process, data collection, and reporting requirements of the state and federal special populations legislation. This course requires an internship with the office of Federal Programs and/or the office of Bilingual/ESL Education in local school districts. Prerequisite: BEEP 5318.

BEEP 5366. SPANISH FOR SCHOOL ADMINISTRATORS & TEACHERS. 3 Hours.

Development of Spanish proficiency for teachers and administrators through an immersion approach. Emphasis on concepts and terminology related to education, program administration, community involvement, and communication with Spanish-speaking parents. This course can be repeated.

BEEP 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for course substitution or a topic agreed upon between the student and instructor. May be repeated for credit with permission.

COURSES

EDML 4300. PRE-ADOLESCENT/ADOLESCENT GROWTH AND DEVELOPMENT. 3 Hours.

Prerequisite to subsequent courses in teacher education. Physical, social, emotional, and cognitive growth patterns from emphasizing familial, cultural, societal, and genetic determinants of behavior. Topics include the following: developmental characteristics of pre-adolescents/ adolescents including exceptional learners and students with special needs, a variety of disabilities (Learning Disabled, Emotionally Disabled, Behavior Disorders, Attention Deficit Hyperactivity Disorder, etc.), the creation and purpose of Individual Education Plans, concepts, and forms, as well as the IDEA law, its application and ethical considerations. The course also includes a field component.

EDML 4350. NATURE & CURRICULUM NEEDS OF THE YOUNG ADOLESCENT LEARNER. 3 Hours.

Examines the curriculum, instruction, and organization of middle grades schools. Provides a substantial knowledge base in the nature and needs of early adolescents, as well as in middle school curriculum, instruction, and behavior management. A variety of instructional approaches will be discussed including the purpose and need for appropriate language, behavior, and disability modifications, inclusion, resource, content mastery, and others. Theory and practice in the teaching of students with special needs will be addressed. The course also includes a field component. Prerequisite: Admitted to the Middle Level Program.

EDML 4360. TEACHING STUDENTS WITH SPECIAL NEEDS - A SURVEY. 3 Hours.

Theory and practice in the teaching of students with special needs, including a survey of the variety of disabilities (LD, ED, physical handicapped, conduct, ADD, ADHD, etc.), the creation and purpose of Individual Education Plans, concepts and forms. The IDEA law and its application, and ethical considerations. A variety of instructional approaches will be discussed including the purpose and need for appropriate modifications, inclusion, resource, consult, content mastery and others. Special emphasis will be the State basic skills assessment and the State developed alternative assessment.

EDML 4370. SOCIAL STUDIES & DIVERSITY IN THE MIDDLE LEVEL GRADES. 3 Hours.

Examination of materials, methods, content, and assessment learning experiences associated with middle level social studies. Content areas include history, geography, economics, government, citizenship, culture, science, technology, and society. Prerequisites: EDML 4300 & EDML 4350; BEEP 4384; LIST 4343.

EDML 4371. SCIENCE IN THE MIDDLE LEVEL GRADES. 3 Hours.

Instructional approaches, management, materials, and effective teaching practices pertinent to teaching science in the middle level grades; the organization of science content and the selection and implementation of lesson designs which utilize a hands-on approach promoting discovery and inquiry. This Inquiry course involves a two-hour lecture and two-hour application of lecture /theory. The two-hour application of lecture/theory will require students to spend time in a 4-8 classroom during normal school hours. Prerequisites: EDML 4300, EDTC 4301, and EDML 4350.

EDML 4372. MATHEMATICS IN THE MIDDLE LEVEL GRADES. 3 Hours.

Curriculum standards, methods, and effective teaching practices as proposed by the National Council of Teachers of Mathematics for the middle level; the organization of mathematics content with an emphasis on using manipulatives and technology to teach math. This inquiry course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a 4-8 classroom during normal school hours. Prerequisite: EDML 4350.

EDML 4676. MIDDLE LEVEL FIELD-BASED EXPERIENCE. 6 Hours.

Supervised and directed field-based experience, Monday through Thursdays. Candidates will be placed in two settings: an early grade (4,5,6) and late grade (6,7,8) experience as well as in two content areas. Prerequisite: EDML 4300, EDML 4350, LIST 4343, and BEEP 4384. This course must be taken just prior to student teaching (EDML 4677).

EDML 4677. MIDDLE LEVEL CLINICAL TEACHING. 6 Hours.

Supervised and directed clinical teaching experience in an approved field setting, Monday through Friday. Candidates will be assigned for the Independent School District (ISD) calendar. Candidates will be placed in two settings: an early grade (4,5,6) and late grade (6,7,8) experience as well as in two content areas. Required seminars will provide candidates with theory to integrate and apply during clinical teaching. Prerequisites: LIST 4378.

EDML 5302. SCIENCE IN THE MIDDLE GRADES. 3 Hours.

The examination of instructional strategies, materials, current research, and technology pertinent to teaching science in the middle grades; the scope and sequence of science content and implementation of instructional approaches to accommodate diverse student populations.

EDML 5303. MATHEMATICS IN THE MIDDLE GRADES. 3 Hours.

The examination of instructional strategies, materials, current research, and technology pertinent to teaching mathematics in the middle grades; the scope and sequence of math content and the selection and implementation of instructional approaches to accommodate diverse student populations.

EDML 5304. SOCIAL STUDIES IN THE MIDDLE GRADES. 3 Hours.

An examination of content, methods, current research, and learning theory appropriate for social studies education in the middle grades. Special attention to methods that promote analytical and evaluative abilities necessary for participatory democracy in a culturally diverse society.

EDML 5308. MIDDLE GRADES ORGANIZATION, INSTRUCTION, AND MANAGEMENT. 3 Hours.

The examination of principles, theories, and research related to developmentally responsive middle level programs, effective instruction and effective strategies of classroom management. Attention is given to the employment of a variety of approaches for developing an appropriate climate to meet the varying needs of the middle level student.

EDML 5315. CLINICAL TEACHING. 3 Hours.

Clinical teaching in candidate's certification area(s). This longitudinal experience will help candidates apply theory and research to practice.

EDML 5328. PREADOLESCENT/ADOLESCENT GROWTH, DEVELOPMENT, AND LEARNING THEORY. 3 Hours.

Course will focus on physical, social, emotional, and cognitive growth patterns of 10- to 15-year-old children, emphasizing familial, cultural, societal, and genetic determinants of behavior. Attention is given to current research regarding the developmental characteristics of adolescents, including exceptional learners and students with special needs.

EDML 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

COURSES**EDTC 4201. TECHNOLOGY APPLICATIONS. 2 Hours.**

This course is for K-12 educators who are interested in integrating technology into teaching and learning. Its focus is on the technology applications Texas Essential Knowledge and Skills (TEKS). Participants should gain a greater understanding of the technology applications TEKS and how to introduce them into curriculum. Study and application of technology use in educational environments. Topics include: instructional learning and computer software.

EDTC 4301. TECHNOLOGY APPLICATIONS. 3 Hours.

This course is for K-12 educators who are interested in integrating technology into teaching and learning. Focus is on the technology applications Texas Essential Knowledge and Skills (TEKS). Participants should gain a greater understanding of the technology applications TEKS and how to introduce them into curriculum. Study and application of technology use in educational environments. Topics include: instructional learning and computer software.

EDTC 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDTC 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. May be repeated for credit with permission.

EDTC 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDTC 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDTC 5300. INTRODUCTION TO FOUNDATION OF EDUCATION INSTRUCTIONAL DESIGN AND TECHNOLOGY. 3 Hours.

Analysis of integrating TEKS, computers and related technologies in education. Topics include issues and concerns prior to integration, use of software in teaching and learning, identifying resources and strategies for use of the World Wide Web, and creating instructional activities into and across curriculum.

EDTC 5301. CURRENT APPLICATIONS OF TECHNOLOGY IN EDUCATION. 3 Hours.

Study of technology use in educational environments. Topics include: instructional, learning, assessment, and management applications; a review of current research on selection, evaluation, and integration of appropriate media; and computer hardware, software, and multimedia.

EDTC 5302. INTERNET IN EDUCATION. 3 Hours.

Course is designed to aid educators and training professionals in developing robust techniques for locating, utilizing, and creating Internet resources for professional productivity and research.

EDTC 5310. COMPUTER APPLICATIONS IN CURRICULUM AND INSTRUCTION. 3 Hours.

Designed for both elementary and secondary teachers; skills and methods necessary to implement computer applications within the curriculum. Methods for managing the computer in the classroom, courseware telecommunications within the curriculum.

EDTC 5320. WEB AUTHORING. 3 Hours.

Study of Web site planning, development and HTML tagging. Topics include: storyboards, content creation, Web site tagging with browser independent tags, use of color and fonts to communicate concepts, interactivity by design, ethical use of and respect for intellectual property, understand copyright, fair use, patent, and trademarks, the Master Technology Teacher Standards (EC-12) and the Standards for Basic Endorsement in Educational Computing and Technology Literacy.

EDTC 5330. DESKTOP PUBLISHING. 3 Hours.

Study of desktop publishing planning, development, and production. Topics include: desktop publishing terminology, basic design theory, principles of form and design, guidelines for desktop publishing, ethical use of and respect for intellectual property, understand copyright, fair use, patent, and trademarks, the Master Technology Teacher Standards (EC-12) and the Standards for Basic Endorsement in Educational Computing and Technology Literacy.

EDTC 5340. MULTIMEDIA. 3 Hours.

Study of multimedia planning, development, and implementation that maximize the use of technology, student learning, and teacher effectiveness. Topics include: methodologies for tutorials, hypermedia, drills, simulations, educational games, open-ended learning environments, testing, Web-based learning, interactivity by design, ethical use of and respect for intellectual property, understand copyright, fair use, patent, and trademarks, the Master Technology Teacher Standards (EC-12) and the Standards for Basic Endorsement in Educational Computing and Technology Literacy.

EDTC 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDTC 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. May be repeated for credit with permission.

COURSES**EDUCIR 5391. INDEPENDENT RESEARCH. 3 Hours.**

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

COURSES**EDUC 2101. EXPLORING TEACHING. 1 Hour.**

An opportunity to experience a mentorship with public school students while exploring the impact Gardner's Multiple Intelligences and personality profiles play in the learning environment. Ten hours of mentorship required. Academic credit awarded. Service Learning course.

EDUC 2302. THE PROFESSIONAL EDUCATOR. 3 Hours.

This course introduces students to the teaching profession. Professionalism, ethics, learning theory and historical foundations, advocacy, and current trends and issues in education will be examined. Students will develop a personal philosophy of education. This course fulfills the University requirement for either UNIV 1101 or UNIV 1131.

EDUC 2330. STUDENT LEADER EFFECTIVENESS TRAINING. 3 Hours.

Identifies the philosophy and theories of leadership, leadership styles, and contemporary leadership issues for any student who desires to pursue their leadership education. Practical application of leadership skills are developed through interactive class discussions, analyzing case studies, and group problem-solving and role-playing experiences. Elective only and does not count as part of the professional education certification requirements.

EDUC 3301. TEACHING DIVERSE LEARNERS. 3 Hours.

A survey course that focuses on effective differentiated instruction, assessment, and management strategies for working with diverse learners to build capacity for constructing a culturally responsive learning environment. Designed to provide increased self-awareness and insight into issues of diversity. Additionally, students will examine education law and models related to diverse learners as well as strategies for working with parents and families of diverse learners. Students will evaluate multicultural context, demographics, and practices at a local school. This course requires students to spend a minimum of 20 hours a semester in a K-12 classroom.

EDUC 3333. STEM EDUCATION IN THE PK-12 CONTEXT. 3 Hours.

Methods and materials for integrated STEM teaching and learning in the PK-12 context. Emphasis on developing best practices for an integrated context that combines and makes connections between science, technology, engineering, and mathematics. This includes, but is not limited to, project and problem-based learning, real world problem solving, inquiry-based instruction, computational thinking, and engineering design. Includes field-experience in a PK-12 STEM setting.

EDUC 3390. SPECIAL TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4316. FOUNDATIONS OF EDUCATION. 3 Hours.

The course introduces students to the teaching profession. Historical foundations, professionalism, school law (including special education law), diversity in education, effective communication, family involvement, and current trends and issues in education will be examined. Students will also examine personal reasons for wanting to teach and will create a personal philosophy of education. Field observation required. (2-1).

EDUC 4318. POSITIVE CLASSROOM MANAGEMENT. 3 Hours.

A survey of effective strategies of classroom management based on contemporary research. Particular attention will be paid to creating proactive learning environments through positive behavioral interventions and supports. Outcomes students will demonstrate include: instructional management and application of positive behavioral supports, procedures of assessment for planning classroom management; understanding of functional behavior assessment, a continuum of behavioral support, and the role of behavioral strategies in instructional classroom management; and understanding classroom management systems and instructional formats.

EDUC 4319. CLASSROOM ASSESSMENT. 3 Hours.

This course will introduce students to classroom assessment strategies that are used to inform teaching. Focus will include ways to interpret standardized test results and also create and use authentic classroom-based assessments to design and deliver differentiated instruction. Data-based instructional decisions will also be introduced. Course will include a field-based component.

EDUC 4325. WOMEN IN SCIENCE. 3 Hours.

Explores the role of women in science. Emphasis on gender and science, the history of women in science, gender equity in the classroom, strategies for the retention of women scientists, the current culture/climate for women in science, and contemporary women in science. Offered as EDUC 4325, SCIE 4325, and WOMS 4325. Credit will be granted only once.

EDUC 4331. KNOWING AND LEARNING IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program. Psychological foundations of learning; problem solving in mathematics and science education utilizing technology; principles of expertise and novice understanding of subject matter; implications of high-stakes testing; and foundations of formative and summative assessment. Three lecture hours a week for one semester; additional hours may be required. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment in either.

EDUC 4332. CLASSROOM INTERACTIONS. 3 Hours.

Restricted to students in the UTeach Arlington program. Principles of delivering effective instruction in various formats (lecture, lab activity, collaborative settings); examination of gender, class, race, and culture in mathematics and science education; overview of policy related to mathematics and science education. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in SCIE 1202 or C or better in SCIE 1334; C or better in EDUC 4331 or concurrent enrollment.

EDUC 4333. MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program who have earned a passing score on the preliminary portfolio. Multiple research-based teaching practices including foundations of project-based, case-based, and problem-based learning environments; principles of project-based curriculum development in mathematics and science education; classroom management and organization of inquiry-based, problem-based/project-based learning classrooms. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in EDUC 4332; formal admission to program.

EDUC 4340. HUMAN GROWTH AND DEVELOPMENT. 3 Hours.

Prerequisite to subsequent courses in teacher education. Physical, social, emotional, and cognitive growth patterns from conception to early adulthood, emphasizing familial, cultural, societal, and genetic determinants of behavior. Topics include developmental characteristics of children and adolescents including exceptional learners and students with special needs.

EDUC 4341. ORGANIZATION AND MANAGEMENT OF INSTRUCTION IN SECONDARY SCHOOLS. 3 Hours.

Emphasizes the importance of organizing, developing, and adapting management systems to enhance learning in classroom environments. Managing the teaching-learning process, applying a variety of assessment techniques, motivation, and adapting management styles to meet student needs. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4342. APPLICATIONS OF INSTRUCTION IN MIDDLE/SECONDARY SCHOOL CLASSROOMS. 3 Hours.

Field-based applications of inquiry-based curriculum planning and instructional theory and methods. Includes writing and implementing unit and instructional goals and objectives, using instructional lesson models to meet teacher appraisal criteria including utilization of classroom technology and audiovisual aids, planning for individual needs, and evaluating student progress. This course involves a lecture and application of lecture/theory. The application of lecture/theory will require students to spend time in a Grades 4-12 classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4343. TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL. 3 Hours.

Methods and materials for social studies teaching and learning at the secondary school level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a social studies classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a grades 7-12 social studies classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4344. TEACHING IN MIDDLE/SECONDARY SCHOOL SCIENCE CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based science teaching and learning at the middle/secondary level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a science classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a Grades 4-12 science classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4345. TEACHING IN MIDDLE/SECONDARY SCHOOL MATHEMATICS CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based mathematics teaching and learning at the middle/secondary school level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a mathematics classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a Grades 4-12 mathematics classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4346. SECONDARY SCHOOL CULTURE AND THE TEACHING PROFESSION. 3 Hours.

School cultures, effective schools and teaching practices, stages of professional development, foundations of American schools, legal and ethical aspects, and societal demands on the school.

EDUC 4347. SECONDARY SCHOOL INTERNSHIP WITH TECHNOLOGY APPLICATIONS. 3 Hours.

Supervised and directed professional practice in a local secondary school. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. Internship must be taken the semester prior to residency. Theory from technology will be applied during internship assignment.

EDUC 4352. TEACHING DIVERSE POPULATIONS. 3 Hours.

Effective instruction, assessment, and management strategies for working in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a project or a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor.

EDUC 4647. CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theories/backgrounds/strategies to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice.

Prerequisite: Office of Educational Field Experiences approval required.

EDUC 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5263. READING AND DEVELOPMENT. 2 Hours.

This course will focus on the acquisition of reading skills in the typically developing child. Sub-skills and precursors of reading such as visual and phonological processing will be examined from a neurological point of view. This foundational knowledge will then be applied to researching reading difficulties as well as the teaching and learning in the classroom for typically developing students and those with reading difficulties.

EDUC 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5305. EFFECTIVE TEACHING AND LEARNING FOR 21ST CENTURY EC-12 STUDENTS. 3 Hours.

Students gain understanding of the nature of learning and the purpose of education as the pedagogical foundation to teaching in any discipline. Students develop knowledge of state and national standards and apply these standards vertically and horizontally in preparing high quality teaching and learning experiences. Students gain experience critically analyzing disciplinary content, instructional models, lessons, curricula, and research literature. Students learn to construct and test instructional models using activities that focus attention on diversity, authentic assessments, intellectual, social and emotional development, interdisciplinary connections, and technology. Must be taken prior to EDUC 5309.

EDUC 5309. ADVANCED TEACHING MODELS FOR DIVERSE LEARNERS. 3 Hours.

Students engage in the advanced study and design of curriculum models with an understanding of cognitive development, pedagogical content knowledge (PCK), and learning progressions. Students learn in-depth analyses of how students learn and how to appropriately differentiate instruction. Students learn culturally responsive teaching practices and gain skill in developing learning experiences that attend to teaching diverse learners.

Prerequisite: EDUC 5305.

EDUC 5310. DIVERSE POPULATIONS IN TODAY'S SCHOOLS. 3 Hours.

An overview of the diverse populations in today's schools and effective instruction, assessment, and management strategies for working in diverse educational settings. Urban, suburban, and rural school communities and populations will be addressed with special attention to issues of human growth and development, culture, ethnicity, exceptionality, gender, language, religion and socioeconomic status. This course application of lecture/theory which will require students to spend a minimum of 20 hours in a K-12 classroom during normal school hours.

EDUC 5314. EFFECTIVE CLASSROOM INSTRUCTION. 3 Hours.

Designed to provide teachers with skills and competencies based on research findings on effective teaching and instruction related to promoting student academic achievement. Includes identifying, developing, and practicing instructional variables that affect teacher performance and student learning tasks. Includes field-experience in a local middle or high school based on teacher candidate's certification program. The application of lecture/theory will require candidates to spend time in a grades 7-12 classroom during normal school hours, Monday-Friday.

EDUC 5315. CLINICAL TEACHING. 3 Hours.

Supervised clinical teaching in candidate's area of certification. Candidates will be assigned full-time according to school district calendar. Required seminars provide candidates with theory to integrate and apply during clinical teaching. This experience will help candidates apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis.

EDUC 5321. EDUCATIONAL RESEARCH. 3 Hours.

Examination of basic concepts and procedures necessary for empirical research investigations within classroom contexts, experimental design, data collection and interpretation, and statistical analysis.

EDUC 5322. EDUCATIONAL RESEARCH AND EVALUATION. 3 Hours.

An overview of basic concepts and procedures necessary for analyzing, designing, and conducting quantitative and qualitative educational studies. A focus on educational research, including empirical research, investigations data collection and interpretation, and statistical analysis. Also, a focus on educational evaluation including accreditation, personnel appraisal, and educational programs and materials.

EDUC 5329. CLASSROOM MANAGEMENT AND DISCIPLINE. 3 Hours.

Analysis of the variables that affect teacher and student behavior in the classroom. Survey of effective strategies of classroom management and discipline based on contemporary research. Particular attention to individual student differences in settings such as gifted and talented, handicapped, and learning disabled.

EDUC 5330. LEADERSHIP IN THE INSTRUCTIONAL SETTING. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement.

EDUC 5358. THEMATIC SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Professional development program for elementary and secondary science teachers who will examine a variety of instructional strategies. The course will provide a broad spectrum of content from all areas of science and provide opportunities to participate in investigations, field trips and seminars. The course will facilitate the implementation of a thematic science curriculum in elementary and secondary schools through research-based practices.

EDUC 5359. ENVIRONMENTAL SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Designed for elementary, middle and high school teachers who will examine a variety of environmental education issues and instructional strategies for classroom and outdoor settings. The course will provide a broad spectrum of content from all areas of science and will provide opportunities to participate in field trips, science investigations and seminar sessions. It will facilitate the implementation of an environmentally based curriculum in schools using best practices.

EDUC 5360. INTRODUCTION TO MIND, BRAIN, AND EDUCATION. 3 Hours.

Students will explore and integrate five themes central to the emerging field of Mind, Brain and Education (MBE): development as seen by cognitive scientists and neuroscientists; the conceptual and technical tools used in MBE; and specific educational issues (e.g., dyscalculia, dyslexia, attention deficits, role of emotions etc.). This course also offers a number of exercises to help students become researchers as well as consumers of research. This iterative work is intended to support the longer-term goal of helping students develop and complete a capstone project for the master degree in Mind, Brain and Education. The capstone project is addressed in numerous courses in the masters program and concludes in EDUC 5368.

EDUC 5361. INTRODUCTION TO EDUCATIONAL NEUROSCIENCE. 3 Hours.

This course is designed to provide an introduction to foundational areas of neuroscience such as brain anatomy and brain mapping techniques and its applications to education. Students will study different viewpoints of links between education and neuroscience and develop their own notions of what educational questions might be answered with brain-based techniques.

EDUC 5362. THE NEUROSCIENCE OF TYPICAL & ATYPICAL LANGUAGE DEVELOPMENT. 3 Hours.

This course will examine the many levels of language including phonetics, phonology, semantics, syntax and pragmatics from both functional and neuroscientific perspectives. This will be closely tied to language acquisition and early language development. The focus on the pre-reading years will provide a solid basis for further study of literacy-related skills and overall learning. Sub-skills and precursors of reading will be examined from a neurological point of view and applied to researching reading difficulties as well as the teaching and learning in the classroom. Course offered as EDUC 5362 and SPED 5309; co-list credit will be granted only as one.

EDUC 5363. THE NEUROSCIENCE OF TYPICAL & ATYPICAL DEVELOPMENT OF MATHEMATICAL AND REASONING ABILITY. 3 Hours.

The course focuses on the development of problem-solving, logical, numeracy, and mathematical skills from a cognitive neurocognitive perspective. Woven throughout the course is attention to cognitive biases in scientific thinking. Two prominent features of the course include neuroplasticity as a result of organic and environmental pressures and brain-based disorders (dyscalculia, ADHD, autism) and adaptive strategies.

EDUC 5364. EPISTEMOLOGY AND NEUROSCIENCE. 3 Hours.

Students will explore the basic principles of reasoning and knowledge construction as well as their psychological and neurobiological underpinnings. Students compare and contrast the deductive and inductive methods used in decision-making and belief-forming processes. The course also highlights the role of the frontal cortex and limbic system in how learners address and resolve questions and challenges in varying contexts. The goal of the course is to offer students the theoretical structures and critical strategies necessary for assessing their own work toward the completion of the capstone project as well as for analyzing the outcomes it generates. The skills acquired in this course are widely transferrable and can help the student to become a better consumer and producer of pedagogical and scientific research.

EDUC 5365. THEORETICAL AND CONCEPTUAL MODELS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course is designed to help students connect cognitive science to instructional practice. Students examine the roles that cognitive models play in learning and in designing lessons and curricula. The cognitive models in this course are used to provide a framework for recognizing possible strategies for improving or re-designing curricula, as well as build lessons or interventions that fit their working context. Students are expected to take part in a prototype curriculum, analyze how it was constructed and to use their insights to build a modest curriculum over the course of the semester.

EDUC 5366. EVALUATING AND DEBUNKING EDUCATIONAL INTERVENTIONS. 3 Hours.

This course focuses on making sense of the impact of interactions between educational variables in complex systems like classrooms and schools. Being able to predict outcomes in dynamic environments requires understanding that the variables themselves can change as a result of interacting with each other, which influences how we understand systems from neural networks to school districts. The general sense of the course will be to understand certain behaviors/characteristics of dynamic systems from the examination and analysis of exemplars from multiple domains. We also examine how areas of the brain demonstrate these characteristics and use them to implement certain functionalities, and in turn examine the implications of these functionalities on curriculum and instruction.

EDUC 5367. RESEARCH METHODS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course presents an overview of the process of scientific inquiry, while fostering an understanding of research paradigms used by researchers in MBE. The primary course goals are to support students in developing a framework for their capstone project in MBE, and help them identify the research tools and methods necessary to carry out the capstone project. To support this work students analyze research from MBE as well as the wider literature to identify relevant tools, techniques and methodologies. As students develop expertise with the tools and techniques that are relevant to their capstone project they are expected to share that knowledge with their peers.

EDUC 5368. CONDUCTING RESEARCH IN MIND, BRAIN, AND EDUCATION. 3 Hours.

The goal of this course is to help students in the Mind, Brain and Education program complete their capstone project. Students work collaboratively with fellow students and with faculty oversight to prepare a poster presentation that summarizes their capstone work, as well as choose a local, national or international conference to present their work.

EDUC 5370. INTRODUCTION TO GIFTED AND TALENTED CHILDREN. 3 Hours.

Psychological characteristics of gifted and talented children. Introduction to identification techniques, educational programs, instructional approaches, and special problems.

EDUC 5371. MEASUREMENT AND ASSESSMENT OF GIFTED AND TALENTED CHILDREN. 3 Hours.

Tests, formal and informal measures, and systems for identification and selection of the gifted and talented student. Basic test construction theory, test interpretation, and test uses.

EDUC 5372. METHODS, MATERIALS, AND CURRICULUM FOR THE GIFTED AND TALENTED. 3 Hours.

Curriculum theory and curriculum design for the gifted student. Methodology for implementing practical and theoretical objectives for gifted instruction.

EDUC 5373. CREATIVITY: THEORIES, MODELS, AND APPLICATION. 3 Hours.

The concept of and current research on creativity, the nature and assessment of creative thinking, as well as methods of fostering creativity.

EDUC 5374. PRACTICUM. 3 Hours.

Participation in a gifted and talented setting supervised by a university and/or school district representative. A wide range of practical experiences will be emphasized. Graded P/F/R.

EDUC 5380. DIVERSITY IN EDUCATIONAL SETTINGS. 3 Hours.

Effective leadership, instruction, and management strategies for work in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. Demographic issues along with urban and suburban educational settings will also be addressed.

EDUC 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5394. UNDERSTANDING AND DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this introductory course, students learn about different types of educational research methods and study designs that can be applied to real-world settings. Furthermore, students learn about how to write measurable research questions, ethically collect data, and be introduced to qualitative, quantitative, and mixed methods study designs. At the conclusion of this course, students should be able to understand the basics of educational research to determine whether it would be appropriate for implementation in a real-world authentic setting. This course is to be taken after at least 3 hours of graduate course work and preceding EDUC 5397 or EDUC 5368.

EDUC 5395. DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this course, students will develop their own classroom educational research project. Their designed study will be based in the literature in their educational field and focus on classroom research questions and problems that will inform teaching practices. In this course, students will develop an individual research problem statement, argue the significance of the problem, complete a written literature review and logical chain of reasoning related to the stated problem, write specific research questions to investigate the problem in educational settings, and design a research study (methodology) that will effectively investigate their research questions. Students design a research study that shows promise for improving education, written as the first three chapters of a scholarly classroom action research project. Prerequisite: EDUC 5394. For M.Ed.T. students, this course is to be taken in the final semester of the masters' degree program. For M.Ed. students, this course is to be taken in the semester just prior to the final semester of the masters' degree program, and in the semester immediately preceding EDUC 5397.

EDUC 5396. EEG Laboratory and Experimental Design. 3 Hours.

This course is an introduction to EEG technique, covering experimental design, recording, analysis, and interpretation of brainwaves.

EDUC 5397. IMPLEMENTING AND DISSEMINATING CLASSROOM RESEARCH. 3 Hours.

In this advanced course, students will build on the knowledge gained in EDUC 5394/EDUC 5367 to specifically focus on how to collect, analyze, and interpret different types of data grounded in a variety of educational research methods. This course is split into three sections focusing on quantitative data analyses/interpretations (e.g., correlations, t-tests, and regressions), qualitative data analyses/interpretations (e.g., thematic analysis, content analysis, and summative analysis), and mixed methods analyses/interpretations. At the conclusion of this course, students should be able to collect, analyze, and interpret different types of data commonly used in educational classrooms to make data driven decisions. Prerequisite: EDUC 5394 or EDUC 5367.

EDUC 5600. COUNSELING STUDENTS IN SCHOOLS. 6 Hours.

The focus of this capstone course will be individual and group counseling theories and techniques for pre k-12 students in an educational setting. Special techniques are included for substance abuse, and for using group play therapy. Knowledge of Diagnostic and Statistical Manual of Mental Disorders, 4th. Edition (DSM IV) will be covered for purposes of diagnosis and for outside referral when necessary. Three hours in a supervised counseling practicum in area schools or with school children will be required.

COURSES**ELED 4311. TEACHING MATHEMATICS IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.**

Principles of integration of mathematics concepts in relation to cognitive development. Emphasis on developing dispositions promoting scientific investigation and appropriate objects, materials, activities and programs to assist in assimilation of mathematics concepts. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural and multilingual classrooms for this content area; 20 hours field-based experiences required. Prerequisite: ELED 4312, ELED 4314. Taken concurrently with BEEP 4384.

ELED 4312. TEACHING SCIENCE AND HEALTH IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Principles of integration of science and health concepts in relation to cognitive, socio-emotional, and psychomotor development. Emphasis on developing dispositions promoting scientific investigation and appropriate objects, materials, activities and programs to assist in assimilation of science and health concepts. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural and multilingual classrooms for this content area; 20 hours field-based experiences required. Prerequisite: Taken concurrently with ELED 4314.

ELED 4314. TEACHING SOCIAL STUDIES AND FINE ARTS IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Examination of materials, methods, content, and assessment learning experiences associated with elementary social studies and fine arts. Content areas include history, geography, economics, government, citizenship, culture, science, technology and society. Opportunities to demonstrate applications in field settings. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural, and multilingual classrooms for this content area; 20 hours field experiences required. Prerequisites: Taken concurrently with ELED 4312.

ELED 4317. GROWTH, DEVELOPMENT, AND LEARNING THEORY. 3 Hours.

Examination of the relationship between major theories and principles of cognitive, socio-emotional, and psychomotor development and EC-6 student learning, home-school connections, and behavior in the classroom. Emphasis on environmental and cultural influences on children's development and learning, prenatal through age 12. Prerequisite: ELED 4311, ELED 4312, ELED 4314.

ELED 4321. CLASSROOM MANAGEMENT, PEDAGOGY, AND PRACTICES IN EC-6 EDUCATION. 3 Hours.

A study of developmentally appropriate curriculum and methods for elementary classrooms, including diversity, assessment, behavior guidance and management, planning instruction, and creating a positive learning environment. Course will also address instructional needs and appropriate assessment of all students in inclusive, multicultural, and multilingual classrooms. Field observations required. Prerequisites: EDUC 4316, ELED 4317.

ELED 4687. CLINICAL TEACHING IN EARLY AND ELEMENTARY EDUCATION. 6 Hours.

Full-day, Monday - Friday, supervised and directed clinical teaching in university-approved EC-6 classrooms. Candidates will have two placements: one in PK-2 and one in grade 3-6. Clinical teaching must immediately follow the field-based experiences semester. Candidates will follow the school district's calendar, and report to the classroom all day and each day of the semester. Prerequisites: ELED 4311, ELED 4312, ELED 4314, ELED 4317, BEEP 4306, BEEP 4384; LIST 4373, LIST 4374, LIST 4376, EDUC 3301, EDUC 4318, EDUC 4319.

ELED 5309. TRENDS AND ISSUES IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION. 3 Hours.

In-depth analysis of current research and practical articles on trends and issues in early childhood and elementary education. Emphasis on the evaluation and impact of historical, political, and social policy; overview of legislation and advocacy on behalf of young children.

ELED 5312. EC6: INSTRUCTIONAL STRATEGIES IN SCIENCE. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on science concepts and cognitive development. Emphasis on developing dispositions toward scientific inquiry and the use of appropriate objects, materials, activities, and programs to assist in the learning of science concepts.

ELED 5315. CLINICAL TEACHING. 3 Hours.

Clinical teaching in candidate's certification area(s). This semester-long experience will help candidates apply theory and research to practice.

ELED 5317. THEORIES OF CHILD DEVELOPMENT AND LEARNING. 3 Hours.

Human growth and development, including developmental anomalies, from birth through middle childhood with emphasis on cognitive, social, emotional, and physical growth. Attention is given to current research regarding establishment of learning environments that foster development of the child's self-concept, cognitive competencies, oral language and literacy development, and positive social behaviors including appreciation of diversity among individuals and groups.

ELED 5318. FOUNDATIONS IN EC6 EDUCATION. 3 Hours.

An overview of historical and philosophical influences and current research in early and elementary education on promoting educational environments that support development of the whole child. Attention is given to the development and implementation of appropriate EC-6 curricula and programs that extend and integrate learning experiences of children, including the home-school relationship; 20 hours field experiences required.

ELED 5319. EC6 EDUCATION: INSTRUCTIONAL STRATEGIES IN MATHEMATICS. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on mathematics concepts and cognitive development. Emphasis on developing dispositions toward the use of appropriate objects, materials, activities, and programs to assist in learning of mathematics concepts.

ELED 5320. EC6 EDUCATION: INSTRUCTIONAL STRATEGIES IN SOCIAL STUDIES AND THE CREATIVE ARTS. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on social studies, the creative arts, and cognitive and socio-emotional development. Emphasis on developing dispositions promoting awareness of self and others, and the study of group dynamics involved in the socialization process in a diverse community. Strategies for enhancing creativity and risk-taking characteristics in EC-6 classrooms.

ELED 5321. EC-6: CLASSROOM MANAGEMENT & INSTRUCTIONAL STRATEGIES. 3 Hours.

This course explores a variety of effective classroom management and instructional strategies which include developmentally appropriate, research-based, and anti-biased curricular and materials to teach the core content subjects of English language arts, mathematics, science, and social studies in ESL elementary classrooms. This course also examines challenges to inquiry-based instruction, including those related to assessment, behavior guidance and management, planning instruction, and diversity; 20 hours of field observations are required.

ELED 5390. SELECTED TOPICS IN ELEMENTARY EDUCATION. 3 Hours.

An examination of different topics related to elementary education. This course may be repeated for credit with permission.

ELED 5391. INDEPENDENT RESEARCH. 3 Hours.

Research over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

COURSES

LISTIR 5391. INDEPENDENT RESEARCH IN READING. 3 Hours.

Individual or small group research project on a literacy-related topic agreed upon between student(s) and instructor. May be repeated for credit with permission.

COURSES

LIST 4326. SECONDARY READING. 3 Hours.

This course focuses on the scope of reading instruction in the secondary schools and the processes and skills for reading. Students explore programs, trends, and issues related to secondary reading instruction along with comprehension and word study instruction, the integration of reading with writing and oral communication, selection of print materials competency, and an examination of visual literacy and the media.

LIST 4343. CONTENT AREA READING AND WRITING. 3 Hours.

Explores methods of teaching reading, writing, and study skills across the curriculum. Emphasis on text structure and the differences between narrative and expository text, graphic organizers, and the reading/writing process as applied to informational text. Classroom adaptations for culturally and linguistically diverse populations in the content areas are also addressed.

LIST 4373. LITERACY LEARNING FOR EC-6 STUDENTS: READING AND WRITING. 3 Hours.

Comprehensive literacy approach to teaching with an emphasis on guided reading and writing. Theoretical models, principles of teaching reading and writing using a variety of instructional strategies, the role of foundational literacy learning, effective program organization, assessment, and classroom management.

LIST 4374. LITERACY LEARNING FOR EC-6 STUDENTS: LITERATURE AND LANGUAGE. 3 Hours.

Comprehensive approach to literacy instruction. Emphasis on using genres of children's literature to promote language and literacy development. Instructional models and techniques for using children's literature across the curriculum. Use of appropriate media and non-print materials, selection and evaluation of literature, and strategies for stimulating and expanding children's response to literature.

LIST 4376. ASSESSMENT IN LITERACY LEARNING. 3 Hours.

Examines a variety of formal and informal literacy assessment tools and techniques. Also focuses on diagnostic procedures for identifying literacy learning strengths and needs. Students will apply reading and writing assessment and instructional strategies with children.

LIST 4378. TEACHING READING, WRITING, AND LITERATURE IN THE MIDDLE LEVEL GRADES. 3 Hours.

Theory and practice in the teaching of literacy for the middle level grades, including various instructional approaches to reading, writing, listening, and speaking; motivating student readers and writers, vocabulary and comprehension, strategies for various writing modes, purposes, and audiences; and the basic components of assessment. Integration of literature suitable for the middle level; selection and evaluation of appropriate fiction, nonfiction, and poetry for instruction, as well as literature-based instructional methods. This course includes an embedded field experience component, which requires students to work with middle grades learners during normal school hours.

LIST 4390. SELECTED TOPICS IN LITERACY. 3 Hours.

An examination of different topics related to literacy. This seminar may be repeated for credit as the topic changes.

LIST 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a project in a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Consent of instructor.

LIST 5315. LITERACY THEORY TO PRACTICE. 3 Hours.

Designed as an introduction to comprehensive literacy education. Provides students the opportunity to explore theory, research, and knowledge in the field of literacy, including teaching diverse learners and students for whom English is an additional language.

LIST 5316. LITERACY THEORY TO PRACTICE - PRACTICUM I. 3 Hours.

Designed as an introduction to comprehensive literacy education. Provides students the opportunity to explore the theory, research, and knowledge in the field of literacy, including teaching diverse learners and students for whom English is an additional language, with application through field experiences in schools and classrooms. This course should be taken in the first full semester in the MEd in Curriculum and Instruction with Literacy Studies Emphasis student's program. It must be completed before enrolling in LIST 5361 and LIST 5317.

LIST 5317. LITERACY LEADERSHIP AND COACHING: PRACTICUM III. 3 Hours.

This practicum is the capstone experience for students in the M.Ed. with Literacy Studies Emphasis. The course provides an opportunity to synthesize the theory and research related to literacy that has been presented in the program, to explore literacy program development and the implementation of technology in literacy programs, and to participate in professional leadership. Prerequisite: LIST 5316, LIST 5361, and at least 4 additional program courses.

LIST 5325. UNDERSTANDING LITERACY RESEARCH. 3 Hours.

Designed as an introduction and exploration of literacy research. Provides the opportunity to read broadly in the area of literacy research to become aware of current trends and methodologies. Emphasizes the tools for critically consuming literacy research and utilizing existing research in personal examinations of literacy topics and questions.

LIST 5326. PRE-ADOLESCENT & ADOLESCENT LITERACY. 3 Hours.

Focuses on literacy theory, research, and practice as it relates to pre-adolescents and adolescents. Addresses sociocultural, cognitive, linguistic, psychological, and developmental influences on literacy. Explores the development of curricular designs for teaching reading/language arts in middle and secondary schools including reading, writing, oral communication, literature, and digital literacy.

LIST 5345. CONTENT AREA READING AND WRITING. 3 Hours.

Explores methods of teaching reading, writing, and study skills across the curriculum. Emphasis on text structure and the difference between narrative and expository text, graphic organizers, and the reading/writing process as applied to informational text. Classroom adaptations for culturally and linguistically diverse populations in the content areas also will be addressed.

LIST 5346. TEACHING THE WRITING PROCESS. 3 Hours.

Current research and theory on the writing process, how children develop as writers, the teacher's role, the learning environment, and motivation, assessment, and evaluation in writing. Current approaches to digital writing and multimodal writing will be explored.

LIST 5350. LITERACY ASSESSMENT. 3 Hours.

Formal and informal assessment of student literacy learning, and diagnosis of student literacy learning strengths and needs.

LIST 5353. LITERATURE FOR CHILDREN AND YOUNG ADULTS. 3 Hours.

Selection, evaluation, and use of current literature published for children and young adults.

LIST 5354. MULTICULTURAL LITERATURE FOR CHILDREN AND YOUNG ADULTS. 3 Hours.

Study of literature for children and young adults which reflects the experiences representing cultural, ethnic, geographic, linguistic, gender, ability, and other dimensions of diversity. Consideration of selection guidelines, evaluation of literary quality as well as cultural authenticity and teaching applications, including adaptations for culturally and linguistically diverse populations.

LIST 5361. LANGUAGE LEARNING: EDUCATIONAL PERSPECTIVES PRACTICUM II. 3 Hours.

This practicum-based course bridges theory to practice, stressing how the relationship between first and additional language acquisition and development can inform teaching ESL/bilingual students. Provides opportunities to apply effective instructional practices in teaching ESL students to foster development in speaking, listening, reading, and writing within a framework of cultural understanding. Prerequisite: LIST 5316.

LIST 5362. LITERACY INSTRUCTION IN ESL/BILINGUAL SETTINGS. 3 Hours.

This course bridges theory to practice, stressing how the relationship between first and additional language acquisition and development can inform teaching ESL/bilingual students. Provides opportunities to apply effective instructional practices in teaching students to foster development in speaking, listening, reading, and writing within a framework of cultural understanding.

LIST 5373. FOUNDATIONS OF LITERACY LEARNING IN EC-6 CLASSROOMS. 3 Hours.

Comprehensive approach to literacy instruction in EC-6 classrooms with an emphasis on reading and writing including the critical areas of phonics, phonemic awareness, word study, vocabulary, fluency, comprehension, and writing. In addition, the course examines various theoretical models of literacy along with the principles of teaching reading and writing using a variety of instructional strategies, effective program organization, assessment, and classroom management.

LIST 5381. NATIONAL WRITING PROJECT PART I. 3 Hours.

An intensive institute in which teachers learn ways to improve student writing abilities by improving their own teaching and learning of writing. Students participate in an intensive literature review related to the area of writing instruction. Prerequisite: Students must apply and be invited to participate in this course. Concurrent enrollment in LIST 5382.

LIST 5382. NATIONAL WRITING PROJECT PART II. 3 Hours.

An intensive institute in which teachers learn ways to improve student writing abilities by improving their own teaching and learning of writing. For this part of the workshop, students build on their literature review by writing a research proposal and developing research-based writing instruction. In addition, professional development training for classroom teachers is provided. Prerequisite: Students must apply and be invited to participate in this course. Concurrent enrollment in LIST 5381.

LIST 5383. WRITING FOR PROFESSIONAL PUBLICATION. 3 Hours.

This course focuses instructor and peer interaction as students conduct literacy-related research, analyze data, write up the results, and disseminate their completed study to a professional journal. A comprehensive study of professional journals and their requirements for submission is included in this course. Prerequisite: LIST 5385 or program advisor approval.

LIST 5384. ADVANCED PEDAGOGY OF WRITING. 3 Hours.

This course focuses on strategies for teaching prewriting, drafting, revising, editing, and publishing through writing workshop, literature focus units, and thematic units as well as through the content areas. Both writing assessment with rubrics and evaluation with portfolios are studied. Students compose both expository and expressive pieces as well as design and micro teach mini lessons and a web-based integrated writing unit. Prerequisite: LIST 5346, or LIST 5381, and LIST 5382, or program advisor approval.

LIST 5385. DESIGNING LITERACY RESEARCH. 3 Hours.

This course is designed to build on the LIST 5325, Understanding Literacy Research, by providing an exploration of the process for quantitative, mixed methods or qualitative research design. Includes an examination of various research designs related to language and literacy development including models such as case studies, ethnography, observations and interviews. Students are lead through the research process including forming a theoretical epistemology, formulating research questions, reviewing literature, selecting methods of data collection, interpretation and analysis of data and writing a research proposal. Students will be expected to complete this research focus in the program capstone experience, LIST 5317. Prerequisite: LIST 5325.

LIST 5390. SELECTED TOPICS IN READING. 3 Hours.

An examination of different topics each semester, with a focus on subjects related to reading, writing, oral language, and literacy.

LIST 5391. INDEPENDENT RESEARCH IN READING. 3 Hours.

Individual or small group research project on a literacy-related topic agreed upon between student(s) and instructor. May be repeated for credit with permission.

COURSES

MAED 5351. WHOLE NUMBERS, RATIONAL NUMBERS, & OPERATIONS. 3 Hours.

In this course students engage in activities and problem solving on concepts related to whole numbers, rational numbers and operations. Students in the course will learn to utilize research-based, problem-based teaching methods to promote K-12 student understanding. Students will experience how K-12 students learn these concepts as they themselves engage in computation and problem solving activities transferrable to classroom practice. In this course, students will engage in experiences to learn and teach their K-12 students on using numbers, number systems and their structure, operations and algorithms, quantitative reasoning, and technology.

MAED 5352. PATTERNS & ALGEBRA. 3 Hours.

This course engages students in problem-based teaching and curriculum development to help children learn problem solving and critical thinking with an emphasis on patterns, relations, functions, algebraic reasoning, analysis, and technology. The course incorporates research shown effective in helping children develop necessary skills for algebraic reasoning as a foundation for higher level mathematics learning.

MAED 5353. PROBABILITY & STATISTICS. 3 Hours.

In this course students will engage in learning experiences and readily usable curricula for teaching K-12 students concepts of probability and statistics, their applications, and technology. Students will examine K-12 student learning and research-based practices that best help them understand these mathematical concepts and that will promote their development of probabilistic reasoning abilities.

MAED 5354. PROBLEM SOLVING. 3 Hours.

In this course, students experience and practice innovative curricula for teaching and learning problem solving. Students engage in hands-on activities and apply various problem solving techniques, using mathematical processes to reason mathematically, to solve mathematical problems, to make mathematical connections within and outside of mathematics, and to communicate mathematically. Students learn to identify relevant and irrelevant variables in problems and work through problems to arrive at meaningful solutions. Students examine research on ways to help K-12 students become effective problem solvers as transferrable to other mathematics topics and subjects across the curriculum.

MAED 5355. CONCEPTUAL GEOMETRY. 3 Hours.

In this course students will experience and incorporate active learning curricula that utilize a variety of manipulative materials, diagrams, models, and pictures to study geometry and spatial reasoning. The students will learn effective, research-based practices for teaching geometry and examine ways to best help K-12 students build geometric and spatial understandings as a foundation for later, more complex abstract visualizations.

MAED 5356. MEASUREMENT. 3 Hours.

This course focuses on inquiry-based, problem-based curricula that help K-12 students learn concepts of measurement including units of measure, standardization, and error. Students will learn to use teaching techniques that will promote K-12 students' understanding as well as the application of measurement concepts to other subjects and to everyday life experiences.

COURSES

SCED 5351. PHYSICAL SCIENCE - PROPERTIES AND CHANGES IN MATTER. 3 Hours.

This course provides an in depth study of the properties and changes in matter and how to teach these concepts to students in grades K-12 science. Students study matter by engaging in inquiry and field/laboratory investigations using scientific processes, critical thinking, and problem solving. The course will help students learn to teach these physical science concepts to K-12 students using inquiry models.

SCED 5352. PHYSICAL SCIENCE - FORCE & ENERGY. 3 Hours.

In this course, students gain scientific knowledge about characteristics and interactions among matter, force, and energy with interdisciplinary and everyday life connections. Topics experienced through laboratory/field based investigations include: gravity, work, friction, acceleration, volume, length, distance, light, forms of energy, electricity, heat, and simple machines. The course will help students learn to teach these physical science concepts to K-12 students using inquiry models.

SCED 5353. EARTH SCIENCE - STRUCTURES, MOVEMENT, & CHANGES IN EARTH & SPACE. 3 Hours.

Through laboratory investigations, students gain knowledge of the various constructive and destructive forces that shape and alter the Earth's surfaces such as plate tectonics, volcanoes, earthquakes, erosion, weathering and deposition, as well as conservation of resources. The course will include studies of rock identification, and the rock cycle, as well as geologic time and the fossil record. The course includes study of earth, moon and planetary characteristics and motions. The course will enable students to teach these earth science concepts to K-12 students using inquiry models.

SCED 5354. EARTH SCIENCE - WATER PROPERTIES, DISTRIBUTION, THE WATER CYCLE, & WEATHER. 3 Hours.

Students gain understanding of the importance of water including the topics of cohesion, adhesion, surface tension, and capillary action. Water distribution on Earth is analyzed using maps and charts, with connections to geographic and climatic characteristics of the various regions. Water, as a major factor in weather, along with other meteorological variables such as air pressure, humidity, dew point, and cloud formation will be studied and weather patterns will be tracked over time using technology and maps. The course will provide students with the knowledge and skills required to teach these earth science concepts to K-12 students using inquiry models.

SCED 5355. LIFE SCIENCE - UNITY & DIVERSITY OF LIFE & LIFE PROCESSES. 3 Hours.

This course will explore living organisms and classification of organisms. The course will focus on the unity of life including the cell and cell components and the life functions, as well as the diversity of life including a look at pathogenic agents including bacteria and viruses. The course will analyze the structure and function of DNA and genetics. The course will include comparative anatomy and physiology studies of organisms. Students will learn how to teach these life science concepts to K-12 students using inquiry models.

SCED 5356. LIFE SCIENCE - CYCLES IN NATURE, ADAPTATIONS, AND ENVIRONMENTAL SCIENCE. 3 Hours.

This course analyzes life, biochemical, and geochemical cycles within the natural world and how they impact ecological systems and environment. Students conduct laboratory and field investigations to examine and recognize various plant and animal adaptations. Science topics include camouflage, mimicry, body coverings, mouthparts, habitats. Math-science integrations include estimations, relationships, graphing, and number sense. Inquiry models will be used to help students learn to teach these life science concepts to K-12 students.

Curriculum and Instruction - Graduate Programs

Degrees / Certificates

MASTER'S DEGREES (P. 390)

- M.Ed. in Curriculum & Instruction - Literacy Studies
- M.Ed. in Curriculum & Instruction - Mathematics Education
- M.Ed. in Curriculum & Instruction - Science Education
- M.Ed. in Curriculum & Instruction - Open Option
- M.Ed. in Mind, Brain, and Education
- M.Ed.T., Master of Education in Teaching, with Teacher Certification
- M.Ed. in Special Education

CERTIFICATES (P. 393)

- Initial Teacher Certification, ESL EC6 Generalist
- Initial Teacher Certification, Bilingual EC6 Generalist
- Initial Teacher Certification, 4-8
- Initial Teacher Certification, 7-12
- Initial Teacher Certification EC-12
- English as a Second Language Certification
- Reading Specialist Certification

Programs

The Department of Curriculum and Instruction currently offers the Master of Education in Teaching (M.Ed.T.), the M.Ed. in Special Education, and the Master of Education in Curriculum and Instruction (M.Ed.) degrees. Certification and supplemental certifications are offered for: Reading Specialist, Bilingual Education (BEEP), and English as a Second Language (ESL). Distance learning opportunities in some degree programs are available for those interested (see section on Distance Learning Options). Students pursuing a master's degree are required, with the assistance of the Graduate Advisor and graduate faculty, to complete a tentative program of work. This program of work is filed in the College of Education Graduate Advising Office and may be modified as needed. All master's degrees in Curriculum and Instruction comprise a minimum of 30 semester hours and are non-thesis.

Objective

The Master of Education in Teaching (M.Ed.T.) degree is designed for those wishing to pursue initial teacher certification at the graduate level. The Master of Education in Curriculum and Instruction (M.Ed.) degree provides opportunities for those interested in developing effective teaching, research, and leadership skills that are congruent with an ever-expanding theoretical knowledge base in the field. The degree enables teachers to specialize in advanced coursework in their teaching fields and other professional certification areas designed to meet a variety of professional goals. Both degrees help prepare graduates to reflect upon their own teaching as well as on the state of education as a whole and to better understand the linkage between the theory and practice of teaching. The M.Ed. in Special Education is uniquely focused on the needs of students with disabilities. This graduate program includes a heavy emphasis on teaching and learning with assistive technology, evidence-based behavioral strategies, and research.

Each student's program of study is planned individually and provides academic and/or pedagogical specialization within the context of the general field of education. Graduate faculty in the College of Education as well as those in departments and in the colleges throughout the University work closely with students in formulating study plans that meet the students' objectives and individual goals for professional growth. Each program of work includes both professional and academic components.

Criminal History Acknowledgement

As required by Texas HB1508, applicants need to be aware of the following.

1. In order to receive educator certification in Texas, you must pass a criminal history background check.
2. If you have been convicted of an offense that is considered not appropriate for an educator, you could be ineligible to earn this certification from the state of Texas.
3. You have a right to request a preliminary criminal history evaluation letter from the Texas Education Agency prior to admission into this program. The Texas Education Agency currently charges a non-refundable \$50 fee for this criminal history evaluation.

For more information on Preliminary Criminal History Evaluation:

https://tea.texas.gov/Texas_Educators/Investigations/Preliminary_Criminal_History_Evaluation-FAQs/

Information for Out-of-State Students Who Complete COEd Programs

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Professional Dispositions

Each student/candidate in the College of Education of UT Arlington will be evaluated on Professional Dispositions by the faculty and staff. These dispositions are identified as essential for a highly-qualified professional. Instructors and program directors will work with students/candidates rated as “unacceptable” in one or more stated criteria. The student/candidate will have an opportunity to develop a plan to remediate any digressions. If digression(s) are not, or cannot be successfully remediated as in the case of an egregious digression, a determination will be made by Committee on continuation or dismissal from the College of Education.

Changes

Program requirements may change as state/TEA certification requirements change.

Admissions Requirements

Department of Curriculum and Instruction M.Ed. and M.Ed.T. Programs

Admission to Master of Education (M.Ed.) in Curriculum and Instruction Programs is competitive and some qualified students may not be admitted if demand exceeds the program’s capacity to serve all applicants. All students must meet university, college, department, and Texas Administrative Code qualifications in order to participate in educator preparation programs. Out-of-state students will not qualify for Texas educator certification. Therefore, students should review their state’s requirements to determine if completion of a program at UTA will lead to certification in their state.

Unconditional Admission Criteria

1. Proof of two or more years of relevant experience.
2. Undergraduate transcripts with at least a 3.0 GPA during the last 60 hours or at least a 3.0 cumulative GPA. The higher of these GPAs will be used for admission purposes. A 3.0 GPA on the last 9 hours of graduate coursework may be considered in place of the undergraduate GPA.
3. Two professional letters of reference. Letters from supervisors are strongly encouraged. Applicants for the M.Ed. in Special Education submit a personal statement of interest. M.Ed. in Special Education applicants who are not certification seeking submit only a personal statement of interest rather than letters of reference.

Program areas have additional requirements including documents for TEA reporting, including: 1) a written response to the given prompt (fulfills “other screening instrument” as required by The Texas Education Agency), and 2) completion of Attestation and FERPA forms. In addition, some programs require access to an approved Pre K-12 setting. The overall grade point average (GPA) of each incoming class admitted between September 1 and August 31 of each year by an educator preparation program (EPP) may not be less than 3.0 on a four-point scale or the equivalent. Certification programs have additional TAC requirements for GPA (used by the program in addition to, not in lieu of, the requirements stated above).

Probationary Admission Criteria

1. Applicants who have less than 2 years of relevant experience, AND have a GPA of at least 3.0 and two letters of reference, may be granted probationary admission. The faculty admissions committee may require additional documents (e.g., GRE scores) for consideration. M.Ed. in Special Education program applicants may also be admitted on a probationary status with less than 2 years of relevant work experience, and a personal statement of interest.
2. Students granted probationary admission must maintain a 3.0 (B or better) GPA in the first 9 credit hours of graduate coursework in the College of Education program to be converted from probationary to unconditional admission.

Program areas have additional requirements including documents for TEA reporting, including: 1) a written response to the given prompt (fulfills “other screening instrument” as required by The Texas Education Agency), and 2) completion of Attestation and FERPA forms. In addition, some programs require access to an approved Pre K-12 setting. The overall grade point average (GPA) of each incoming class admitted between September 1 and August 31 of each year by an educator preparation program (EPP) may not be less than 3.0 on a four-point scale or the equivalent. Certification programs have additional TAC requirements for GPA (used by the program in addition to, not in lieu of, the requirements stated above).

Deferred Admission

An applicant’s admission may be deferred when a file is not complete or when denying admission is not appropriate.

Denied Admission

An applicant may be denied admission if the conditions for unconditional or probationary admission are not met. In addition, if a student was suspended or expelled from the University of Texas at Arlington or any other university or program for reasons other than academic, that student may be denied admission or readmission to an educator preparation program in the UTA College of Education.

Eligibility for Scholarships/Fellowships

To be eligible, candidates must be new students coming to UT Arlington in the fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Office of Graduate Studies, and must be enrolled in a minimum of six (6) hours of coursework in both long semesters to retain their fellowships.

Distance Learning Options

Many graduate courses in the Department of Curriculum and Instruction are offered on campus as well as over the Internet. For the distance learning option, students enroll in the Internet course and complete all course requirements from the convenience of their home or school computers. Basic computer competence is necessary (logging on to a Web site, sending and receiving e-mail). Students need a reliable Internet connection. All assignments are submitted electronically according to an established calendar of deadlines. Students participate in a highly interactive learning environment.

Degree Requirements

In order to graduate from UTA and the College of Education, all candidates must have at least a 3.0 GPA.

Master of Education in Teaching (M.Ed.T.) with Teacher Certification

The Master of Education in Teaching (M.Ed.T.), a 30-hour non-thesis degree, is a unique and specialized degree that enables a student holding a baccalaureate degree to pursue initial teacher certification and use those hours toward requirements of a master's degree. In addition to being accepted by the Office of Graduate Studies, students must also be admitted into the Teacher Certification program (consult a teacher certification advisor for current admittance requirements). For teacher certification, students must meet state requirements for their teaching field(s) or specialization and complete the graduate-level coursework for early childhood - grade 6 ESL, middle level, secondary, or early childhood - grade 6 bilingual certification. They must also fulfill the student teaching requirements and pass the appropriate certification exams (consult a teacher certification advisor for current certification information). Up to 18 hours of teacher certification coursework may be applied to the total 30 hours required for completion of the M.Ed.T.; however, students must complete teacher certification courses and pass the appropriate certification exams before proceeding to courses that apply to the master's degree. Students may earn teacher certification without completing a master's degree. See the College of Education Web site at <https://www.uta.edu/coed/> (<https://www.uta.edu/coed/>) for more details on all programs.

Master of Education (M.Ed.)

The Master of Education degree in Curriculum and Instruction (M.Ed.), a 30-hour non-thesis degree, is a broad-based degree that enables students to pursue academic and professional goals within an individualized program. Following are possible master's degree options.

M.Ed. in Curriculum and Instruction

This particular master's degree option is ideal for students desiring a pedagogical foundation in education in addition to an 18-hour concentration of a particular resource area or academic discipline. A common core of 12 hours of graduate education coursework in instructional strategies, curriculum design, and research are required. Students also choose from a variety of certifications available through the College of Education and Health Professions to incorporate into their master's degree plan (see the section on Professional Certifications), or they may choose to incorporate up to 18 hours of graduate coursework from disciplines outside of Education. For example, a degree plan for a student who desires TESOL (Teaching English to Speakers of Other Languages) certification would include the required 12 hours of coursework in Education along with the 18 hours of Linguistics coursework from the Program in Linguistics. The Graduate Advisor works with students in creating a degree plan that meets their professional needs and goals. (Note: The Graduate Advisor and graduate faculty must approve all coursework included in a degree plan.) This degree does not require a student to hold a teacher certificate. See the College of Education Web site at www.uta.edu/coed (<http://www.uta.edu/coehp/>) for more details on the program.

M.Ed. in Curriculum and Instruction - Science Education

M.Ed. in Curriculum and Instruction - Mathematics Education

The M.Ed. in Curriculum and Instruction - Science Education and M.Ed. in Curriculum and Instruction - Mathematics Education offer opportunity for students to pursue graduate studies by taking a *Core component* of 4 courses (12 credit hours) in the College of Education focusing on topics such as inquiry-based, problem-based teaching and learning, diversity, and classroom research, and a *Concentration area component* of 6 courses (18 credit hours). The six *concentration area* courses may be taken either in the Department of Curriculum and Instruction for a science and mathematics content-curriculum integration emphasis and/or in the College of Science for deeper subject matter emphasis in the various science and mathematics disciplines. These programs offer flexibility in course selection, yet are focused on science and mathematics teaching and learning in K-16 educational settings.

A version of this program is offered online through the Accelerated Online program. For more information on the online program please visit: <http://academicpartnerships.uta.edu/>

M.Ed. in Curriculum and Instruction - Literacy Studies (available online)

One of the most popular M.Ed. degree plans is the M.Ed. in Curriculum and Instruction - Literacy Studies. In this program, students specialize in advanced coursework designed to meet a variety of professional goals related to literacy. For instance, eligible students may pursue professional certificates including the following.

- **Reading Specialist.** Literacy coaches generally work with teachers to help them with best literacy practices. Reading Specialist is an advanced certificate that eligible certified teachers may add to their existing credential upon completion of two year's teaching experience and a master's degree with at least 27 hours of graduate coursework in literacy.
- **English as a Second Language.** In Texas, ESL is an add-on certificate that eligible individuals with an initial teaching certificate can add to their existing credential with only 12 hours of graduate coursework.
- **Writing Focus** is a 30-hour, non-certificate, degree focus area providing extra coursework in writing instruction and assessment.

Out of state students seeking certification should go to <http://www.uta.edu/coed/distancededucation/> (<https://academicpartnerships.uta.edu/programs/education.aspx>) for information about their certification options.

In addition to these professional certificates, students may choose focused coursework in areas including:

- Writing
- Working with culturally and linguistically diverse students

This program requires 30 credit hours (10 courses). Once students have successfully completed all coursework, they will graduate with a Master of Education in Curriculum and Instruction. In addition, on passing the appropriate TExES tests, eligible students will also have the Reading Specialist Certification and/or supplemental certification in English as a Second Language. The ESL is a 12-hour, four-course program that can be taken as part of this master's degree plan or separately in preparation for the TExES test for supplemental certification in ESL. For additional information, contact Dr. Kathryn Pole at kpole@uta.edu.

M.Ed. in Mind, Brain, and Education

The Master's Degree in Mind, Brain, and Education integrates research in the cognitive and neurosciences and education along with classroom practice to develop more effective teaching methods as well as a deeper understanding of how to support life-long learning. The degree is a 30-hour non-thesis, non-certification program, focused on integrating cognitive science, neuroscience, and education to challenge and information pedagogy. The program focuses on the potential and limits of cognitive neuroscience in education and the central role educators can play in shaping research agendas in MBE. Graduates are expected to serve their community and the field by completing a project defined and carried out during the two-year program. Applicants must be accepted by the Office of Graduate Studies and admitted to the program as part of a cohort. Students complete nine required courses (27 credits) and choose one additional courses from a list of approved electives (3 credits). For additional information contact Dr. Dan Robinson at daniel.robinson@uta.edu.

M.Ed. in Special Education

The M.Ed. in Special Education includes a heavy emphasis on teaching and learning with assistive technology, evidence-based behavioral strategies, and research. This graduate program has multiple emphasis areas such as options for initial teacher certification preparation, high incidence disabilities, and low incidence disabilities. Students who successfully complete the certificate coursework, state and program requirements, and required exams will be eligible to apply for Texas EC-12 (early childhood-12th grade) Special Education certification. This program is uniquely focused on the needs of students with disabilities. For additional information, contact Dr. Bree Jimenez bree.jimenez@uta.edu.

See <https://www.uta.edu/coed/curricandirect/graduate/index.php> for plan of work information/links.

Coursework and Completion Requirements

- Master's degree and university graduate-level certificate programs must be completed within six years (time in military service excluded) from initial registration in the Office of Graduate Studies. Coursework that is more than six years old at the time of graduation or program completion cannot be used toward meeting the requirements for a master's degree or university graduate-level certificate. Coursework that is more than five years old cannot be used toward state certification requirements for licensure (further restrictions may apply, depending on program).
- Each student/candidate in the College of Education of UT Arlington will be evaluated on Professional Dispositions by the faculty and staff. These dispositions are identified as essential for a highly-qualified professional. Instructors and program directors will work with students/candidates rated as "unacceptable" in one or more stated criteria. The student/candidate will have an opportunity to develop a plan to remediate any digressions. If digression(s) are not, or cannot be successfully remediated as in the case of an egregious digression, a determination will be made by Committee on continuation or dismissal from the College of Education.

Criminal History Acknowledgement

As required by Texas HB1508, applicants need to be aware of the following.

1. In order to receive educator certification in Texas, you must pass a criminal history background check.

2. If you have been convicted of an offense that is considered not appropriate for an educator, you could be ineligible to earn this certification from the state of Texas.

3. You have a right to request a preliminary criminal history evaluation letter from the Texas Education Agency prior to admission into this program. The Texas Education Agency currently charges a non-refundable \$50 fee for this criminal history evaluation.

For more information on Preliminary Criminal History Evaluation:

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Changes

Program requirements may change as state/TEA certification requirements change.

Professional-Level Certifications

The Department of Curriculum and Instruction offers graduate-level programs leading to professional certificates. Certifications include Initial Teacher Certification (Early Childhood - Grade 6, Middle Level, Secondary, and EC-12) and the Reading Specialist Certification. Supplemental certification is available for English as a Second Language (ESL), Bilingual (BIL) and Gifted and Talented. The graduate-level coursework required for these programs may be applied toward a master's degree (M.Ed.T.). The Graduate Advisor works with the student to build an individual degree plan that incorporates one or more of these certification areas. See the College of Education Web site at www.uta.edu/coed (<http://www.uta.edu/coehp/>) for more details on these programs.

Initial Teacher Certification

Students holding a baccalaureate degree may pursue initial teacher certification at the graduate level. Students must be admitted to the Graduate School as master's-degree-seeking students (students may elect to complete certification only) and be admitted to Teacher Certification in the College of Education (see a Teacher Certification advisor for current requirements). Up to 18 hours of graduate-level teacher certification hours may be applied toward an M.Ed.T. Students must also complete the student teaching requirements and pass the appropriate TExES exams. Candidates for Teacher Certification must also meet all state requirements for coursework in their teaching field/academic specialization. Note, certification students must be advised and cleared to take teacher certification courses through Teacher Certification Advising. See the College of Education Web site at www.uta.edu/coed (<http://www.uta.edu/coehp/>) for more details on the program.

Reading Specialist Certification (available online)

Teachers interested in focusing on the important area of reading may pursue the Reading Specialist Certificate, an all-level (K-12) certificate. This unique program focuses on the needs of the multicultural and multi-linguistic classrooms of today with the possibility of integrating the requirements for the supplemental certification for ESL into the total program if desired. To qualify for the Reading Specialist Certificate, students must complete a master's degree, hold a valid Texas teacher certificate, document two years of acceptable classroom teaching experience in a TEA-approved school, and pass the Reading Specialist TExES. See the College of Education Web site at www.uta.edu/coed (<http://www.uta.edu/coehp/>) for more details on the program.

English as a Second Language (ESL) (available online)

The English as a Second Language (ESL) certification prepares candidates to teach children from all cultural and language backgrounds (speakers of Spanish, Vietnamese, etc.), and is required for those teachers working with students in grades PK-12 whose first language is not English. (No foreign language background is required for the ESL certificate.) The ESL endorsement may be added to any valid Texas teacher certificate. Students are required to take four required courses in any sequence, complete a practicum in an ESL classroom or one year of successful teaching experience in an ESL or Bilingual Education program approved by the Texas Education Agency, and pass the ESL TExES. (The four courses may be applied toward a master's degree and to the Reading Specialist Certificate.) See the College of Education Web site at www.uta.edu/coed (<http://www.uta.edu/coehp/>) for more details on the program.

Bilingual Education (BIL)

Teachers who are fluent in Spanish and wish to specialize in bilingual education will want to add the Bilingual Education to their initial certification. The required 12 hours of coursework may be incorporated into a master's degree program developed in consultation with the Graduate Advisor and graduate faculty. Students are required to take four courses and provide documentation of one year of successful teaching experience in a bilingual setting.

approved by the Texas Education Agency. Candidates must also pass the EC-6 Bilingual Generalist, and the Bilingual Target Language Proficiency Test--Spanish. See the College of Education Web site at www.uta.edu/coed (<http://www.uta.edu/coehp/>) for more details on the program.

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Changes

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Curriculum and Instruction - Undergraduate Programs

The mission of the Department of Curriculum and Instruction is to prepare and support effective professional educators who can meet students' diverse academic, social, and personal needs. Department faculty members also contribute to education by generating and disseminating high-quality research, developing innovative programs to meet education needs, and through providing meaningful professional service.

The Department of Curriculum and Instruction offers the following undergraduate degrees:

- Bachelor of Arts in Education with EC-6 Bilingual Teacher Certification
- Bachelor of Arts in Education with EC-6 ESL Teacher Certification
- Bachelor of Arts in Education with 4-8 Middle-Level English Language Arts/Social Studies Teacher Certification
- Bachelor of Science in Education with 4-8 Middle-Level Math/Science Teacher Certification
- Bachelor of Science in Education with EC-12 Special Education and EC-6 Core Subjects Teacher Certification

Eligible degreed candidates may choose to apply for the post-baccalaureate program for initial teacher certification at the graduate level. See the College of Education Web site (<http://www.uta.edu/coed/>) or a graduate academic advisor for details.

Field Experience

Application for clinical teaching is required a year in advance of your clinical teaching semester.

EC-6 Field Experience

Early Childhood - 6th Grade ESL and Bilingual Field Experience occurs in the fall semester. Candidates enroll in three on-campus courses and spend one day per week in a public school classroom. In this classroom, they will work with a cooperating teacher and complete assignments from their on-campus courses. Candidates may be offered opportunities for employment as early childhood teaching assistants in a kindergarten setting. To be eligible to participate in EC-6 field experiences, candidates must have:

- Filed a degree plan with the COEd Advising Office
- Completed all core and support system courses
- Met all requirements (GPA, TSI complete, and prerequisite courses)
- Pass a criminal background check

Middle-Level Field Experience

Middle Level teacher certification candidates participate in field experiences in both their junior and senior years in the program. Candidates receive two placements for field experiences, in an upper-grade classroom and in a lower-grade classroom. Candidates work with the same cooperating teachers both years. During the fall semester of the junior year, field experiences are a minimum of 20 hours. During the spring semester of the junior year, field experiences are a minimum of 40 hours. During the fall semester of the senior year, candidates are in their assigned field experience classrooms one day per week for ten weeks, five weeks at each placement. Candidates are also actively engaged in planning, teaching, and participating in the larger school events. To be eligible to participate in middle-level field experiences, candidates must have:

- Filed a degree plan with the COEd Advising Office
- Have a minimum GPA, not less than 2.75, for any applicant, that leads to a cohort average of 3.0 or higher.
- Completed the required content-area courses
- Earned a minimum GPA of 3.0 in all College of Education certification courses
- Pass a criminal background check

EC-12 Special Education Field Experience

EC-12 Special Education teacher certification candidates participate in field experiences in both their junior and senior years in the program. During the fall semester of the junior year, field experiences are a minimum of 30 hours. During the spring semester of the junior year, field experiences are a minimum of 20 hours. During the fall semester of their senior year, candidates are in their assigned field experience classrooms one day per week for ten weeks, five weeks at an elementary placement and five weeks at a secondary placement (which includes middle level). Candidates are also actively engaged in planning, teaching, and participating in the larger school events. To be eligible to participate in middle-level field experiences, candidates must have:

- Filed a degree plan with the COEd Advising Office
- Have a cumulative or last 60 hours minimum GPA, not less than 2.75, that leads to a cohort average of 3.0 or higher
- Meet Texas Success Initiative standards
- Have 6 or fewer hours of core/content courses remaining
- Pass a criminal background check

Secondary Field Experience

Field Experience for secondary teacher certification is a one-semester experience for candidates. During the 15-weeks field experience semester, secondary candidates spend five instructional clock hours and a one-hour planning period per week in their assigned schools working with cooperating teachers and secondary school students.

Eligible secondary certification candidates must make application for secondary field experience before the deadline early in the semester preceding the field experience assignment. Secondary field experience applications are then reviewed by partner schools, and candidates are subsequently assigned by the COEd Office of Educational Field Experiences to appropriate school sites (based on candidate's area of specialization and the partner school's needs).

For purposes of determining eligibility for field experience, all applicable grades, including those earned at other institutions, will be used in the calculation of grade point averages. Candidates are urged not to take more than 15 semester credit hours during the field experience semester.

To be eligible to participate in field experiences, secondary education candidates must:

- Have filed a degree plan with major academic department and have provided a copy to the COEd Advising Office
- Have a minimum GPA, not less than 2.75, for any applicant, that leads to a cohort average of 3.0 or higher.
- Have a minimum GPA of 3.0 in all COEd certification courses with a grade of C or better in all College of Education certification courses
- Attend a mandatory orientation to become familiar with the *Field Experience Handbook* and the requirements prior to beginning the field experience assignment
- Pass a criminal background check

Clinical (Student) Teaching

Early Childhood - 6th Grade ESL and Bilingual Clinical Teaching is a full-time supervised and directed practice in an approved Pre-K- 6th grade classroom. Clinical teachers will have at least two placements. Clinical teaching lasts one semester; it begins with the school district calendar and ends with UTA Graduation.

Middle-level 4th-8th Grade Clinical Teaching is the final semester. They attend faculty meetings, parent-teacher conferences and professional development experiences, as well as regularly scheduled university seminars that involve presentations by partner school principals and university faculty. Clinical teaching lasts one semester; it begins with the school district calendar and ends with UTA Graduation.

Early Childhood - 12th Grade Special Education Clinical Teaching is a full-time supervised and directed practice in an approved EC-12th grade classroom. Clinical teachers will have at least two placements (elementary and secondary). Clinical teaching lasts one semester; it begins with the school district calendar and ends with UTA Graduation.

Clinical Teaching for Secondary Certification immediately follows the field experience semester for students seeking Secondary certification and All-level certification. Clinical teaching lasts one semester; it begins with the school district calendar and ends with UTA Graduation. Clinical teaching involves working full-time with cooperating teachers and grades 7-12 students in the school setting five days a week. Clinical teaching is considered full-time enrollment.

Candidates must attend a mandatory orientation to become familiar with the Clinical Teaching Handbook and the requirements prior to beginning the clinical teaching assignment.

For purposes of determining clinical teaching eligibility for all education candidates, the following must be completed:

- Have a minimum GPA, not less than 2.75, for any applicant, that leads to a cohort average of 3.0 or higher.
- 3.0 GPA in all College of Education certification courses with a grade of C or better in all College of Education certification courses.
- Additional requirements specific to each certification level.

Oral Communication Competency Requirement

All students will satisfy the oral communication requirement during the professional development sequence leading to initial teacher certification. Students must complete the Field Experience semester with an acceptable evaluation of oral communication by university supervisors and assigned cooperating teachers in the field.

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Admission, Enrollment and Program Continuation

Eligibility for Admission and Enrollment

Students seeking admission to the College of Education must meet specific criteria established by the College of Education for unconditional admission:

- Satisfy credit hour requirements for admission to a degree plan.
- Application for admission.
- Submit transcripts from each college or university the student has attended (reflecting all current/completed semesters).
- Be TSI (Texas Success Initiative) complete
- Have a minimum GPA, not less than 2.75, for any applicant, that leads to a cohort average of 3.0 or higher.
- Any other assessment requirements deemed necessary by the College of Education.
- Students who have been suspended or expelled from The University of Texas at Arlington or any other university or program for reasons other than academic reasons may be denied admission or readmission to an educator preparation program in the College of Education.

Educator preparation program requirements are located on the College of Education website.

Eligibility for Program Continuation

Each candidate for certification must:

- Demonstrate suitability for admission to the education profession.
- Demonstrate knowledge of and adherence to the Code of Ethics and Standard Practices for Texas Educators.
- Demonstrate the speech competencies associated with proficient oral communication in instructional settings. If a student is found to be deficient in these competencies, successful completion of COMS 3315 or an approved substitute will be required.
- Demonstrate progress through committee assessment of the teaching field(s) or specialization(s) and maintain a 3.0 GPA in all College of Education certification courses with a grade of C or better.
- See College of Education website for additional educator preparation program requirements.

Students/candidates who have been suspended or expelled from The University of Texas at Arlington or any other university or program for reasons other than academic reasons may be denied admission or readmission to an educator preparation program in the College of Education.

Our candidates must have a minimum overall grade point average of 2.75 or at least 2.75 in the last 60 semester credit hours of coursework. Students who do not meet the grade point average of 2.75 should consult a program advisor to determine their eligibility.

Each student/candidate in the College of Education of UT Arlington will be evaluated on Professional Dispositions by the faculty and staff. These dispositions are identified as essential for a highly-qualified professional. Instructors and program directors will work with students/candidates rated as "unacceptable" in one or more stated criteria. The student/candidate will have an opportunity to develop a plan to remediate any digressions. If digression(s) are not, or cannot be successfully remediated as in the case of an egregious digression, a determination will be made by Committee on continuation or dismissal from the College of Education.

Criminal History Acknowledgement

As required by Texas HB1508, applicants need to be aware of the following.

1. In order to receive educator certification in Texas, you must pass a criminal history background check.
2. If you have been convicted of an offense that is considered not appropriate for an educator, you could be ineligible to earn this certification from the state of Texas.
3. You have a right to request a preliminary criminal history evaluation letter from the Texas Education Agency prior to admission into this program. The Texas Education Agency currently charges a non-refundable \$50 fee for this criminal history evaluation.

For more information on Preliminary Criminal History Evaluation:

https://tea.texas.gov/Texas_Educators/Investigations/Preliminary_Criminal_History_Evaluation-FAQs/

Degrees with Teacher Certification

Bachelor of Arts in Education with EC-6 ESL Teacher Certification

Pre-Professional Courses

General Core Requirements (p. 50) 42

ENGL 1301 RHETORIC AND COMPOSITION I

ENGL 1302 RHETORIC AND COMPOSITION II

ENGL 2309 WORLD LITERATURE

or ENGL 2319 BRITISH LITERATURE

or ENGL 2329 AMERICAN LITERATURE

FOUNDATIONAL COMPONENT AREA (3 hours)

HIST 1301 HISTORY OF THE UNITED STATES TO 1865

HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT

POLS 2311 GOVERNMENT OF THE UNITED STATES

POLS 2312 STATE AND LOCAL GOVERNMENT

MATH 1302 COLLEGE ALGEBRA

MATH 1330 ARITHMETICAL PROBLEM SOLVING

Life and Physical Science (Biology recommended); 6 credit hours

Social/Behavioral Sciences

Creative Arts

Other Program Requirements

Foreign Language, two courses, Spanish preferred, at 1441 and 1442 level. No sign language. 8

MATH 1331 GEOMETRICAL INFERENCE AND REASONING 3

MATH 1332 FUNCTIONS, DATA, AND APPLICATIONS 3

Select two of the following: 6

SCIE 3301 PHYSICAL SCIENCE - PHYSICS

SCIE 3302 PHYSICAL SCIENCE - CHEMISTRY

SCIE 3303 GEOLOGY, METEOROLOGY, AND OCEANOGRAPHY

SCIE 3304 ASTRONOMY

SCIE 3305 ENVIRONMENTAL SYSTEMS

HIST 3345 TEXAS TO 1850 3

or HIST 3346 TEXAS SINCE 1845

Early Childhood Support System - 7 hours at 2000 level or above including EDUC 2302. See advisor. 7

BEEP 3381 INTRODUCTION TO SPECIAL LANGUAGE PROGRAMS 3

EDUC 3301 TEACHING DIVERSE LEARNERS 3

ELED 4317	GROWTH, DEVELOPMENT, AND LEARNING THEORY	3
EDUC 4318	POSITIVE CLASSROOM MANAGEMENT	3
BEEP 4306	FAMILY LITERACY AND SECOND LANGUAGE ACQUISITION	3
BEEP 4385	SHELTERED ENGLISH INSTRUCTION	3
EDUC 4319	CLASSROOM ASSESSMENT	3
LIST 4373	LITERACY LEARNING FOR EC-6 STUDENTS: READING AND WRITING	3
LIST 4374	LITERACY LEARNING FOR EC-6 STUDENTS: LITERATURE AND LANGUAGE	3
LIST 4376	ASSESSMENT IN LITERACY LEARNING	3
ELED 4311	TEACHING MATHEMATICS IN EARLY AND ELEMENTARY EDUCATION	3
ELED 4312	TEACHING SCIENCE AND HEALTH IN EARLY AND ELEMENTARY EDUCATION	3
ELED 4314	TEACHING SOCIAL STUDIES AND FINE ARTS IN EARLY AND ELEMENTARY EDUCATION	3
BEEP 4384	LITERACY METHODS FOR ESL/BILINGUAL CLASSROOMS	3
ELED 4687	CLINICAL TEACHING IN EARLY AND ELEMENTARY EDUCATION	6
Total Hours		120

Bachelor of Arts in Education with EC-6 Bilingual Teacher Certification

Pre-Professional Courses

General Core Requirements (p. 50) 42

ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
ENGL 2309	WORLD LITERATURE	
or ENGL 2303	TOPICS IN LITERATURE	
or ENGL 2319	BRITISH LITERATURE	
or ENGL 2329	AMERICAN LITERATURE	
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
MATH 1302	COLLEGE ALGEBRA	
MATH 1330	ARITHMETICAL PROBLEM SOLVING	
Life and Physical Science (Biology recommended); 6 credit hours		

FOUNDATIONAL COMPONENT AREA (3 hours)

SOCIAL/BEHAVIORAL SCIENCES

CREATIVE ARTS

Program Requirements

Intermediate Spanish

SPAN 2313; Complete CLEP Test

SPAN 2314 (SPAN 2315 if fluent); complete CLEP Test

Advanced Spanish 6

SPAN 3305	ADVANCED SPANISH FOR HERITAGE SPEAKERS	
SPAN 3315	SPANISH COMPOSITION	
MATH 1331	GEOMETRICAL INFERENCE AND REASONING	3
MATH 1332	FUNCTIONS, DATA, AND APPLICATIONS	3
Select two of the following:		6
SCIE 3301	PHYSICAL SCIENCE - PHYSICS	
SCIE 3302	PHYSICAL SCIENCE - CHEMISTRY	
SCIE 3303	GEOLOGY, METEOROLOGY, AND OCEANOGRAPHY	
SCIE 3304	ASTRONOMY	
EDUC 2302	THE PROFESSIONAL EDUCATOR	3
HIST 3345	TEXAS TO 1850	3
or HIST 3346	TEXAS SINCE 1845	

Professional Courses

BEEP 3381	INTRODUCTION TO SPECIAL LANGUAGE PROGRAMS	3
BEEP 4305	BILITERACY DEVELOPMENT IN DUAL LANGUAGE PROGRAMS	3
BEEP 4302	IMPLEMENTATION OF EC-6 DUAL LANGUAGE CURRICULUM MODELS	3
ELED 4317	GROWTH, DEVELOPMENT, AND LEARNING THEORY	3
EDUC 3301	TEACHING DIVERSE LEARNERS	3
LIST 4373	LITERACY LEARNING FOR EC-6 STUDENTS: READING AND WRITING	3
LIST 4376	ASSESSMENT IN LITERACY LEARNING	3
EDUC 4319	CLASSROOM ASSESSMENT	3
BEEP 4382	LITERACY INSTRUCTION IN SPANISH FOR THE BILINGUAL CLASSROOM	3
EDUC 4318	POSITIVE CLASSROOM MANAGEMENT	3
BEEP 4306	FAMILY LITERACY AND SECOND LANGUAGE ACQUISITION	3
BEEP 4311	MATH IN DUAL LANGUAGE SETTINGS	3
BEEP 4312	SCIENCE AND HEALTH EDUCATION IN DUAL LANGUAGE SETTINGS	3
BEEP 4314	CREATIVE ARTS AND SOCIAL STUDIES IN DUAL LANGUAGE SETTINGS	3
BEEP 4384	LITERACY METHODS FOR ESL/BILINGUAL CLASSROOMS	3
BEEP 4319	ASSESSMENT OF CULTURALLY AND LINGUISTICALLY DIVERSE STUDENTS IN EC-6 SETTINGS	3
BEEP 4687	CLINICAL TEACHING IN EC-6 BILINGUAL/ESL CLASSROOMS	6
Total Hours		120

¹ One Texas History may be taken in place of one US History: HIST 3345 or HIST 3346.

Bachelor of Arts in Education with 4-8 Middle-Level English Language Arts/Social Studies Teacher Certification

Core Curriculum

General Core Requirements (p. 50) 42

ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
ENGL 2309	WORLD LITERATURE	
or ENGL 2319	BRITISH LITERATURE	
or ENGL 2329	AMERICAN LITERATURE	
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
MATH 1302	COLLEGE ALGEBRA	
MATH 1330	ARITHMETICAL PROBLEM SOLVING	

LIFE AND PHYSICAL SCIENCE (Biology recommended 6 hours)

SOCIAL/BEHAVIORAL SCIENCE (3 hours)

FOUNDATIONAL COMPONENT AREA (3 hours)

CREATIVE ARTS (3 hours)

Other Degree Requirements/Content

Intermediate-Level Foreign Language ¹

SPAN 2313	INTERMEDIATE SPANISH I	3
SPAN 2314	INTERMEDIATE SPANISH II	3

Social Studies Content

HIST 2321	WORLD HISTORY TO 1400	3
HIST 2322	WORLD HISTORY, 1400 TO THE PRESENT	3
HIST 3345	TEXAS TO 1850	3
HIST 3346	TEXAS SINCE 1845	3
ECON 2337	ECONOMICS OF SOCIAL ISSUES	3
GEOG 2302	HUMAN GEOGRAPHY	3
ENGL 3333	DYNAMIC TRADITIONS IN LITERATURE	3
ENGL 3371	ADVANCED EXPOSITION	3

ENGL 3384	STRUCTURE OF MODERN ENGLISH	3
ENGL 4370	RHETORIC AND COMPOSITION FOR SECONDARY SCHOOL TEACHERS	3
ENGL 4366	YOUNG ADULT LITERATURE	3
or ENGL 4365	CHILDREN'S LITERATURE	
Early Education Coursework		
EDUC 2302	THE PROFESSIONAL EDUCATOR	3
Professional Courses		
EDUC 4340	HUMAN GROWTH AND DEVELOPMENT	3
SPED 3301	CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES	3
LIST 4378	TEACHING READING, WRITING, AND LITERATURE IN THE MIDDLE LEVEL GRADES	3
EDUC 3301	TEACHING DIVERSE LEARNERS	3
LIST 4343	CONTENT AREA READING AND WRITING	3
EDUC 4318	POSITIVE CLASSROOM MANAGEMENT	3
EDUC 4319	CLASSROOM ASSESSMENT	3
LIST 4376	ASSESSMENT IN LITERACY LEARNING	3
ELED 4314	TEACHING SOCIAL STUDIES AND FINE ARTS IN EARLY AND ELEMENTARY EDUCATION	3
LIST 4373	LITERACY LEARNING FOR EC-6 STUDENTS: READING AND WRITING	3
Clinical Teaching		
EDUC 4647	CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	6
Total Hours		120

¹ Credit for the Beginner Foreign Language (1441 & 1442) is required prior to taking the intermediate levels (Spanish is preferred; no sign language).

Bachelor of Science in Education with 4-8 Middle-Level Math/Science Teacher Certification

Core Curriculum

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
ENGL 2303	TOPICS IN LITERATURE	3
or ENGL 2309	WORLD LITERATURE	
or ENGL 2319	BRITISH LITERATURE	
or ENGL 2329	AMERICAN LITERATURE	

Foundational Component Area	3
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HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
MATH 1302	COLLEGE ALGEBRA	3
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
BIOL 1441	CELL AND MOLECULAR BIOLOGY (required)	4
BIOL 1442	EVOLUTION AND ECOLOGY	4

SOCIAL/BEHAVIORAL SCIENCE (3 hours)	3
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CREATIVE ARTS (3 hours)	3
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Program Requirements

MATH 1330	ARITHMETICAL PROBLEM SOLVING	3
MATH 1331	GEOMETRICAL INFERENCE AND REASONING	3
MATH 1332	FUNCTIONS, DATA, AND APPLICATIONS	3
MATH 4350	PRECALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS (Capstone I: Fall Only)	3
MATH 4351	CALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS (Capstone II: Spring Only)	3
BIOL 3454	GENERAL ZOOLOGY	4
or BIOL 3427	PLANT SCIENCE	
SCIE 3301	PHYSICAL SCIENCE - PHYSICS	3
SCIE 3302	PHYSICAL SCIENCE - CHEMISTRY	3

or CHEM 1451	CHEMISTRY FOR HEALTH SCIENCES	
SCIE 3303	GEOLOGY, METEOROLOGY, AND OCEANOGRAPHY	3
SCIE 3304	ASTRONOMY (MATH/SCIENCE/TECHNOLOGY ELECTIVE)	3
MATH 1303	TRIGONOMETRY	3
or MATH 1325	ANALYTIC GEOMETRY	
or MATH 3313	INTRODUCTION TO PROBABILITY	
PHYS 1302	PHYSICS FOR NON SPECIALISTS II	3
or GEOL 1302	EARTH HISTORY	
or BIOL 3454	GENERAL ZOOLOGY	
or BIOL 3427	PLANT SCIENCE	
or CHEM 1445	CHEMISTRY FOR NON-SCIENCE MAJORS	
or CHEM 1446	CHEMISTRY II FOR NON-SCIENCE MAJORS	
Note: Each elective/choice course above must be an elective/choice course not already taken (courses will not count more than once).		
EDUC 2302	THE PROFESSIONAL EDUCATOR	3
EDUC 4340	HUMAN GROWTH AND DEVELOPMENT	3
EDUC 4344	TEACHING IN MIDDLE/SECONDARY SCHOOL SCIENCE CLASSROOMS	3
LIST 4378	TEACHING READING, WRITING, AND LITERATURE IN THE MIDDLE LEVEL GRADES	3
EDUC 4345	TEACHING IN MIDDLE/SECONDARY SCHOOL MATHEMATICS CLASSROOMS	3
LIST 4343	CONTENT AREA READING AND WRITING	3
EDUC 4318	POSITIVE CLASSROOM MANAGEMENT	3
EDUC 4342	APPLICATIONS OF INSTRUCTION IN MIDDLE/SECONDARY SCHOOL CLASSROOMS	3
EDUC 4319	CLASSROOM ASSESSMENT	3
SPED 3301	CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES	3
EDUC 3301	TEACHING DIVERSE LEARNERS	3
EDUC 4647	CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	6
Total Hours		120

¹ One Texas History may be taken in place of one US History: HIST 3345 or HIST 3346.

Bachelor of Science in Education with EC-12 Special Education and EC-6 Core Subjects Teacher Certification

Core Curriculum

General Core Requirements (p. 50)		42
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
ENGL 2303	TOPICS IN LITERATURE	
or ENGL 2309	WORLD LITERATURE	
or ENGL 2329	AMERICAN LITERATURE	
FOUNDATIONAL COMPONENT AREA (3 hours)		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
MATH 1302	COLLEGE ALGEBRA	
MATH 1330	ARITHMETICAL PROBLEM SOLVING	
LIFE AND PHYSICAL SCIENCES (Biology recommended) 6 hours		
SOCIAL/BEHAVIORAL SCIENCES (3 hours)		
CREATIVE ARTS (3 hours)		
Other Degree Requirements/Content Course		
HIST 3345	TEXAS TO 1850	3
or HIST 3346	TEXAS SINCE 1845	
MATH 1331	GEOMETRICAL INFERENCE AND REASONING	3
MATH 1332	FUNCTIONS, DATA, AND APPLICATIONS	3

SCIE 3301, SCIE 3302, SCIE 3303, SCIE 3304 (must take two of the listed SCIE courses for a total of six hours)		6
EDUC 2302	THE PROFESSIONAL EDUCATOR	3
EDUC 3301	TEACHING DIVERSE LEARNERS	3
SPED 3301	CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES	3
DS/HIST 3307	HISTORY OF DISABILITY	3
or KINE 3304	ADAPTED PHYSICAL EDUCATION & SPORT	
or DS/THEA 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	
or SPED 4307	SPECIAL EDUCATION LEGAL AND POLICY ISSUES	
EDUC 4318	POSITIVE CLASSROOM MANAGEMENT	3
ELED 4317	GROWTH, DEVELOPMENT, AND LEARNING THEORY	3
ELED 4314	TEACHING SOCIAL STUDIES AND FINE ARTS IN EARLY AND ELEMENTARY EDUCATION	3
ELED 4311	TEACHING MATHEMATICS IN EARLY AND ELEMENTARY EDUCATION	3
SPED 3302	APPLIED BEHAVIOR ANALYSIS FOR TEACHERS	3
SPED 4304	ASSISTIVE TECHNOLOGY	3
SPED 4301	STRATEGIES FOR TEACHING INDIVIDUALS WITH HIGH INCIDENCE DISABILITIES: READING AND WRITING	3
SPED 4302	COLLABORATIVE PRACTICES AND TRANSITION PLANNING IN SPECIAL EDUCATION	3
LIST 4373	LITERACY LEARNING FOR EC-6 STUDENTS: READING AND WRITING	3
LIST 4376	ASSESSMENT IN LITERACY LEARNING	3
EDUC 4319	CLASSROOM ASSESSMENT	3
SPED 4303	ADVANCED CONTENT AREA STRATEGIES FOR TEACHING INDIVIDUALS WITH HIGH INCIDENCE DISABILITIES	3
ELED 4312	TEACHING SCIENCE AND HEALTH IN EARLY AND ELEMENTARY EDUCATION	3
SPED 4601	PRACTICUM IN SPECIAL EDUCATION	6
SPED 4687	CLINICAL TEACHING IN EC-6 AND SPECIAL EDUCATION	6
Total Hours		120

COURSES

ELED 4311. TEACHING MATHEMATICS IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Principles of integration of mathematics concepts in relation to cognitive development. Emphasis on developing dispositions promoting scientific investigation and appropriate objects, materials, activities and programs to assist in assimilation of mathematics concepts. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural and multilingual classrooms for this content area; 20 hours field-based experiences required. Prerequisite: ELED 4312, ELED 4314. Taken concurrently with BEEP 4384.

ELED 4312. TEACHING SCIENCE AND HEALTH IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Principles of integration of science and health concepts in relation to cognitive, socio-emotional, and psychomotor development. Emphasis on developing dispositions promoting scientific investigation and appropriate objects, materials, activities and programs to assist in assimilation of science and health concepts. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural and multilingual classrooms for this content area; 20 hours field-based experiences required. Prerequisite: Taken concurrently with ELED 4314.

ELED 4314. TEACHING SOCIAL STUDIES AND FINE ARTS IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Examination of materials, methods, content, and assessment learning experiences associated with elementary social studies and fine arts. Content areas include history, geography, economics, government, citizenship, culture, science, technology and society. Opportunities to demonstrate applications in field settings. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural, and multilingual classrooms for this content area; 20 hours field experiences required. Prerequisites: Taken concurrently with ELED 4312.

ELED 4317. GROWTH, DEVELOPMENT, AND LEARNING THEORY. 3 Hours.

Examination of the relationship between major theories and principles of cognitive, socio-emotional, and psychomotor development and EC-6 student learning, home-school connections, and behavior in the classroom. Emphasis on environmental and cultural influences on children's development and learning, prenatal through age 12. Prerequisite: ELED 4311, ELED 4312, ELED 4314.

ELED 4321. CLASSROOM MANAGEMENT, PEDAGOGY, AND PRACTICES IN EC-6 EDUCATION. 3 Hours.

A study of developmentally appropriate curriculum and methods for elementary classrooms, including diversity, assessment, behavior guidance and management, planning instruction, and creating a positive learning environment. Course will also address instructional needs and appropriate assessment of all students in inclusive, multicultural, and multilingual classrooms. Field observations required. Prerequisites: EDUC 4316, ELED 4317.

ELED 4687. CLINICAL TEACHING IN EARLY AND ELEMENTARY EDUCATION. 6 Hours.

Full-day, Monday - Friday, supervised and directed clinical teaching in university-approved EC-6 classrooms. Candidates will have two placements: one in PK-2 and one in grade 3-6. Clinical teaching must immediately follow the field-based experiences semester. Candidates will follow the school district's calendar, and report to the classroom all day and each day of the semester. Prerequisites: ELED 4311, ELED 4312, ELED 4314, ELED 4317, BEEP 4306, BEEP 4384; LIST 4373, LIST 4374, LIST 4376, EDUC 3301, EDUC 4318, EDUC 4319.

ELED 5309. TRENDS AND ISSUES IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION. 3 Hours.

In-depth analysis of current research and practical articles on trends and issues in early childhood and elementary education. Emphasis on the evaluation and impact of historical, political, and social policy; overview of legislation and advocacy on behalf of young children.

ELED 5312. EC6: INSTRUCTIONAL STRATEGIES IN SCIENCE. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on science concepts and cognitive development. Emphasis on developing dispositions toward scientific inquiry and the use of appropriate objects, materials, activities, and programs to assist in the learning of science concepts.

ELED 5315. CLINICAL TEACHING. 3 Hours.

Clinical teaching in candidate's certification area(s). This semester-long experience will help candidates apply theory and research to practice.

ELED 5317. THEORIES OF CHILD DEVELOPMENT AND LEARNING. 3 Hours.

Human growth and development, including developmental anomalies, from birth through middle childhood with emphasis on cognitive, social, emotional, and physical growth. Attention is given to current research regarding establishment of learning environments that foster development of the child's self-concept, cognitive competencies, oral language and literacy development, and positive social behaviors including appreciation of diversity among individuals and groups.

ELED 5318. FOUNDATIONS IN EC6 EDUCATION. 3 Hours.

An overview of historical and philosophical influences and current research in early and elementary education on promoting educational environments that support development of the whole child. Attention is given to the development and implementation of appropriate EC-6 curricula and programs that extend and integrate learning experiences of children, including the home-school relationship; 20 hours field experiences required.

ELED 5319. EC6 EDUCATION: INSTRUCTIONAL STRATEGIES IN MATHEMATICS. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on mathematics concepts and cognitive development. Emphasis on developing dispositions toward the use of appropriate objects, materials, activities, and programs to assist in learning of mathematics concepts.

ELED 5320. EC6 EDUCATION: INSTRUCTIONAL STRATEGIES IN SOCIAL STUDIES AND THE CREATIVE ARTS. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on social studies, the creative arts, and cognitive and socio-emotional development. Emphasis on developing dispositions promoting awareness of self and others, and the study of group dynamics involved in the socialization process in a diverse community. Strategies for enhancing creativity and risk-taking characteristics in EC-6 classrooms.

ELED 5321. EC-6: CLASSROOM MANAGEMENT & INSTRUCTIONAL STRATEGIES. 3 Hours.

This course explores a variety of effective classroom management and instructional strategies which include developmentally appropriate, research-based, and anti-biased curricular and materials to teach the core content subjects of English language arts, mathematics, science, and social studies in ESL elementary classrooms. This course also examines challenges to inquiry-based instruction, including those related to assessment, behavior guidance and management, planning instruction, and diversity; 20 hours of field observations are required.

ELED 5390. SELECTED TOPICS IN ELEMENTARY EDUCATION. 3 Hours.

An examination of different topics related to elementary education. This course may be repeated for credit with permission.

ELED 5391. INDEPENDENT RESEARCH. 3 Hours.

Research over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

COURSES

SPED 3301. CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES. 3 Hours.

This course focuses on the characteristics of students with mild disabilities and their (a) related academic and social outcomes, and (b) implications for assessment and intervention. The course is specifically designed for students who seek certification in teaching children with mild disabilities, to include children who are defined by Federal and state regulations as experiencing learning disabilities (LD), intellectual disability (ID), emotional and/or behavioral disabilities (EBD), and attention deficit disorders/hyperactivity disorders (ADD/ADHD).

SPED 3302. APPLIED BEHAVIOR ANALYSIS FOR TEACHERS. 3 Hours.

This course is designed to present students with applied behavior analysis strategies and tactics to ensure they are able to make effective instructional decisions and to evaluate the results of those decisions. Procedures covered in class include those to accelerate, decelerate, and maintain student academic and social behavior. Application of learning theory, measurement procedures, and verification of functional relationships will be emphasized. Knowledge of current significant research in Applied Behavior Analysis will be facilitated through research readings.

SPED 4301. STRATEGIES FOR TEACHING INDIVIDUALS WITH HIGH INCIDENCE DISABILITIES: READING AND WRITING. 3 Hours.

This course is designed to prepare future special educators to plan and provide content area instruction to elementary and secondary students with mild disabilities in reading and writing. Course content will include information on assessment, curriculum and instruction, and the professional role as a teacher of students with mild disabilities.

SPED 4302. COLLABORATIVE PRACTICES AND TRANSITION PLANNING IN SPECIAL EDUCATION. 3 Hours.

The purpose of this course is to learn about the concepts, tools, and strategies considered essential for effective collaboration and teamwork. Methods of collaborating and consulting with other professionals in the field of education and family members of students with disabilities will be discussed. Transition planning and collaborative interagency issues related to transition will be examined. Context, process, and content of collaborative school consultation will be presented.

SPED 4303. ADVANCED CONTENT AREA STRATEGIES FOR TEACHING INDIVIDUALS WITH HIGH INCIDENCE DISABILITIES. 3 Hours.

This course is designed to prepare future special educators to plan and provide content area instruction to elementary and secondary students with mild disabilities across the content areas. Course content will include information on assessment, curriculum and instruction, and the professional role as a teacher of students with mild disabilities.

SPED 4304. ASSISTIVE TECHNOLOGY. 3 Hours.

This course will address the use of technology in special education, including microcomputers, interactive video, auditory and visual enhancement, and other adaptive devices with individuals experiencing disabilities including learning disabilities, intellectual impairments, sensory and physical impairments. Current developments and research findings concerning rehabilitative, adaptive, and learning technologies applied to needs of individuals with learning, intellectual, physical, or sensory disabilities will also be addressed. Topics include selection and evaluation, instructional and administrative applications, and personal productivity tools.

SPED 4307. SPECIAL EDUCATION LEGAL AND POLICY ISSUES. 3 Hours.

This introductory course will discuss historical legal foundations of special education and the present legal and policy challenges facing the field. Course content will include information on the Individuals with Disabilities Education Act, the Americans with Disabilities Act, and Section 504 of the Vocational Rehabilitation Act. Students will also understand how important rules from the court system have interpreted laws governing special education and how current policies and issues could impact special education. At the undergraduate level, special focus will be given to applied aspects of the law (e.g., Individualized Education Plans; ARD meetings, etc.).

SPED 4601. PRACTICUM IN SPECIAL EDUCATION. 6 Hours.

This course is designed to provide practical opportunities for the pre-service candidate to develop skills in assessment and instruction of individuals with severe disabilities. In addition to providing direct services, an important component of the practicum is to collaborate with both classroom and school staff regarding all aspects of service provision. Finally, general professional protocol is emphasized in this course including dependability, attitude, and communication skills (both written and spoken).

SPED 4687. CLINICAL TEACHING IN EC-6 AND SPECIAL EDUCATION. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theory to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice. Prerequisite: Completion of program coursework, program approval.

SPED 5301. CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES. 3 Hours.

This introductory course focuses on the characteristics of students with mild disabilities and their (a) related academic and social outcomes, and (b) implications for assessment and intervention. The course is specifically designed for students who seek certification in teaching children with mild disabilities, to include children who are defined by Federal and state regulations as experiencing learning disabilities (LD), intellectual disability (ID), emotional and/or behavioral disabilities (EBD), and attention deficit disorders/hyperactivity disorders (ADD/ADHD). Graduate level students' understanding will be assessed and measured through additional readings and assignments designed to encourage deeper thinking regarding classroom level interventions for students with disabilities.

SPED 5302. APPLIED BEHAVIOR ANALYSIS FOR TEACHERS. 3 Hours.

This course is designed to present students with applied behavior analysis strategies and tactics to ensure they are able to make effective instructional decisions and to evaluate the results of those decisions. Procedures covered in class include those to accelerate, decelerate, and maintain student academic and social behavior. Application of learning theory, measurement procedures, and verification of functional relationships will be emphasized. Graduate level students' understanding will be assessed and measured through the direct application of concepts in the field and a written functional behavioral assessment inclusive of a behavior intervention plan.

SPED 5303. COLLABORATIVE PRACTICES AND TRANSITION PLANNING IN SPECIAL EDUCATION. 3 Hours.

This course focuses on the concepts, tools, and strategies considered essential for effective collaboration and teamwork. Methods of collaborating and consulting with other professionals in the field of education and family members of students with disabilities will be discussed. Transition planning and collaborative interagency issues related to transition will be examined. Graduate students will facilitate a mock ARD and transition planning meeting.

SPED 5304. INSTRUCTIONAL STRATEGIES FOR STUDENTS WITH DISABILITIES. 3 Hours.

This course is designed to prepare future special educators to plan and provide specialized instruction to elementary and secondary students with mild disabilities in reading, writing, mathematics, and across the content areas. Course content will include information on assessment, curriculum and instruction, and the professional role as a teacher of students with mild disabilities. Graduate students will demonstrate mastery of evidence-based practices for students with disabilities by teaching a lesson.

SPED 5305. ADVANCED LEARNING DISABILITIES. 3 Hours.

This course is designed to teach the definitions, characteristics, theories, and etiologies of students with specific learning disabilities. Students will analyze definitions of specific learning disabilities from the Individuals with Disabilities Education Act and professional learning disability organizations. Students will also analyze research describing the nature and characteristics of learning disabilities and how to best serve these students in an educational setting.

SPED 5306. ASSISTIVE TECHNOLOGY. 3 Hours.

This course will address the use of technology in special education, including microcomputers, interactive video, auditory and visual enhancement, and other adaptive devices with individuals experiencing disabilities including learning disabilities, intellectual impairments, sensory and physical impairments. Students will examine current developments and conduct research concerning rehabilitative, adaptive, and learning technologies applied to needs of individuals with disabilities.

SPED 5307. SPECIAL EDUCATION LEGAL AND POLICY ISSUES. 3 Hours.

This introductory course will discuss historical legal foundations of special education and the present legal and policy challenges facing the field. Course content will include information on the Individuals with Disabilities Education Act, the Americans with Disabilities Act, and Section 504 of the Vocational Rehabilitation Act. Students will also understand how important rules from the court system have interpreted laws governing special education and how current policies and issues could impact special education. At the undergraduate level, special focus will be given to applied aspects of the law (e.g., Individualized Education Plans; ARD meetings, etc.).

SPED 5308. ADVANCED INTELLECTUAL DISABILITIES. 3 Hours.

This course is designed to teach the definitions, characteristics, theories, and etiologies of students with intellectual disabilities. Students will analyze definitions of intellectual disabilities from the Individuals with Disabilities Education Act and professional intellectual disability organizations. Students will also analyze research describing the nature and characteristics of intellectual disabilities and how to best serve these students in an educational setting.

SPED 5309. THE NEUROSCIENCE OF TYPICAL & ATYPICAL LANGUAGE DEVELOPMENT. 3 Hours.

This course will examine the many levels of language including phonetics, phonology, semantics, syntax and pragmatics from both functional and neuroscientific perspectives. This will be closely tied to language acquisition and early language development. The focus on the pre-reading years will provide a solid basis for further study of literacy-related skills and overall learning. Sub-skills and precursors of reading will be examined from a neurological point of view and applied to researching reading difficulties as well as the teaching and learning in the classroom. Course offered as EDUC 5362 and SPED 5309; co-list credit will be granted only as one.

SPED 5310. ADVANCED BEHAVIORAL DISORDERS. 3 Hours.

This course will cover advanced principles, concepts, and practices related to educating students with Emotional/Behavioral Disorders and other IDEA disabilities categories with behaviorally related characteristics. Emphasis will be on school-based services, including advanced instructional and behavioral interventions for improving academic, social, and behavioral outcomes, as well as mental health and juvenile justice services.

SPED 5311. CLASSROOM ASSESSMENT OF STUDENTS WITH DISABILITIES. 3 Hours.

This course is designed to equip teachers with practical assessment strategies for students with a wide range of disabilities. Course content will include standardized norm-referenced assessments, curriculum-based assessment, curriculum-based measurement, and other progress monitoring strategies. Students will create various assessment tools and plans to collect meaningful instructional data from students with disabilities.

SPED 5312. SPECIAL EDUCATION FIELD EXPERIENCE. 3 Hours.

This course is designed to engage students in multiple field-based activities such as, direct observations, functional-behavior assessments, data-based instruction and decision making, and research as part of an independent field experience. At the conclusion of the field experience, students will be assessed on a written product and presentation (e.g., portfolio, research poster). Prerequisite: All other courses in program sequence; requires approval.

SPED 5313. SINGLE SUBJECT RESEARCH. 3 Hours.

This course is designed to provide students an introductory overview of single subject research methodology. Course content will include quality indicators of single subject research that can lead to identifying effective interventions. Students will design and implement a single-subject experiment.

SPED 5314. CURRENT TOPICS IN SPECIAL EDUCATION AND RESEARCH. 3 Hours.

This course is designed to discuss current events in special education with a focus on both practice and research. Students will think critically about intended and unintended consequences of various policy and practice issues. Specific topics for the course will be influenced by current policy concerns, problems of practice, and student interests.

SPED 5315. MULTI-TIERED SYSTEM OF SUPPORT. 3 Hours.

This course will focus on multi-tiered system of support frameworks for integrating instruction, evidence-based interventions, and assessments to meet the academic and behavior needs of all students. Specific frameworks such as, response to intervention and positive behavioral interventions and supports will be emphasized as systems for prevention of disabilities and identification of students with learning disabilities and emotional and behavioral disorders.

SPED 5316. ADVANCED APPLIED BEHAVIORAL ANALYSIS. 3 Hours.

This course is designed to present graduate students in special education with applied behavior analysis strategies and tactics to ensure they are able to make effective instructional decisions and to evaluate the results of those decisions in accordance with the master's degree program and initial and advanced licensure standards. This course is intended for students with foundational knowledge of Applied Behavior Analysis (ABA). Students will be required to plan, implement, and evaluate an applied behavior analysis project with a student in an educational setting.

SPED 5317. AUTISM SPECTRUM DISORDERS. 3 Hours.

This course focuses on the characteristics and issues encountered by individuals who experience autism spectrum disorders. Students will analyze definitions of ASD provided by IDEA, DSM-V, and professional organizations. Emphasis will be on characteristics, school-based and post-secondary supports, Applied Behavior Analysis (ABA), and assistive technology.

SPED 5318. MEDICAL AND PHYSICAL MANAGEMENT OF STUDENTS WITH MULTIPLE DISABILITIES. 3 Hours.

This course is designed to provide students with an examination of how the medical and physical needs of students affect a teacher's design of instruction. The medical and physical aspects of a wide variety of orthopedic, musculo-skeletal and sensory disorders, as well as the educational models of intervention and service delivery for individuals with multiple disabilities will also be discussed.

SPED 5319. METHODS OF TEACHING STUDENTS WITH MODERATE/SEVERE DISABILITIES AND AUTISM. 3 Hours.

This course is designed to prepare future special educators to plan and provide specialized instruction to elementary and secondary students with moderate/severe disabilities and Autism Spectrum Disorders. Course content will include information on assessment and evidence-based instructional practices for academic, functional, adaptive, and behavioral skills. Students will demonstrate mastery of evidence-based practices for students with moderate/severe disabilities and Autism Spectrum Disorders and receive feedback on the implementation of these practices.

SPED 5320. CHARACTERISTICS OF STUDENTS WITH SEVERE DISABILITIES. 3 Hours.

This course focuses on the characteristics and issues encountered by individuals who experience severe and profound levels of intellectual disabilities. Characteristics addressed include learning, behavioral, social-emotional, and communicative abilities. Special emphasis is placed on implementing evidence-based practices and empirically supported treatments.

SPED 5601. CLINICAL TEACHING. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theory to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice.

Educational Leadership and Policy Studies

Undergraduate Degrees

- Interdisciplinary Leadership Minor (p. 424)
- Leadership Certificate (p. 424)

Graduate Degrees

- Master of Education in Educational Leadership and Policy Studies, with Principal Certificate Courses (p. 415)
- Master of Education in Educational Leadership and Policy Studies, with Higher Education Administration Emphasis (p. 415)
- BA-PhD track in Educational Leadership and Policy Studies with Higher Education Administration Emphasis (p. 415)
- Doctor of Philosophy (Ph.D.) in Educational Leadership and Policy Studies (p. 415)
- Master of Education in Educational Leadership and Policy Studies (Higher Education Administration Emphasis) and a Master of Social Work (MEd/MSW) with two concentrations: Direct Practice Concentration - Specialty in Mental Health and Substance Misuse or a Community and Administrative Practice Concentration (Dual Degree with the School of Social Work) (p. 416)

Professional Certification Preparation

- Principal Certification (p. 415) Preparation Only
- Superintendent Certificate (p. 415) (Not Currently Accepting Applications)

COURSES

EDADIR 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDADIR 6391. INDEPENDENT RESEARCH. 3 Hours.

Research for independent study over topic agreed upon between student and instructor. Can be repeated for credit with permission. For doctoral students only.

COURSES

EDAD 1130. FOUNDATIONS OF LEADERSHIP. 1 Hour.

Student leadership trainers, under the supervision of the staff in the Department of Student Activities, facilitate class discussion and assist students in identifying the necessary skills for effective leadership in university organizations and in both personal and professional settings. Topics include: leadership vs. management communication, leadership styles and personality traits, emotionally intelligent leadership, ethical leadership, leadership and change, and diversity and cultural awareness. Opportunities are provided for group problem solving, and team interaction and collaboration. Elective only and does not count as part of the professional certification requirements. Pass-Fail grades will be awarded.

EDAD 2330. THEORIES IN LEADERSHIP. 3 Hours.

Identifies the philosophy and theories of leadership, leadership styles, and contemporary leadership issues. Practical application of leadership skills are developed through interactive class discussions, analyzing case studies, and group problem-solving and role-playing experiences.

EDAD 4330. CAPSTONE IN LEADERSHIP STUDIES. 3 Hours.

This capstone course focuses on the synthesis of learning and experiences across the prior 15 hours of coursework. Students will design and present their new understandings of leadership and speculate about futures on the horizon. Prerequisite: EDAD 2330.

EDAD 4390. SELECTED TOPICS IN LEADERSHIP. 3 Hours.

An examination of different topics related to leadership. This seminar may be repeated for credit as the topic changes.

EDAD 4391. INDEPENDENT RESEARCH. 3 Hours.

An examination of selected topics related to leadership. Can be repeated for credit with permission.

EDAD 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDAD 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDAD 5199. PROBATIONARY CERTIFICATION INTERNSHIP. 1 Hour.

This course provides mentoring and supervision to UTA Educational Leadership and Policy Studies students employed as assistant principals or principals while on a Probationary Certificate and not enrolled in either EDAD 5389 or EDAD 5399. Individuals must reenroll in EDAD 5199 while on probation, which is initially issued for one calendar year.

EDAD 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDAD 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDAD 5302. EDUCATIONAL TECHNOLOGY PLANNING. 3 Hours.

This course is designed to help prepare future educational administrators in assessing, revising, or developing a technology plan for their school, district, or campus. Students will explore the overall concepts of technology, new applications of technology, and how they apply to educational standards, such as the National Educational Technology Standards for Teachers (NETS-T) and the Technology Standards for School Administrators (TSSA).

EDAD 5303. TEACHER LEADERSHIP FOR SCHOOL IMPROVEMENT. 3 Hours.

Examine formal/informal leadership in schools emphasizing the roles and contributions of teachers as leaders of instructional improvement at the classroom and school levels. Study organizational dynamics and school culture from theoretical and practical perspectives for improving teaching and learning. Develop leadership strategies for shaping professional learning communities.

EDAD 5304. DATA-DRIVEN ASSESSMENT. 3 Hours.

Examine the impact of national and state-level education standards on curriculum and instruction. Examine the structure and uses of both standardized and informal assessments. Examine methods for using assessment data to design differentiated instruction that meets varying student needs.

EDAD 5305. CURRICULUM DESIGN, IMPLEMENTATION, AND EVALUATION. 3 Hours.

An examination of theory and research in curriculum development, implementation, and evaluation. Emphasis on current trends in the content areas.

EDAD 5306. COACHING AND CONSULTATION SKILLS. 3 Hours.

Examine various methods of coaching at the individual teacher, grade-level or subject-area team, and whole-school levels. Includes in-class instructional demonstrations, teacher observations and providing feedback, coaching through team meetings, and providing whole-school professional development. Also effective ways of including school administrators in instructional improvement.

EDAD 5307. TEACHER LEADERSHIP POLICY TRENDS AND ISSUES. 3 Hours.

Examines current national and state-level trends and policies in teacher leadership. Reviews research on the effects of various models of teacher leadership on instructional improvement.

EDAD 5309. ADVANCED INSTRUCTIONAL STRATEGIES. 3 Hours.

A study of advanced models of teaching, including concept attainment, inductive thinking, inquiry, cognitive growth, non-directive group investigation, laboratory training, simulation and the training model. Research in teacher effectiveness and demonstration of various models will be required.

EDAD 5315. RESEARCH PRACTICUM. 3 Hours.

Examination of basic concepts and procedures necessary for empirical research investigations within classroom contexts, experimental design, data collection and interpretation, and statistical analysis.

EDAD 5321. EDUCATIONAL RES. 3 Hours.**EDAD 5322. EDUCATIONAL RESEARCH AND EVALUATION. 3 Hours.**

An overview of basic concepts and procedures necessary for analyzing, designing, and conducting quantitative and qualitative educational studies. Topics include familiarization with educational journals, associations, funding agencies, accreditation procedures, program evaluation, sampling procedures, data collection, and statistical analyses.

EDAD 5330. LEADERSHIP IN THE INSTRUCTIONAL SETTING PRACTICUM. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement. Prerequisite: EDAD 5389.

EDAD 5350. AMERICAN COLLEGE STUDENT. 3 Hours.

The purpose of the course is to explore and understand the nature, culture, and development of the American College Student. The course focuses on examining a range of development theories that offer insight into the processes of student learning, growth, and development during the college years.

EDAD 5351. HIGHER EDUCATION ADMINISTRATION AND STUDENT AFFAIRS. 3 Hours.

The course is designed to introduce students to the organization, management, and philosophy of higher education administration and student affairs at post-secondary institutions. It explores the range of services and organizations associated with the wide-range of positions that exist in student and academic affairs and helps students gain a better understanding of the potential career opportunities that await them after graduation.

EDAD 5352. HIGHER EDUCATION LAW. 3 Hours.

The purpose of this course is to provide students with the fundamental cases of higher education law for administrators. Topics of this course may include the legal structure of higher education, separation of church and state, religion, academic freedom, employment and tenure, due process, computer-related legal issues, copyright, students' rights of speech and expression, search and seizure, desegregation, tort liability, contracts and collective bargaining.

EDAD 5353. HIGHER EDUCATION FINANCE. 3 Hours.

This course will provide knowledge of the theoretical basis for use of tax funds for education, student fees and tuition, state methods for financing, planning, cost benefit, budgeting, federal role, capital outlay, and the relationships between educational objectives and resource allocations.

EDAD 5354. THE AMERICAN COMMUNITY COLLEGE. 3 Hours.

This course will provide students with the philosophical and historical foundations of the American community college system. Students will explore current issues including, but not limited to, the evolution of the community college baccalaureate, principles of accreditation, institutional effectiveness, workforce development, and federal oversight of community colleges.

EDAD 5355. HIGHER EDUCATION CURRICULUM. 3 Hours.

An examination of theory and research in curriculum development, implementation, and evaluation in higher education settings. Emphasis will be on current trends in the content areas.

EDAD 5356. HISTORY, PRINCIPLES, AND PHILOSOPHY OF HIGHER EDUCATION ADMINISTRATION. 3 Hours.

This course is for current and prospective faculty, administrators, and staff seeking to learn about the American higher education system. The topics addressed include the history, recent developments, and strategies for future management and administration, finance, organization, governance, and the mission and role of higher education in American society.

EDAD 5357. HIGHER EDUCATION TRENDS AND ISSUES. 3 Hours.

The course is designed to introduce students to key issues affecting higher education today. Through diverse and critical readings, the students explore issues such as access and equity, affirmative action, faculty, academic freedom, college costs, and strategic change.

EDAD 5360. LEADERSHIP THEORY. 3 Hours.

Leadership theories and the practice of leadership serve to focus this course designed to prompt self awareness as a school leader.

EDAD 5363. ADVANCED EDUCATIONAL RESEARCH. 3 Hours.

An in-depth coverage of selected topics in the design of research and the collection and analysis of data. Topics include multivariate analyses, experimental and quasi-experimental designs, development and selection of data collection instruments, focus group interviewing, observational research, the delphi method, and interpretive analysis.

EDAD 5365. LEADING LEARNING ORGANIZATIONS. 3 Hours.

The change process in educational settings serves to focus this course. Moving along the continuum of change theories, the planning, adoption, implementation and institutionalization of change are explored across public school and post-secondary learning organizations.

EDAD 5376. EDUCATIONAL GOVERNANCE. 3 Hours.

Focus on the appointed and elected entities and bureaucracies that determine and implement policy in public education.

EDAD 5377. CONTEMPORARY ISSUES IN EDUCATION. 3 Hours.

An exploration of selected controversial issues in contemporary education. Symposium/seminar/lecture format.

EDAD 5379. SUPERINTENDENCY INTERNSHIP. 3 Hours.

Provides experiences in the various roles and responsibilities of a superintendent of schools under the direction of a school district mentor and a university supervisor. An internship project will be developed in consultation with public school and university personnel.

EDAD 5380. DIVERSITY AND EQUITY IN EDUCATION. 3 Hours.

Effective leadership, instruction, and management strategies for work in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity and equity such as culture, ethnicity, exceptionality, gender, language, and socioeconomic status. Demographic issues along with urban and suburban educational settings will also be addressed.

EDAD 5381. GOVERNANCE, POLITICAL AND LEGAL ASPECTS OF EDUCATION. 3 Hours.

Focus on the legal foundation of public education, political theory, and application of political skills in working with school personnel, students, parents, and community organizations. The role of the law, court rulings, and the politics of school governance at the federal, state, and local levels will be addressed.

EDAD 5382. FOUNDATIONS OF EDUCATIONAL ADMINISTRATION. 3 Hours.

Will address the various aspects of instructional leadership roles and responsibilities of central office as well as building level administrators and supervisors. Topics included will be history of educational administration, educational philosophy, the global understanding of administrative roles in urban and rural settings, and professional organizations, as well as an overview of educational reforms, site-based management, governance, instructional management, evaluation, exchanging ideas, making changes, coaching beginning teachers, mentoring of teachers and peers, and a diverse community.

EDAD 5383. THE PRINCIPALSHIP. 3 Hours.

The Principalship will address the role of the campus leader in the leadership, organization and administration of schools. The importance of campus culture, climate, vision and ethics will be stressed throughout standards-based instruction, case studies, developmental activities, readings, reflections and field experiences. The importance of appropriate principal induction will be stressed along with the concepts of the principal as scholar-practitioner and proactive leader. An emphasis will be placed on continuous school improvement and a commitment to professional development.

EDAD 5384. RESOURCE MANAGEMENT IN EDUCATION. 3 Hours.

School finance, as well as auxiliary areas of resource management, will be addressed. The emphasis will be on the use of technology, alternative models of financing and budgeting, and sources of revenue from the federal, state, and local levels as well as from private sources. The course is designed to assist administrators in developing an understanding of the functions, operation, and evaluation of auxiliary services which support the educational program.

EDAD 5388. EDUCATIONAL POLICY ISSUES IN THE PUBLIC SCHOOLS. 3 Hours.

Examination of positions on policy issues of importance in education.

EDAD 5389. ADMINISTRATIVE PRACTICUM. 3 Hours.

Designed to provide prospective educational administrators job-related experiences under supervision in an appropriate educational setting. An approved professional study is designed in relationship to the intern's interest and past experiences. Can be repeated for credit with approval of advisor.

EDAD 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDAD 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDAD 5395. FUTURISTIC LEADERSHIP ROLES IN SCHOOL ADMINISTRATION. 3 Hours.

Concepts and skills to prepare educational leaders for learner-centered schools and to anticipate and foster the professional development of all staff and parents in the learning community.

EDAD 5399. CAPSTONE PRACTICUM IN EDUCATIONAL LEADERSHIP AND POLICY STUDIES. 3 Hours.

The course focus will be on collaborative inquiry and action research in the individual classroom, team, school, and/or professional learning community. Each student will identify, research, design and initiate addressing a real problem at their work site. Students will leave this course and graduate from the program with a research presentation as part of their informal professional portfolio. Successful completion of the Capstone Internship will fulfill the comprehensive examination requirements for the graduate degree and/or certification. Requirements of EDAD 5399 will include, but not be limited to, those collaboratively established by University faculty and school administrative personnel.

EDAD 6179. SUPERINTENDENCY PRACTICUM. 1 Hour.

Provides experiences in the various roles and responsibilities of a superintendent of schools under the direction of a school district mentor and a university supervisor. An internship project will be developed in consultation with public school and university personnel.

EDAD 6279. SUPERINTENDENCY PRACTICUM. 2 Hours.

Provides experiences in the various roles and responsibilities of a superintendent of schools under the direction of a school district mentor and a university supervisor. An internship project will be developed in consultation with public school and university personnel. Prerequisite: permission of advisor.

EDAD 6301. INTRODUCTION TO K-16 DOCTORAL STUDIES. 3 Hours.

This course will examine K-16 literature, the dissertation process, and practices of successful doctoral students. Students will explore the purpose and function of scholarly writing, practice fundamental writing and editing skills, and utilize APA style requirements. Prerequisite: ELPS doctoral program admittance required.

EDAD 6304. K-16 QUANTITATIVE RESEARCH DESIGN & METHODOLOGY. 3 Hours.

Advanced course that covers the logic of research methods and design with an emphasis on empirical and other quantitative methods, including designing, conducting, and analyzing research from multiple paradigms. Emphasis will be placed on the steps involved in the administration of a research project including literature review, methodology, data collection and analysis, and presentation and publication in multiple media. State-of-the-art technology will be utilized.

EDAD 6308. QUALITATIVE RESEARCH DESIGN & METHODOLOGY. 3 Hours.

Research processes including developing interview questions, interviewing, coding/analyzing, interpreting data, theorizing, and reporting results, with participant observation as needed. Special focus on methods available to triangulate/verify data in order to confirm or achieve convergent validity. Establishing appropriate safeguards to ensure that findings are drawn from the data.

EDAD 6310. STATISTICAL METHODS. 3 Hours.

Statistical applications that emphasize sampling theory, normal, t, and F distributions, hypothesis tests, types of errors, power, analysis of variance for designs with one or more levels of classification, random effects and mixed models, comparisons among means, randomized block designs, designs with repeated measures including split-plot designs, zero-order correlation, and simple linear regression. More advance principles of parametric and non-parametric statistics will also be emphasized. State-of-the-art technology will be utilized.

EDAD 6315. ADVANCED STATISTICAL METHODS. 3 Hours.

Review of correlation topics including zero-order, part and partial correlation, two variable linear regression theory, standard error of estimate, coefficient of determination, test for linearity of regression, relation of correlation ratio to analysis of variance, multiple correlation, point-biserial correlation, phi coefficient, tetrachoric correlation, canonical correlation, rank correlation, Fisher's Z and significance test for r, and effect size. Fundamentals of multiple regression including relationship to analysis of variance, and analysis of covariance. General introduction to factor analysis models, multiple analysis of variance, multiple analysis of covariance, and meta-analysis. Applicability to K-16 studies.

EDAD 6318. ADVANCED QUALITATIVE METHODS. 3 Hours.

This course is for doctoral students who have already taken the introductory qualitative course (EDAD 6308). Students extend the lessons gained from that course by completing a small-scale research project, writing a paper using a traditional journal format, and formally presenting their findings to their class colleagues. The format of the class will provide opportunities for active learning and self-reflection on issues important to qualitative researchers. Prerequisite: EDAD 6308.

EDAD 6320. K-16 PHILOSOPHY & HISTORY POLICY RESEARCH. 3 Hours.

Analysis of the roles of history, philosophy, culture, and values in shaping educational policy. Topics include the Greek Academies, the Medieval Universities, Progressivism, Neo-Conservatism, and Postmodern perspectives, as necessary antecedents to the K-16 movement. Detailed analysis of the roles, history, philosophy, culture, and values for public school and policy making within institutions of higher education.

EDAD 6325. K-16 POLICY ANALYSIS RESEARCH. 3 Hours.

A study of principles and practices involved in policy analysis research in educational settings.

EDAD 6327. K-16 POLICY & LAW ANALYSIS RESEARCH. 3 Hours.

A study of principles and practices involved in policy analysis research in educational settings and critical analysis of the legal underpinnings of public K-16 education with particular emphasis on the United States Constitution.

EDAD 6330. K-16 LEGAL POLICY RESEARCH. 3 Hours.

Critical analysis of the legal underpinnings of public K-16 education with particular emphasis on the United States Constitution. Attention will also be paid to varieties of statutory construction, the role of case law, and the significance of administrative decisions in the K-16 context. Legal implications of synergistic relationships spanning the K-16 context.

EDAD 6331. LEADERSHIP IN THE K-12 INSTRUCTIONAL SETTING. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement. For doctoral students only.

EDAD 6335. K-16 ACCOUNTABILITY POLICY RESEARCH. 3 Hours.

A comprehensive course covering the research about and role of outcomes assessment in institutional accountability and accreditation. Addresses the relationship between outcomes assessment and strategic planning. Exploration of outcomes assessment in public schools and institutions of higher education.

EDAD 6340. K-16 ORGANIZATIONAL THEORY RESEARCH. 3 Hours.

In depth study of theories of organizing, the ways in which they are evidenced in educational organizations and the ways in which they influence leaders and learning.

EDAD 6342. K-16 ORGANIZATIONAL & LEADERSHIP THEORY RESEARCH. 3 Hours.

In depth study of theories of organizing, the ways in which they are evidenced in educational organizations and the ways in which they influence leaders and learning. Analysis of both classical and contemporary theories, and their application in K-16 settings.

EDAD 6343. HISTORICAL, SOCIAL, & CULTURAL CONTEXTS OF EDUCATION. 3 Hours.

This course examines the manner in which K-16 education is influenced by the broader social and cultural contexts within which it is situated. Course materials draw from the foundations, history, sociology, politics, and economics of education. More specifically, the course will consider the ways that race, class, and gender relate to the inequitable distribution of educational opportunity. Additional concepts/topics such as language status, nationality, physical & mental ability, sexual orientation, etc., will be explored to develop a deeper understanding of the ways that student marginalization manifests in K-16 schooling. Prerequisite: ELPS doctoral program admittance required.

EDAD 6345. K-16 HUMAN RESOURCES LEADERSHIP RESEARCH. 3 Hours.

Human resource needs in educational settings, including faculty and staff recruitment, selection, evaluation, retention, promotion, tenure, grievances, and leadership and personnel development.

EDAD 6350. K-16 CURRICULUM LEADERSHIP RESEARCH. 3 Hours.

Foundations, principles, and issues of curriculum, including vertical alignment and the middle college concept. Exploration of curriculum development in both public schools and institutions of higher education. Analysis of the role of articulation agreements.

EDAD 6351. HIGHER EDUCATION AND STUDENT AFFAIRS ADMINISTRATION. 3 Hours.

The course is designed to introduce students to the organization, management, and philosophy of higher education administration and student affairs at post-secondary institutions. It explores the range of services and organizations associated with the wide-range of positions that exist in student and academic affairs and helps students gain a better understanding of the potential career opportunities that await them after graduation. For doctoral students only.

EDAD 6352. HIGHER EDUCATION LAW. 3 Hours.

The purpose of this course is to provide students with the fundamental cases of higher education law for administrators. Topics of this course may include the legal structure of higher education, separation of church and state, religion, academic freedom, employment and tenure, due process, computer-related legal issues, copyright, students' rights of speech and expression, search and seizure, desegregation, tort liability, contracts and collective bargaining. For doctoral students only.

EDAD 6353. HIGHER EDUCATION FINANCE. 3 Hours.

This course will provide knowledge of the theoretical basis for use of tax funds for education, student fees and tuition, state methods for financing, planning, cost benefit, budgeting, federal role, capital outlay, and the relationships between educational objectives and resource allocations. For doctoral students only.

EDAD 6354. American Community College. 3 Hours.

This course will provide students with the philosophical and historical foundations of the American community college system. Students will explore current issues including, but not limited to, the evolution of the community college baccalaureate, principles of accreditation, institutional effectiveness, workforce development, and federal oversight of community colleges. For doctoral students only.

EDAD 6355. K-16 STUDENT SERVICES LEADERSHIP RESEARCH. 3 Hours.

Analysis of the student services, co-curricular, extracurricular, and auxiliary enterprise functions of both public schools and institutions of higher education. Particular emphasis on the relationship with the institutions' stated curricula, purposes, and institutional missions.

EDAD 6356. HISTORY, PRINCIPLES, AND PHILOSOPHY OF HIGHER EDUCATION ADMINISTRATION. 3 Hours.

This course is for current and prospective faculty, administrators, and staff seeking to learn about the American higher education system. The topics addressed include the history, recent developments, and strategies for future management and administration, finance, organization, governance, and the mission and role of higher education in American society. For doctoral students only.

EDAD 6357. HIGHER EDUCATION TRENDS AND ISSUES. 3 Hours.

The course is designed to introduce students to key issues affecting higher education today. Through diverse and critical readings, the students explore issues such as access and equity, affirmative action, faculty, academic freedom, college costs, and strategic change. For doctoral students only.

EDAD 6358. AMERICAN COLLEGE STUDENT. 3 Hours.

The purpose of the course is to explore and understand the nature, culture, and development of the American College Student. The course focuses on examining a range of development theories that offer insight into the processes of student learning, growth, and development during the college years. For doctoral students only.

EDAD 6359. HIGHER EDUCATION CURRICULUM. 3 Hours.

An examination of theory and research in curriculum development, implementation, and evaluation in higher education settings. Emphasis will be on current trends in the content areas. For doctoral students only.

EDAD 6360. K-16 LEADERSHIP THEORY RESEARCH. 3 Hours.

Organizational leader behavior in K-16 settings with reference to interpersonal relationships, hierarchy, management style, and communication. Analysis of both classical and contemporary organizational theories, and their application in K-16 settings.

EDAD 6365. K-16 LEADING LEARNING ORGANIZATIONS RESEARCH. 3 Hours.

Building on organizational and leadership theories and their use in educational organizations, this course focuses on the study of change theory and its uses in leading learning organizations in times of change.

EDAD 6371. PERSONNEL & SCHOOL LAW. 3 Hours.

Focuses on understanding the relationship between motivation and the management of human resources; articulate the basics of team management and group facilitation; identify proper procedures for recruiting, assignment, and inducting personnel; and recognize the legal requirement for suspension, transfer, reduction in force and dismissal of professional personnel. Prerequisite: permission of advisor.

EDAD 6373. THE SUPERINTENDENCY. 3 Hours.

This course introduces candidates to the many facets of the superintendency with a focus on the challenges facing the superintendent today. Topics include: exercising collaborative leadership, developing a strong organizational culture, dealing with the politics of education, building strong superintendent-board relations, managing the problems of school reform, and planning. Instruction is problem-oriented and included field-based experiences.

EDAD 6374. ADVANCED SCHOOL BUSINESS ADMINISTRATION. 3 Hours.

Survey principles of public school finance at the local, state, and federal levels. Examines the school budgeting process, methods of school funds accounting and techniques of school business management. Prerequisite: permission of advisor.

EDAD 6376. Educational Governance. 3 Hours.

Focus on the appointed and elected entities and bureaucracies that determine and implement policy in public education. For doctoral students only.

EDAD 6378. ADVANCED CURRICULUM AND PROGRAM ASSESSMENT. 3 Hours.

Focuses on the processes of implementing district-wide curriculum, programs, and other innovations in school systems. Topics include: recent research on the implementation of change in curriculum and instruction, trends in education, strategic and contextual planning, program and student assessment and accountability, and national curriculum projects. Prerequisite: permission of advisor.

EDAD 6380. K-16 RESEARCH PRACTICUM I. 3 Hours.

An In depth research experience that provides an opportunity for participants to work with an experienced faculty researcher on cutting edge K-16-related research. The practicum experience will be personalized to best meet the individual student's needs, aptitudes, and aspirations in the context of the K-16 research arena.

EDAD 6381. POLITICAL AND LEGAL ASPECTS OF K-12 EDUCATION. 3 Hours.

Focus on the legal foundation of public education, political theory, and application of political skills in working with school personnel, students, parents, and community organizations. The role of the law, Ct rulings, and the politics of school governance at the federal, state, and local levels will be addressed. For doctoral students only.

EDAD 6383. The Principalship. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement. For doctoral students only.

EDAD 6384. RESOURCE MANAGEMENT IN K-12 EDUCATION. 3 Hours.

School finance, as well as auxiliary areas of resource management, will be addressed. The emphasis will be on the use of technology, alternative models of financing and budgeting, and sources of revenue from the federal, state, and local levels as well as from private sources. The course is designed to assist administrators in developing an understanding of the functions, operation, and evaluation of auxiliary services which support the educational program. For doctoral students only.

EDAD 6385. K-16 RESEARCH PRACTICUM II. 3 Hours.

A research experience in K-16 research that provides an opportunity for participants to experience the process research with an experienced university professional. The experience will be individualized to best meet the student's needs, aptitudes, and aspirations in the context of K-16 research.

EDAD 6390. SELECTED TOPICS K-16 EDUCATIONAL LEADERSHIP RESEARCH. 3 Hours.

Topics will vary by semester, and may afford students the opportunity for choice within the cohort design. Selected topics courses will provide opportunities for faculty to teach courses in their area of expertise that meet students' needs, aptitudes, and aspirations. Examples of selected topics that may be offered in leadership research include: k-16 student judicial processes, K-16 academic program administration, and K-16 student information management systems. May be repeated for credit with permission of instructor.

EDAD 6391. INDEPENDENT RESEARCH. 3 Hours.

Research for independent study over topic agreed upon between student and instructor. Can be repeated for credit with permission. For doctoral students only.

EDAD 6392. SELECTED TOPICS K-16 EDUCATION POLICY RESEARCH. 3 Hours.

Topics will vary by semester, and may afford students the opportunity for choice within the cohort design. Selected topics courses will provide opportunities for faculty to teach courses in their area of expertise that meet students' needs, aptitudes, and aspirations. Examples of selected topics that may be offered in leadership research include: K-16 governance, IDEA & ADA, and K-16 articulation. May be repeated for credit with permission of instructor.

EDAD 6399. DISSERTATION. 3 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree, and permission of major professor. Graded P/F.

EDAD 6699. DISSERTATION. 6 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree, and permission of major professor. Graded R/F/P/W.

EDAD 6999. DISSERTATION. 9 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree, and permission of major professor. Graded P/R/F.

EDAD 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Educational Leadership & Policy Studies - Graduate Programs

Programs

The Department of Educational Leadership and Policy Studies offers the Master of Education (M.Ed.) in Educational Leadership and Policy Studies. In addition to core courses in K-16 educational leadership and policy, two distinct emphases are available: Principal Certificate Courses and Higher Education Administration Emphasis. Students build upon their existing expertise with progressive skills that can increase student achievement, improve teacher performance, and increase organizational effectiveness of schools and higher education institutions.

For those with a master's degree, the Department offers certification preparation courses for candidates seeking a Principal as Instructional Leader Certificate or a Superintendent Certificate. Applications for the Superintendent Certification Program are not being accepted for the 2021-22 academic year.

The department has specific requirements that must be met for recommendation to take the TExES Exam. Please see the department's website at <https://www.uta.edu/coed/educleadership/>.

The Department also offers the Ph.D. in Educational Leadership and Policy Studies and a BA-PhD in Educational Leadership and Policy Studies with Higher Education Administration Emphasis.

In addition to the single degrees, the department offers a dual degree with the School of Social Work, which is a Master of Education in Educational Leadership and Policy Studies (Higher Education Administration Emphasis) and a Master in Social Work (MEd/MSW) with two concentrations: Direct Practice Concentration - Specialty in Mental Health and Substance Abuse or a Community and Administrative Practice Concentration.

Students accepted in the M.Ed. with Higher Education Administration Emphasis can elect, with program approval, to pursue the integrated BA-PhD track which allows students to start doctoral work earlier and transfer into the PhD program upon completion of 30 SCH and after two evaluations of their academic progress.

The department also offers a dual degree with the School of Social Work, which is a Master of Education in Educational Leadership and Policy Studies (Higher Education Administration Emphasis) and a Master in Social Work (MEd/MSW) with two concentrations: Direct Practice Concentration: Specialty in Mental Health and Substance Abuse and a Community and Administrative Practice Concentration.

Degrees and Certifications

Graduate work in Educational Leadership and Policy Studies at UTA may lead to the following degrees and certifications:

Degrees

- Master of Education (M.Ed.) in Educational Leadership and Policy Studies
 - Principal Certificate Courses
 - Higher Education Administration Emphasis
- BA-PhD track in Educational Leadership and Policy Studies with Higher Education Administration Emphasis
- Doctor of Philosophy (Ph.D.) in Educational Leadership and Policy Studies
- Master of Education in Educational Leadership and Policy Studies with Higher Education Administration Emphasis and a Master in Social Work dual degree (MEd/MSW) with two concentrations: Direct Practice Concentration - Specialty in Mental Health and Substance Misuse or a Community and Administrative Practice Concentration.

Educator Preparation Programs

- Principal
- Superintendent (Not Accepting Applications for 2021-22 academic year)

Criminal History Acknowledgement

As required by Texas HB1508, applicants need to be aware of the following.

1. In order to receive educator certification in Texas, you must pass a criminal history background check.
2. If you have been convicted of an offense that is considered not appropriate for an educator, you could be ineligible to earn this certification from the state of Texas.
3. You have a right to request a preliminary criminal history evaluation letter from the Texas Education Agency prior to admission into this program. The Texas Education Agency currently charges a non-refundable \$50 fee for this criminal history evaluation.

For more information on Preliminary Criminal History Evaluation:

https://tea.texas.gov/Texas_Educators/Investigations/Preliminary_Criminal_History_Evaluation-FAQs/

Information for Out-of-State Students Who Complete COEd Programs

The Texas Education Agency (TEA) requires candidates seeking certification to complete all practica in a TEA-approved site. Out-of-state students who do not complete the practicum at a UTA College of Education and TEA-approved site and meet all other TEA requirements do not qualify for Texas educator certification. If seeking certification outside of Texas, please work with your state agency in the state in which you are seeking certification to determine eligibility and to complete any additional requirements. Please note that after successful completion of your UTA College of Education degree, you may request a memo indicating your degree completion. UTA cannot recommend out-of-state students for certification and cannot recommend out-of-state students to take Texas certification exam(s). Additionally, UTA faculty and staff cannot complete out-of-state form requests for individuals seeking certification, licensure, and/or endorsements in another state according to TEA.

Professional Dispositions

Each student/candidate in the College of Education of UT Arlington will be evaluated on Professional Dispositions by the faculty and staff. These dispositions are identified as essential for a highly-qualified professional. Instructors and program directors will work with students/candidates rated as “unacceptable” in one or more stated criteria. The student/candidate will have an opportunity to develop a plan to remediate any digressions. If digression(s) are not, or cannot be successfully remediated as in the case of an egregious digression, a determination will be made by Committee on continuation or dismissal from the College of Education.

Changes

Certification program requirements may change as state/TEA certification requirements change.

Admissions Requirements - Master’s Degree Program

All students, including those enrolled in the Educational Leadership and Policy Studies master’s program, must meet university, college, department, and Texas Administrative Code qualifications in order to participate in educator preparation programs.

The overall grade point average (GPA) of each incoming class admitted between September 1 and August 31 of each year by an educator preparation program (EPP) may not be less than 3.0 on a four-point scale or the equivalent.

College of Education Master’s Degree Requirements

Unconditional Admission Criteria

- 2 or more years relevant work experience
- Undergraduate transcripts with a 3.0 GPA during the last 60 hours or 3.0 cumulative GPA, the higher of which will be used for admission purposes. A 3.0 GPA on the last 9 hours of graduate coursework may be considered in place of undergraduate GPA.
- 2 professional letters of reference on file
- **Program areas may have additional requirements.**

Probationary Admission Criteria

- Students with less than 2 years relevant work experience must provide 2 professional letters of reference.
- Students granted probationary admission must maintain a 3.0 (B or better) GPA in the first 9 credit hours of graduate coursework in the College of Education program to be converted from probationary to unconditional admission.
- **Program areas may have additional requirements.**

Department of Educational Leadership and Policy Studies M.Ed. Program

Admission to the Master of Education (M.Ed.) in Educational Leadership and Policy Studies is competitive and some qualified students may not be admitted if demand exceeds the program’s capacity to serve all applicants.

All students must meet university, college, department, and Texas Administrative Code qualifications in order to participate in educator preparation programs. Out-of-state students will not qualify for Texas educator certification. Therefore, students should review their state’s requirements to determine if completion of a program at UTA will lead to certification in their state.

Program areas have additional requirements including documents for TEA reporting, including: 1) a written response to the given prompt (fulfills “other screening instrument” as required by The Texas Education Agency), and 2) completion of Attestation and FERPA forms. In addition, some programs require access to an approved Pre K-12 setting. The overall grade point average (GPA) of each incoming class admitted between September 1 and August 31 of each year by an educator preparation program (EPP) may not be less than 3.0 on a four-point scale or the equivalent. Certification programs have additional TAC requirements for GPA (used by the program in addition to, not in lieu of, the requirements stated above).

Unconditional Admission Criteria

1. 2 or more years of relevant work experience
2. Undergraduate transcripts with a 3.0 GPA during the last 60 hours or 3.0 cumulative GPA, the higher of which will be used for admission purposes. A 3.0 GPA on the last 9 hours of graduate coursework may be considered in place of undergraduate GPA.
3. 2 professional letters of reference on file. Letters from supervisors are strongly encouraged.

Probationary Admission Criteria

1. Applicants who meet requirements 2) and 3) from unconditional admission criteria but have less than 2 years of relevant work experience may be granted probationary admission. The faculty admissions committee may require additional documents (e.g., GRE scores) for consideration.
2. Students granted probationary admission must maintain a 3.0 (B or better) GPA in the first 9 credit hours of graduate coursework in the College of Education program to be converted from probationary to unconditional admission.

Unconditional Admission

An applicant who meets all requirements is normally considered for unconditional admission. Unconditionally admitted students must maintain a 3.0 GPA for the duration of the program and have at least a 3.0 GPA in order to graduate.

Probationary Admission

An applicant who does not meet all requirements for unconditional admission nevertheless may show promise for successful graduate study and, upon recommendation of the graduate advisor, Committee on Graduate Studies and with approval of the academic dean may be granted probationary admission. Students admitted on probation to any graduate program in the College of Education must earn a 3.0 GPA, with no grade lower than a B, on the first nine credit hours of study. In addition, in order to graduate from UTA and the College of Education, all candidates must have at least a 3.0 GPA.

Deferred Admission

An applicant's admission may be deferred when a file is not complete or when denying admission is not appropriate.

Denied Admission

An applicant may be denied admission if the conditions for unconditional or probationary admission are not met. In addition, if a student was suspended or expelled from the University of Texas at Arlington or any other university or program for reasons other than academic, that student may be denied admission or readmission to an educator preparation program in the UTA College of Education.

Criminal History Acknowledgement

As required by Texas HB1508, applicants need to be aware of the following.

1. In order to receive educator certification in Texas, you must pass a criminal history background check.
2. If you have been convicted of an offense that is considered not appropriate for an educator, you could be ineligible to earn this certification from the state of Texas.
3. You have a right to request a preliminary criminal history evaluation letter from the Texas Education Agency prior to admission into this program. The Texas Education Agency currently charges a non-refundable \$50 fee for this criminal history evaluation.

For more information on Preliminary Criminal History Evaluation:

https://tea.texas.gov/Texas_Educators/Investigations/Preliminary_Criminal_History_Evaluation-FAQs/

Information for Out-of-State Students Who Complete COEd Programs

The Texas Education Agency (TEA) requires candidates seeking certification to complete all practica in a TEA-approved site. Out-of-state students who do not complete the practicum at a UTA College of Education and TEA-approved site and meet all other TEA requirements do not qualify for Texas educator certification. If seeking certification outside of Texas, please work with your state agency in the state in which you are seeking certification to determine eligibility and to complete any additional requirements. Please note that after successful completion of your UTA College of Education degree, you may request a memo indicating your degree completion. UTA cannot recommend out-of-state students for certification and cannot recommend out-of-state students to take Texas certification exam(s). Additionally, UTA faculty and staff cannot complete out-of-state form requests for individuals seeking certification, licensure, and/or endorsements in another state according to TEA.

Master's Degree Programs

In order to graduate from UTA and the College of Education, all candidates must have at least a 3.0 GPA.

Master of Education in Educational Leadership and Policy Studies, with Principal Certificate Courses

Core Courses

EDAD 5322	EDUCATIONAL RESEARCH AND EVALUATION	3
EDAD 5360	LEADERSHIP THEORY	3
EDAD 5380	DIVERSITY AND EQUITY IN EDUCATION	3
EDAD 5399	CAPSTONE PRACTICUM IN EDUCATIONAL LEADERSHIP AND POLICY STUDIES	3

Principal as Instructional Leader Certification Courses

EDAD 5330	LEADERSHIP IN THE INSTRUCTIONAL SETTING PRACTICUM	3
EDAD 5381	GOVERNANCE, POLITICAL AND LEGAL ASPECTS OF EDUCATION	3
EDAD 5383	THE PRINCIPALSHIP	3
EDAD 5384	RESOURCE MANAGEMENT IN EDUCATION	3
EDAD 5389	ADMINISTRATIVE PRACTICUM	3
EDAD 5305	CURRICULUM DESIGN, IMPLEMENTATION, AND EVALUATION	3

Total Hours		30
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Master of Education in Educational Leadership and Policy Studies, with Higher Education Administration Emphasis

Core Courses

EDAD 5322	EDUCATIONAL RESEARCH AND EVALUATION	3
EDAD 5360	LEADERSHIP THEORY	3
EDAD 5380	DIVERSITY AND EQUITY IN EDUCATION	3
EDAD 5399	CAPSTONE PRACTICUM IN EDUCATIONAL LEADERSHIP AND POLICY STUDIES	3

Higher Education Administration Emphasis Courses

EDAD 5350	AMERICAN COLLEGE STUDENT	3
EDAD 5351	HIGHER EDUCATION ADMINISTRATION AND STUDENT AFFAIRS	3
EDAD 5352	HIGHER EDUCATION LAW	3
EDAD 5354	THE AMERICAN COMMUNITY COLLEGE	3
EDAD 5356	HISTORY, PRINCIPLES, AND PHILOSOPHY OF HIGHER EDUCATION ADMINISTRATION	3
EDAD 5357	HIGHER EDUCATION TRENDS AND ISSUES	3

Total Hours		30
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Coursework and Degree Completion Requirements

- Master's degree and university graduate-level certificate programs must be completed within six years (time in military service excluded) from initial registration in the Office of Graduate Studies. Coursework that is more than six years old at the time of graduation or program completion cannot be used toward meeting the requirements for a master's degree or university graduate-level certificate. Coursework that is more than five years old cannot be used toward state certification requirements for licensure (further restrictions may apply, depending on program).
- Each student/candidate in the College of Education of UT Arlington will be evaluated on Professional Dispositions by the faculty and staff. These dispositions are identified as essential for a highly-qualified professional. Instructors and program directors will work with students/candidates rated as "unacceptable" in one or more stated criteria. The student/candidate will have an opportunity to develop a plan to remediate any digressions. If digression(s) are not, or cannot be successfully remediated as in the case of an egregious digression, a determination will be made by Committee on continuation or dismissal from the College of Education.

Please see Doctoral Section for information pertaining to BA-PhD track in Educational Leadership and Policy Studies with Higher Education Administration Emphasis.

Dual Degree Program

The department also offers a dual degree with the School of Social Work, which is a Master of Education in Educational Leadership and Policy Studies (Higher Education Administration Emphasis) and a Master of Social Work (MEd/MSW) with two concentrations: Direct Practice Concentration - Specialty in Mental Health and Substance Misuse or a Community and Administrative Practice Concentration.

Eligible students may participate in a dual degree programs whereby they can earn a Master of Education in Educational Leadership and Policy Studies (Higher Education Administration Emphasis) and a Master of Social Work.

By participating in a dual degree program, students can apply 6-9 semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately.

To participate in the dual degree program, students must apply separately to each program and must submit a separate Program of Work for each degree. Those interested in a dual degree program should consult the appropriate Graduate Advisor(s) for further information on course requirements. See also information on Dual Degree Programs in the Advanced Degree Requirements section of this catalog.

Doctoral Degree Program

Doctor of Philosophy (Ph.D.) in Educational Leadership and Policy Studies

The Ph.D. degree is designed for candidates who seek to enter careers in research, institutional assessment, policy analysis, institutional leadership, higher education administration, or the professoriate. The program challenges the conventional wisdom that higher education and K-12 education are different worlds by bringing together scholars and students from all levels of education to work and study together. Particularly, the program focuses on narrowing achievement gaps by studying and creating efficacious transitions within the educational experience. Working from the premise that all people can learn at high levels, the program includes the study of the systemic barriers at all levels of education that prevent so many children, adolescents, and adults from being as successful as they can possibly be.

In addition to becoming experts in their particular area of inquiry, graduates will have a broad foundation in the study of educational leadership and policy at all levels. Students in the Ph.D. program will be part of a cohort throughout their coursework. Qualified students in the M.Ed. with Higher Education Administration Emphasis program who elect an integrated BA-PhD track in Educational Leadership and Policy Studies with Higher Education Administration Emphasis will transfer into the PhD program upon completion of 30 SCH and after two evaluations of their academic progress. After transfer, they will complete the same required coursework as the doctoral cohort they have joined, and will have the opportunity to take more higher education elective courses.

Admission Requirements - Ph.D. Program

A select number of qualified applicants are admitted each session to the cohort-based program. Each cohort begins coursework during the fall semester. Specific guidelines for applying to this program are found on the departmental website. Admission into this program is very competitive. The departmental admissions committee considers prior educational experiences, prior work experiences, GRE scores, a statement of interest, professional references, and so forth. Meeting admission standards does not guarantee admission to the program.

In addition to the general Office of Graduate Studies admission requirements, applicants must meet the following requirements for unconditional admission.

- Master's degree in education or other field appropriate for the doctorate in Educational Leadership and Policy Studies.
- Grade point minimum average of 3.5 out of a possible 4.0 from the master's degree.
- Successful applicants for unconditional admission are expected to present a minimum of two of the following three Graduate Record Examination (GRE) scores: (1) verbal minimum score of 153, (2) quantitative score of 144, and (3) written analytical minimum score of 4 or equivalent.
- Applicants who do not meet the minimum score requirement for a standardized test will be considered for probationary admission status when other factors are taken into account in a holistic review.
- A minimum score of 79 on the Test of English As a Foreign Language Internet Based Test (TOEFL iBT) for applicants whose native language is not English.
- At least three years of documented experience in a work environment in which the primary professional responsibility at any level has been education (e.g., teaching, administration, curriculum development, professional development, post-secondary education, government or private industry settings) is recommended.
- Admission is very competitive. Meeting admission standards does not guarantee admission to the program.
- Applicants who have been suspended or expelled from the University of Texas at Arlington or any other university or program for reasons other than academic reasons may be denied admission or readmission to an educator preparation program in the College of Education.

Required Courses

1. Research Methods Core (15 hours)

EDAD 6304	K-16 QUANTITATIVE RESEARCH DESIGN & METHODOLOGY	3
EDAD 6308	QUALITATIVE RESEARCH DESIGN & METHODOLOGY	3
EDAD 6310	STATISTICAL METHODS	3
EDAD 6315	ADVANCED STATISTICAL METHODS	3
EDAD 6318	ADVANCED QUALITATIVE METHODS	3

2. Core Content Courses (15 hours)

EDAD 6301	INTRODUCTION TO K-16 DOCTORAL STUDIES	3
EDAD 6330	K-16 LEGAL POLICY RESEARCH	3
EDAD 6327	K-16 POLICY & LAW ANALYSIS RESEARCH	3

EDAD 6342	K-16 ORGANIZATIONAL & LEADERSHIP THEORY RESEARCH	3
EDAD 6343	HISTORICAL, SOCIAL, & CULTURAL CONTEXTS OF EDUCATION	3
3. Elective Courses (18 hours)		
Approved elective courses		
4. Dissertation (18 semester credit hours minimum) selected from:		
EDAD 6399	DISSERTATION	3
EDAD 6699	DISSERTATION	6
EDAD 7399	DOCTORAL DEGREE COMPLETION	3

Dissertation

The dissertation is the culmination of the Ph.D. program and represents a distinct contribution to the field of knowledge. A dissertation defense is required.

BA-PhD Track in Educational Leadership and Policy Studies, with Higher Education Administration Emphasis

Qualified students in the M.Ed. with Higher Education Administration Emphasis program who elect an integrated BA-PhD track in Educational Leadership and Policy Studies with Higher Education Administration Emphasis will transfer into the PhD program upon completion of 30 SCH and after two evaluations of their academic progress. After transfer, they will complete the same required coursework as the doctoral cohort they have joined, and will have the opportunity to take more higher education elective courses. Contact Dr. Maria Trache (mtrache@uta.edu) for program details.

Professional Dispositions

Each student/candidate in the College of Education of UT Arlington will be evaluated on Professional Dispositions by the faculty and staff. These dispositions are identified as essential for a highly-qualified professional. Instructors and program directors will work with students/candidates rated as "unacceptable" in one or more stated criteria. The student/candidate will have an opportunity to develop a plan to remediate any digressions. If digression(s) are not, or cannot be successfully remediated as in the case of an egregious digression, a determination will be made by Committee on continuation or dismissal from the College of Education.

Page Information

The information on this page addresses Texas certification. Requirements may change as the Texas Administrative Code and/or Texas Education Code changes.

Recommendation to the State Board for Educator Certification

To be eligible for certification under all programs, a candidate must meet specific criteria set by the College of Education, the University, and the Texas Education Agency/State Board for Educator Certification. To be recommended for certification to the Texas Education Agency/State Board for Educator Certification, a candidate must have successfully completed the following: met all Texas Education Agency requirements for certification recommendation, passed required TExES exam(s), and other required exams, and successfully completed educator preparation program with grades and/or degree posted to transcript in MyMav.

There is a limit of four TExES exam retakes per state policy.

Criminal History Acknowledgement

As required by Texas HB1508, applicants need to be aware of the following.

1. In order to receive educator certification in Texas, you must pass a criminal history background check.
2. If you have been convicted of an offense that is considered not appropriate for an educator, you could be ineligible to earn this certification from the state of Texas.
3. You have a right to request a preliminary criminal history evaluation letter from the Texas Education Agency prior to admission into this program. The Texas Education Agency currently charges a non-refundable \$50 fee for this criminal history evaluation.

For more information on Preliminary Criminal History Evaluation:

https://tea.texas.gov/Texas_Educators/Investigations/Preliminary_Criminal_History_Evaluation-FAQs/

Information for Out-of-State Students Who Complete COEd Programs

The Texas Education Agency (TEA) requires candidates seeking certification to complete all practica in a TEA-approved site. Out-of-state students who do not complete the practicum at a UTA College of Education and TEA-approved site and meet all other TEA requirements do not qualify for Texas educator certification. If seeking certification outside of Texas, please work with your state agency in the state in which you are seeking

certification to determine eligibility and to complete any additional requirements. Please note that after successful completion of your UTA College of Education degree, you may request a memo indicating your degree completion. UTA cannot recommend out-of-state students for certification and cannot recommend out-of-state students to take Texas certification exam(s). Additionally, UTA faculty and staff cannot complete out-of-state form requests for individuals seeking certification, licensure, and/or endorsements in another state according to TEA.

Master's Degree with Principal Certification Courses

The Master's Degree includes courses required for candidates seeking the Texas Principal as Instructional Leader Certification. In addition to obtaining the Master's Degree and successfully completing an approved Texas principal educator preparation program, candidates must also successfully complete the required state exams, hold a valid classroom teaching certificate, and have at least two years of creditable teaching experience as a classroom teacher in a TEA-approved school (see other requirements below and on TEA's website; requirements are subject to change). Candidates must have their school district send via U.S. mail (not fax) their official Texas Teacher Service Record to the UTA College of Education. The Department offers the Master's Degree with Principal Certification courses online.

The overall grade point average (GPA) of each incoming class admitted between September 1 and August 31 of each year by an educator preparation program (EPP) may not be less than 3.00 on a four-point scale or the equivalent.

Certificate Information

To be eligible to receive the Texas Principal Certificate, candidates must:

- Hold a master's degree from a university that is accredited by an accrediting agency recognized by the Texas Higher Education Coordinating Board (THECB) (<http://www.thecb.state.tx.us/institutional-resources-programs/private-postsecondary-institutions/recognition-of-accrediting-agencies/>)
 - U.S. Department of Education Database for Accredited Colleges and Universities (<https://ope.ed.gov/dapip/#/home>)
- Hold a valid classroom teaching certificate.
- Have two years of creditable teaching experience as a classroom teacher
- Successfully complete an approved Texas principal educator preparation program
- Successfully complete the required exams
- Apply to State Board of Education Certification and pay the appropriate fees

See the College of Education and TEA websites for additional information.

State requirements are subject to change.

TEXES Certification Exam

The department has specific requirements that must be met for recommendation to take the TEXES Exam and other state exams. Please see the department's website at <https://www.uta.edu/coed/educleadership/> (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fcoed%2Feducleadership%2F&data=02%7C01%7Cronni.ashley%40uta.edu%7C32dbb397c1984e9c1b0f08d7c43cfc8f%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C637193638519995703&sdata=l0X2z%2F%2FA2UcnwAZTa1oohB6tQmW3kCbWc6m7W8Uh8t0%3D&reserved=0>) and College of Education website at <https://www.uta.edu/coed/certification/steps-advcert.php> (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fcoed%2Fcertification%2Fsteps-advcert.php&data=02%7C01%7Cronni.ashley%40uta.edu%7C32dbb397c1984e9c1b0f08d7c43cfc8f%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C637193638520005694&sdata=gGN%2FhWwQxX18xLmQQWNwS7xVlpR6OFIlhxbIJUkXKw%3D&reserved=0>)

Superintendent Certification Program

Please note: We are not accepting applications for this certificate for the 21-22 academic year.

The Department of Educational Leadership and Policy Studies offers coursework and practicums leading to a Superintendent Certificate. Upon completion of superintendency coursework, Texas administrators seeking a Texas Superintendent Certificate must make a passing score on the Superintendent Texas Examination of Educator Standards (TEXES) (limit of four retakes) and provide evidence of Principal or equivalent certification before they will be recommended to the State Board for Educator Certification (SBEC) for issuance of the certificate.

Required EDAD courses for the Superintendent Certificate: 6179, 6279, 6371, 6373, 6374, and 6378. Currently, courses are offered in an online format.

Out of state students will not qualify for Texas educator certification. Therefore, students should review their state's requirements to determine if completion of the Superintendent Certification program at UTA will lead to certification in their state.

Please Note: We are not accepting applications for this certificate for the 21-22 academic year.

Admissions requirements for the superintendent certificate program:

- Certified administrator in state of residence (if applicable)
- Currently serving in an administrative position or 2 years of administrative experience at building or district level
- Master's GPA of 3.75 or 3 recommendation forms submitted (minimum 3.0 GPA required)
- Other documents required for TEA reporting

The overall grade point average (GPA) of each incoming class admitted between September 1 and August 31 of each year by an educator preparation program (EPP) may not be less than 3.00 on a four-point scale or the equivalent.

Certificate Information

To be eligible to receive the Texas Superintendent Certificate, candidates must:

- Hold a master's degree from a university that is accredited by an accrediting agency recognized by the Texas Higher Education Coordinating Board (THECB) (<http://www.thecb.state.tx.us/institutional-resources-programs/private-postsecondary-institutions/recognition-of-accrediting-agencies/>)
 - U.S. Department of Education Database for Accredited Colleges and Universities (<https://ope.ed.gov/dapip/#/home>)
- Hold a Principal certificate or the equivalent issued by the TEA, another state or country or, completed the superintendent certificate application (PDF, 314 KB) (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Ftea.texas.gov%2FWorkArea%2Flinkit.aspx%3FLinkIdentifier%3Did%26ItemID%3D25769825430&data=02%7C01%7Cronni.ashley%40uta.edu%7C32dbb397c1984e9c1b0f08d7c43cfc8f%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C637193638520025686&sdata=mYKC5Yht89IQbyuXvdG8rpL52KxHpeSsG4Kjt0P4vll%3D&reserved=0>) and been approved by the TEA to substitute managerial experience in lieu of a principal certificate
- Successfully complete an approved superintendent educator preparation program
- Successfully complete the required exam
- Apply to State Board of Education Certification and pay the appropriate fees.

See the College of Education and TEA websites for additional information.

State requirements are subject to change.

Superintendent Certification Program Course List

EDAD 6179	SUPERINTENDENCY PRACTICUM	1
EDAD 6279	SUPERINTENDENCY PRACTICUM	2
EDAD 6371	PERSONNEL & SCHOOL LAW	3
EDAD 6373	THE SUPERINTENDENCY	3
EDAD 6374	ADVANCED SCHOOL BUSINESS ADMINISTRATION	3
EDAD 6378	ADVANCED CURRICULUM AND PROGRAM ASSESSMENT	3
Total Hours		15

Currently, courses are offered in an online format.

Principal Certification Preparation Only (PCO)

Students with a Master's Degree, three letters of reference on file (completed by three persons who can assess the applicant's aptitude, academic skills, and abilities needed for success in the Educational Leadership and Policy Studies program), and other documents required for TEA reporting can apply to the Principal Certification Only (PCO) program that is 18 hours (six courses). These candidates must also pass the Texas Principal Certification exams, hold a valid classroom teaching certificate, and have at least two years of creditable classroom teaching experience as a classroom teacher in a TEA-approved school.

After being admitted, students must meet the following:

- Maintain a GPA of 3.0 or above in order to continue in the program
- Submit all documents required for the field-based practicum which must be conducted in a Texas Education Agency approved site
- Submit other documents required for TEA reporting

The overall grade point average (GPA) of each incoming class admitted between September 1 and August 31 of each year by an educator preparation program (EPP) may not be less than 3.00 on a four-point scale or the equivalent.

Certificate Information

To be eligible to receive the Texas Principal Certificate, candidates must:

- Hold a master's degree from a university that is accredited by an accrediting agency recognized by the Texas Higher Education Coordinating Board (THECB) (<http://www.thecb.state.tx.us/institutional-resources-programs/private-postsecondary-institutions/recognition-of-accrediting-agencies/>)
 - U.S. Department of Education Database for Accredited Colleges and Universities (<https://ope.ed.gov/dapip/#/home>)
- Hold a valid classroom teaching certificate.
- Have two years of creditable teaching experience as a classroom teacher
- Successfully complete an approved Texas principal educator preparation program
- Successfully complete the required exams
- Apply to State Board of Education Certification and pay the appropriate fees

See the College of Education and TEA websites for additional information.

State requirements are subject to change.

TEXES Certification Exam

The department has specific requirements that must be met for recommendation to take the TEXES Exam and other state exams. Please see the department's website at <https://www.uta.edu/coed/eduleadership/> (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fcoed%2Feduleadership%2F&data=02%7C01%7Cronni.ashley%40uta.edu%7C32dbb397c1984e9c1b0f08d7c43cfc8f%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C637193638519995703&sdata=l0X2z%2F%2FA2UcnwAZTa1oohB6tQmW3kCbWc6m7W8Uh8t0%3D&reserved=0>) and College of Education website at <https://www.uta.edu/coed/certification/steps-advcert.php> (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fcoed%2Fcertification%2Fsteps-advcert.php&data=02%7C01%7Cronni.ashley%40uta.edu%7C32dbb397c1984e9c1b0f08d7c43cfc8f%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C637193638520005694&sdata=gGN%2FhWwQxX18xLmQQWNwS7xVlpR6OFIlhxbIJUkXKw%3D&reserved=0>)

Principal Certification Preparation Only Course List (for students who already have a master's degree)

Core Courses

EDAD 5330	LEADERSHIP IN THE INSTRUCTIONAL SETTING PRACTICUM	3
EDAD 5381	GOVERNANCE, POLITICAL AND LEGAL ASPECTS OF EDUCATION	3
EDAD 5383	THE PRINCIPALSHIP	3
EDAD 5384	RESOURCE MANAGEMENT IN EDUCATION	3

Practicum Courses

EDAD 5389	ADMINISTRATIVE PRACTICUM	3
EDAD 5399	CAPSTONE PRACTICUM IN EDUCATIONAL LEADERSHIP AND POLICY STUDIES	3

Total Hours		18
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Coursework and Degree Completion Requirements

- Master's degree and university graduate-level certificate programs must be completed within six years (time in military service excluded) from initial registration in the Office of Graduate Studies. Coursework that is more than six years old at the time of graduation or program completion cannot be used toward meeting the requirements for a master's degree or university graduate-level certificate. Coursework that is more than five years old cannot be used toward state certification requirements for licensure (further restrictions may apply, depending on program).
- Each student/candidate in the College of Education of UT Arlington will be evaluated on Professional Dispositions by the faculty and staff. These dispositions are identified as essential for a highly-qualified professional. Instructors and program directors will work with students/candidates rated as "unacceptable" in one or more stated criteria. The student/candidate will have an opportunity to develop a plan to remediate any digressions. If digression(s) are not, or cannot be successfully remediated as in the case of an egregious digression, a determination will be made by Committee on continuation or dismissal from the College of Education.

Interdisciplinary Leadership Minor and Certificate

The Department of Educational Leadership and Policy Studies offers one undergraduate minor (18 hours) and one certificate (15 hours) in Leadership. This interdisciplinary Leadership Minor/Certificate program prepares students to be relational, ethical, and global leaders equipped with career-readiness knowledge and skills necessary to make a positive contribution in the workplace, the communities in which they live, and throughout the world. The courses are designed to help students explore the intrapersonal and interpersonal dimensions of leadership so that they may engage in leadership that is constructive, purposeful, and oriented toward improving the human condition.

Required Courses		
EDAD 2330	THEORIES IN LEADERSHIP	3
EDAD 4330	CAPSTONE IN LEADERSHIP STUDIES	3
Elective Course		12
Select a course in each area:		
Ethics		
Global Issues		
Field Experience (Service Learning course)		

Admission Requirements

The 18-hour interdisciplinary leadership minor is open to all degree-seeking students. The 15-hour interdisciplinary leadership certificate is available to degree and non-degree-seeking students enrolled at UTA.

The interdisciplinary Leadership Minor and Certificate program is a joint initiative between the Department of Educational Leadership and The Follett Student Leadership Center in the Division of Student Affairs. Program management and oversight will be shared by the Chair and Director of these two areas. Interested students should initiate a request for the preparation of their program by sending an email to the following contacts:

Dr. Marilee Bresciani Ludvik, Department of Educational Leadership and Policy Studies
College of Education, 105B Trimble Hall
817-272-0149 - marilee.ludvik@uta.edu

Loretta Pequeno, Director, The Leadership Center
E.H.Hereford University Center, Lower Level - Suite 180
817.272.9220 - lpequeno@uta.edu (lgriffin@uta.edu)

For information on graduate programs offered in the Department of Educational Leadership and Policy Studies, see the Graduate Catalog.

College of Engineering

Overview

Students in UTA's College of Engineering are making an impact in all areas of life as they perform research with award-winning faculty in state-of-the-art facilities, apply their knowledge to hands-on senior projects and internships, and start businesses to bring their ideas to market. The education they receive at UTA will allow them to face important issues, solve problems and develop new technology to improve the world around us.

For 60 years, the College has helped set the standard for educational excellence in North Texas. With more than 7,400 students and more than 36,000 alumni, it is the fourth-largest engineering school in the state. The College offers students one of the most comprehensive programs in the nation, with 11 baccalaureate, 12 master's, and nine doctoral programs. We are proud of our diversity. Our students come from 73 countries, our Hispanic population reflects UTA's status as a Hispanic-serving institution, and our population of female students and faculty continues to grow. We are tackling important issues and developing technology for the future as a national Tier 1 research university. The university's status as a Carnegie Foundation "Research-1: highest research activity" institution has led to engineering faculty research expenditures of more than \$41 million per year in key areas such as healthcare, security, energy, and the environment, with funding from agencies such as the National Science Foundation, National Institutes of Health, the U.S. Departments of Defense and Energy, NASA, and the American Heart Association, among others. Thousands of our alumni work in industry in the Dallas-Fort Worth Metroplex, and our influence is felt in dozens of Fortune 500 companies across the United States. We are an integral member of our community and we are making an impact on the daily lives of millions of people around the world.

Undergraduate Education:

Baccalaureate degree programs are offered in aerospace engineering, architectural engineering, bioengineering, civil engineering, computer engineering, computer science, construction management, electrical engineering, industrial engineering, mechanical engineering, and software engineering. The programs in aerospace engineering, architectural engineering, civil engineering, computer engineering, electrical engineering, industrial engineering, mechanical engineering, and software engineering are accredited by the Engineering Accreditation Commission (EAC) of ABET, <http://www.abet.org> (<http://www.abet.org/>). The program in computer science is accredited by the Computing Accreditation Commission (CAC) of ABET. Graduate degrees are offered in each of these disciplines and in another area of specialization: materials science and engineering. All of the graduate programs offer master's and doctoral degrees except construction management, engineering management, and software engineering, which offer only master's degrees. A combined B.S. (Biology)/M.S. (Biomedical Engineering) degree is available for students interested in tissue engineering and biotechnology; see the Other Engineering Subject Areas section and the Biology section of the Undergraduate Catalog and the Biomedical Engineering section of the Graduate Catalog for details. There are several engineering "Fast Track" programs where outstanding seniors may begin taking graduate classes for credit while still in their undergraduate course of study. More details on "Fast Track" programs are provided in a later section.

Preparation in High School for Admission to the College of Engineering

For students intending to pursue a major in engineering or computer science, the following preparation in high school is recommended. This course work can be completed within the Texas High School Graduation Program options, approved by the State Board of Education for students entering grade 9 beginning with the School Year 2014-2015.

Specifically, the following credits are recommended to prepare students for entry level college courses in engineering.

English Language Arts	4
4 credits of English Language Arts	
Mathematics	4
4 credits, including 1 credit each in Algebra I, Algebra II, and Geometry, and 1 credit which includes trigonometry. With the exception of students pursuing Construction Management, an additional year of advanced mathematics, such as calculus, is strongly encouraged.	
Science	4
4 credits, including 1 credit each in Biology, Chemistry, Physics, and 1 credit in another science elective	
Languages other than English	2
Foreign Language – 2 credits in a single foreign language	
Social Studies	2
2 credits, including 1 credit in U.S. History and 0.5 credit in U.S. Government, and 0.5 credit in Economics.	
Computer Science	1
Computer Science – 1 credit in computer science and coding	
Total Hours	17

In all areas, students are urged to take advantage of advanced placement opportunities and honors programs. A student who enrolls without having completed the above credits will not be optimally prepared, and the duration of the student's undergraduate program will likely be extended. In

particular, the engineering and computer science programs offered by the college are based upon a student being fully prepared to begin study with the following courses: English 1301, MATH 1426, and CHEM 1441 or CHEM 1465.

Admission to the College of Engineering

Admission to the College of Engineering is based on the University's undergraduate admission requirements plus the following additional admission criteria for the College.

Students Entering Directly from High School

Students entering directly from high school or with less than 24 hours of transfer credit will be evaluated on the basis of the following admission criteria:

- meeting UTA admissions requirements.
- presenting a satisfactory SAT or ACT score
- for all programs other than Construction Management, completing the prerequisites necessary to enroll in MATH 1426 and CHEM 1441 or CHEM 1465.

Students for whom English is the primary language must present a minimum of two high school units in a single foreign language. Students otherwise qualified, but not presenting such credit, will be admitted with a foreign language deficiency that must be removed prior to graduation. (Refer to College of Engineering Academic Regulations item 7, Foreign Language Deficiency Removal.) This requirement cannot be satisfied with computer science or programming language credit.

Students entering directly from high school or with less than 24 hours of transferrable credit will initially be advised by the Division of Student Success (DSS). Transitioning to advisement by College of Engineering advisors will occur as the student accomplishes certain GPA and course completion milestones.

Students Entering with Transfer Credit

Transfer students include those from other units within UTA and those from other educational institutions. Transfer students with less than 24 hours of transferable credit are admitted under the criteria for students entering directly from high school.

Transfer students with 24 hours or more of transferable credit will be evaluated on the basis of the following admission criteria:

- meet UTA admissions requirements.
- for transfer to all programs other than Construction Management, at minimum, complete the prerequisites necessary to enroll in MATH 1426 with no more than three attempts in any prerequisite course.
- have earned a GPA of 3.0 or above in transferred courses applicable to the degree plan requirements.
- have an overall GPA of 3.0 or above in all transferred courses.
- comply with the C-grade rule. (See Academic Regulation 5 below.)
- comply with the three-attempt rule. (See Academic Regulation 9 below.)

Students for whom English is the primary language must present a minimum of two high school units in a single foreign language. Students otherwise qualified, but not presenting such credit, will be admitted with a foreign language deficiency that must be satisfied prior to graduation. (Refer to College of Engineering Academic Regulations item 7, Foreign Language Deficiency Removal.) This requirement cannot be satisfied with computer science or programming language credit.

Advising

Students entering directly from high school and those with less than 24 hours of transferrable credit are advised initially in the Division of Student Success (DSS). Students are transitioned to advising in the College of Engineering as they progress successfully in their degree programs.

Students with 24 hours or more of transferrable credit are advised in the College of Engineering. New transfer students who are undecided about their engineering major or who are conditionally admitted are advised in Engineering Student Services; others are advised in their major department. New students will not be able to register for classes without first being advised and obtaining an approval to register.

Continuing students in all engineering majors must receive advising by their major departments before registering. One period in October and another in March are designated for preregistration advising. Students must be cleared (showing that they have been advised) before proceeding with registration.

The advising goal for students who have not yet attained professional program status is to strengthen their academic background sufficiently so that they are able to subsequently complete courses in their engineering degree plans. To this end, a student's advisor may require him or her to enroll in fewer courses than specified by the University and may require him or her to retake courses for which credit has already been received. See individual department program descriptions for requirements.

The College of Engineering's Engineering Student Services, located in 242 Nedderman Hall, houses the Co-op program and coordinated tutoring, assessment, and academic advising for engineering students.

Admission into the Professional Program

Students who have successfully completed the initial program of study may apply to their department for advancement to the professional program. Prior to admission to the professional program, students are required to demonstrate their intellectual talent, work habits, and professional ethics to warrant acceptance for study toward an engineering or computer science degree.

Hereafter, the term "pre-professional courses" is used for the set of courses, as specified by the degree plan, required for entrance into the professional program. The term "professional courses" is used for the later courses in the engineering major, generally 3000- and 4000-level courses. See each program's requirements for the degree in this catalog for specifics. The professional program includes students who have been accepted by an engineering department into the professional program course sequence. An official degree plan is filed upon acceptance into this category. For advancement to a department's professional program, students must meet the following requirements:

- 1. Academic performance:** Students must have completed all pre-professional courses with a grade of C or better, completed at least 12 hours of math, science and engineering courses required for the degree and taken at UTA, complied with the Three-Attempt Rule, and achieved a minimum three-calculation GPA as specified by the department. Refer to the College of Engineering Academic Regulations and individual department program descriptions for specific requirements in the desired program.
- 2. Limitations on Enrollment:** The University and the College of Engineering reserve the right to limit enrollment in any program, based on the availability of facilities and staff. To achieve such limitations, grade point averages and other measures of student potential beyond the minimum stated above may be applied.

Competence in Oral Communication and Computer Use

Students in engineering and computer science satisfy the oral communication requirement by successfully completing COMS 2302. Programs in the College of Engineering have different requirements for demonstrating computer literacy. Students should consult their particular degree program for details.

College of Engineering Academic Regulations

All students pursuing a degree in one of the College's academic programs must abide by the academic regulations of the University and the following additional rules established by the College of Engineering:

Regulations Regarding Work at Other Institutions

- 1. Enrollment in Other Institution(s):** To ensure adequate coverage of needed material, once enrolled at UTA as an engineering major, a student must obtain written permission from the department before enrolling in courses intended to be transferred to the University for credit toward a UTA engineering degree.
- 2. Transfer Courses:** Only equivalent courses in a program accredited by ABET or those lower division courses accepted by the College of Engineering or the student's major department can be counted toward an engineering degree.
- 3. Validation of Transfer Credit:** Transfer credit that constitutes a part of a continuing course sequence in the same area will be validated only upon satisfactory completion of the succeeding course in the sequence at UTA. Students whose performance in the subsequent courses at UTA is poor may be required to repeat courses taken elsewhere.

Regulations Regarding Work at UTA

- 4. Academic Honesty:** The College of Engineering takes academic honesty and ethical behavior very seriously. Engineers are entrusted with the safety, health, and well-being of the public. Students found guilty of academic dishonesty will be punished to the full extent permitted by the rules and regulations of the University, up to and including dismissal from the College and/or the University.
- 5. C-Grade Rule:** A grade of D or lower in a pre-professional course indicates unsatisfactory preparation for further engineering education. Any such course in which a D or lower is earned must be repeated before enrolling in any course for which it is a prerequisite. This requirement is subject to the Three-Attempt Rule. Students unable to raise their grade to at least a C in a pre-professional course within three enrollments (attempts) are required to change their major to a field outside of the College or to a College of Engineering program that does not include that course.
- 6. English as a Foreign Language:** Courses in English as a foreign language will not substitute for either ENGL 1301 or ENGL 1302.
- 7. Foreign Language Deficiency Removal:** Students admitted to the College of Engineering with a deficiency in foreign language must remove that deficiency prior to graduation by taking two courses in a single modern or classical language totaling not less than six semester hours credit (eight semester hours are required in the current UTA introductory modern and classical languages sequence). This requirement cannot be satisfied with computer science or programming language credit.

8. Academic Load: Students may not enroll in more than the University's maximum permitted academic load without receiving the permission of the their department and the Dean of Engineering. The College of Engineering considers 12 semester hours in the fall and spring terms and nine semester hours in the 11-week summer term to be a minimum "full load" for undergraduates.

9. Three-Attempt Rule: Students may attempt a course (at UTA and/or at any other institution) a maximum of three times and apply that course toward an undergraduate degree in the College of Engineering. The "course", in this context, is any course which is a degree requirement or preparatory to a degree requirement. Enrollment in a course for a period of time sufficient for assignment of a grade, including a grade of W, is considered an attempt.

Regulations Regarding Academic Standing

10. Three-Calculation GPA: The College of Engineering uses three GPA calculations to evaluate students for admission and continuation. The college will use the university's grade exclusion/forgiveness policy applicable to the student in determining the three GPA calculations.

Note: only grades earned at UTA are used in the COE GPA calculations. A student's COE three-calculation GPA must meet or exceed the requirement in each of the following three categories:

- All courses
- All math, science, engineering and construction management courses applicable to the degree being sought, and
- All courses in the major subject applicable to the degree being sought.

11. Satisfactory Academic Standing: College of Engineering pre-professional program students are in satisfactory academic standing if they are not on University probation and at the same time maintain a 3-calculation GPA of 2.25 in the pre-professional program, are not in violation of the 3-attempt rule, and meet the GPA requirements of their major program. College of Engineering professional program students are in satisfactory academic standing if they are not on University probation and at the same time maintain a major GPA and overall GPA of 2.0, are not in violation of the 3-attempt rule, and meet the GPA requirements of their major program. (See the major department section of the catalog for this requirement.)

12. College of Engineering Probation: Academic standing is determined at the end of each semester after official grades post. College of Engineering students in the pre-professional portion of their program will be placed on College of Engineering probation if any one of the three GPA calculations falls below 2.25. Students on College of Engineering probation and in the pre-professional portion of the program are advised by an Engineering Student Services advisor. While on probation, students may be required to participate in student success activities, meet course grade requirements, and may be restricted in course load and/or course selection. Students remain on College of Engineering probation until either all three GPA calculations meet the minimum required 2.25 or they are dismissed from the College. Once in the professional program, students in a College of Engineering major may be placed on College of Engineering probation if their major GPA or overall GPA falls below their program's requirement for graduation, which is 2.0 for all programs.

Regulations Regarding Transient Student Enrollment in Engineering Courses

13. Enrollment of transient status students in COE courses will be approved on a case by case basis by the offering department. Criteria includes status of student in their home institution, academic record, and prerequisite status for courses requested.

Note: For all COE regulations, GPA requirements and calculations are truncated (not rounded) after three decimal places.

Designated Tuition Charge

In addition to fees applicable to the entire University, each engineering course carries a "designated tuition" charge (authorized by the Board of Regents per statute 54.0513) detailed under Description of Tuition and Fees (<http://www.uta.edu/uta/tuition/>).

College of Engineering Minors

A number of the undergraduate programs in the College of Engineering offer students in other disciplines the opportunity to earn a minor. In most cases a student has to complete 18 hours of course work as designated by the program. In many cases some of the courses in the minor may be used as an elective in the program the student is majoring in. The following departments in the College of Engineering offer minors: The Mechanical and Aerospace Engineering Department offers minors in Aerospace Engineering (<http://www.uta.edu/engineering/future-students/undergraduate/programs/aerospace-engineering-minor.php>) and Mechanical Engineering (<http://www.uta.edu/engineering/future-students/undergraduate/programs/mechanical-engineering-minor.php>). The Bioengineering Department offers a minor in Biomedical Engineering (<https://www.uta.edu/engineering/future-students/undergraduate/programs/biomedical-engineering-minor.php>). The Computer Science and Engineering Department offers a minor in Computer Science (<http://www.uta.edu/engineering/future-students/undergraduate/programs/computer-science-minor.php>). The Electrical Engineering Department offers a minor in Electrical Engineering (<http://www.uta.edu/engineering/future-students/undergraduate/programs/electrical-engineering-minor.php>). The Industrial, Manufacturing and Systems Engineering Department offers a minor in Industrial Engineering (<http://www.uta.edu/engineering/future-students/undergraduate/programs/industrial-engineering-minor.php>). The Materials Science and Engineering Department offers a minor in Materials Science and Engineering (<http://www.uta.edu/engineering/future-students/undergraduate/programs/materials-science-and-engineering.php>). The College of Engineering offers minors in Nuclear Engineering and Sustainable Engineering, as detailed in the following section.

Requirements for a Minor in Nuclear Engineering

To receive a minor in Nuclear Engineering, a student must complete the following courses with a grade of C or better in each:

NE 3301	INTRODUCTION TO NUCLEAR ENGINEERING	3
NE 4302	NUCLEAR REACTOR THEORY AND TECHNOLOGY OF THE NUCLEAR POWER PLANT	3
NE 4303	NUCLEAR POWER PLANT ENGINEERING	3
Select three of the following (with a grade of C or better in each):		9
MAE 3311	THERMODYNAMICS II	
MAE 3309	THERMAL ENGINEERING	
MAE 3314	HEAT TRANSFER	
MAE 4347	HEAT EXCHANGER DESIGN	
MAE 4310	INTRODUCTION TO AUTOMATIC CONTROL	
EE 3302	FUNDAMENTALS OF POWER SYSTEMS	
EE 4314	CONTROL SYSTEMS	
PHYS 3446	NUCLEAR AND PARTICLE PHYSICS	
Total Hours		18

Requirements for a Minor in Sustainable Engineering

To receive a minor in Sustainable Engineering, a student must complete the following courses with a grade of C or better in each:

CE 2300	INTRODUCTION TO SUSTAINABLE ENGINEERING	3
ENGR 4395	SUSTAINABLE ENGINEERING DESIGN PROJECT	3
Select 1 from the following Societal Context Electives (3 hours)		
ECON 2305	PRINCIPLES OF MACROECONOMICS	3
IE 2308	ECONOMICS FOR ENGINEERS	3
Select 3 from the following Sustainable Engineering Electives (9-10 hours)		
ARCH 3354	INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES	3
ARCH 3357	DESIGN TECHNOLOGIES - BUILDING INFORMATION MODELING FOR ARCHITECTS/ENGINEERS	3
ARCH 3361	ARCHITECTURE AND ENVIRONMENT	3
ARCH 3551	BASIC DESIGN FOR ENGINEERS	5
ARCH 3553	DESIGN STUDIO: ARCHITECTURE I	5
ARCH 4332	ENERGY USE AND CONSERVATION IN ARCHITECTURE	3
AREN 4307	CONSTRUCTION SUSTAINABILITY	3
AREN 4326	GIS/HYDROLOGIC & HYDRAULIC MODELING	3
BE 3415	FUNDAMENTALS OF BIOMOLECULAR ENGINEERING	4
BE 4331	BIOPOLYMERS AND BIOCOMPATIBILITY	3
BE 4368	AN INTRODUCTION TO TISSUE ENGINEERING AND DRUG DELIVERY	3
BE 4373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	3
CE 4307	CONSTRUCTION SUSTAINABILITY	3
CE 4310	SYSTEM EVALUATION IN CIVIL ENGINEERING	3
CE 4323	LANDFILL DESIGN	3
CE 4326	GIS/HYDROLOGIC AND HYDRAULIC MODELING	3
CE 4350	INTRODUCTION TO AIR POLLUTION	3
CE 4351	PHYSICAL UNIT PROCESSES	3
CE 4353	WATER CHEMISTRY	3
CE 4354	INTRODUCTION TO SOLID WASTE ENGINEERING	3
CE 4355	DESIGN OF WATER AND WASTEWATER TREATMENT FACILITIES	3
CM 3337	CONSTRUCTION ADMINISTRATION AND ECONOMICS	3
CM 4357	SUSTAINABLE BUILDING PRACTICE	3
ECON 2337	ECONOMICS OF SOCIAL ISSUES	3
EE 3302	FUNDAMENTALS OF POWER SYSTEMS	3
EE 4314	CONTROL SYSTEMS	3

IE 3315	OPERATIONS RESEARCH I	3
IE 4345	DECISION ANALYSIS IN SYSTEM DESIGN	3
IE 4351	FUNDAMENTALS OF SYSTEMS ENGINEERING	3
MAE 4324	POWER PLANT ENGINEERING	3
MAE 4382	RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES	3
MAE 4386	WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS	3
GEOL 1301	EARTH SYSTEMS	3
GEOL 1330	GLOBAL WARMING	3
GEOL 2406	NATURAL RESOURCES & SUSTAINABILITY	4
GEOL 4323	ISSUES IN ENVIRONMENTAL HEALTH	3
GEOL 4356	ENVIRONMENTAL RISK ASSESSMENT	3
GEOL 4455	MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS	4
PHYS 1351	ENERGY AND ENVIRONMENT	3
Total Hours		18

Requirements for an "Engineering Math" Minor

The Mathematics Department supports an Engineering Math minor available to students with a major in the College of Engineering. For specific requirements, please see the departmental advisor in the major program.

Undergraduate Certificates

Undergraduate certificates in areas of specialization are offered in the College of Engineering. These certificates include a Certificate in Automotive Engineering, Certificate in Nanotechnology and a Certificate in Unmanned Vehicle Systems. Typically, students must complete 12 to 15 hours of course work as detailed in the requirements for specific programs to earn a certificate. These certificates can be earned by students who are pursuing their undergraduate degree at UTA, by students who are enrolled in other institutions, or by students who have already completed a degree at another institution and wish to specialize in a new field. More information about the certificates offered in the College of Engineering is provided in individual department sections of the catalog and on the web pages of the departments offering the certificates.

Honors Degree

College of Engineering students who wish to graduate with an Honors Degree in Engineering must be members of the Honors College in good standing. They must complete the major degree requirements and the requirements of the Honors College. Honors Degree requirements are compatible with all departmental and college requirements, but specific requirements vary with each engineering department's program. It is particularly important that students pursuing an Honors Degree in Engineering consult carefully with an advisor in the College of Engineering and also in the Honors College before each registration to be sure all requirements are met.

Fast Track Program

The Fast Track Program enables outstanding UTA senior undergraduate students in several disciplines to satisfy degree requirements leading to a master's degree in that discipline while completing their undergraduate studies. When senior-level students are within 15 hours of completing their undergraduate degree requirements, they may take up to nine hours of graduate level coursework designated by the program to satisfy both undergraduate and graduate degree requirements. Interested undergraduate students should discuss this option with their advisors. Information is provided in the department section of this catalog, with details available in departmental offices.

At this time, there are Fast Track programs in the following undergraduate programs:

- Aerospace Engineering leading to an M.S. Degree in Aerospace Engineering
- Biochemistry leading to an M.S. Degree in Biomedical Engineering
- Biology leading to an M.S. Degree in Biomedical Engineering
- Biomedical Engineering leading to an M.S. Degree in Biomedical Engineering
- Civil Engineering leading to a Master of Engineering Degree in Civil Engineering
- Civil Engineering leading to an M.S. Degree in Civil Engineering
- Computer Engineering leading to an M.S. Degree in Computer Engineering
- Computer Science leading to an M.S. Degree in Computer Science
- Electrical Engineering leading to an M.S. Degree in Electrical Engineering
- Industrial Engineering leading to an M.S. Degree in Industrial Engineering
- Mathematics leading to an M.S. Degree in Biomedical Engineering
- Mechanical Engineering leading to an M.S. Degree in Mechanical Engineering

- Mechanical Engineering leading to an M.S. Degree in Materials Science and Engineering
- Physics leading to an M.S. Degree in Materials Science and Engineering
- Physics leading to an M.S. Degree in Biomedical Engineering
- Software Engineering leading to an M.S. Degree in Software Engineering

Professional Licensure

The protection of the public welfare requires that those who practice engineering do so ethically and competently. Professional licensure requires an individual to meet examination and practice requirements defined by the laws of the state or states in which he or she intends to practice.

The first step toward licensure as a Professional Engineer (P.E.) is to pass the Fundamentals of Engineering (FE) examination. Graduating seniors are permitted to take the FE examination during their final year. The FE examination is offered by the Texas Board of Professional Engineers in both the fall and spring semesters. Since this examination is over topics common to all engineering degree programs, students are strongly urged to avail themselves of this opportunity at a time when their academic preparation is at a peak.

Pre-med and Pre-law Studies

Students graduating with degrees in engineering occasionally choose to go on to medical schools or law schools. Those students are advised to consult early with UTA pre-med or pre-law advisors so that additional requirements can be taken in a timely way. For example, a minimum set of additional courses for an engineer planning to apply to medical school consists of 4 chemistry courses (2 in general chemistry, 2 in organic chemistry), and 4 biology courses (2 in general biology plus 6 hours of advanced Biology).

Cooperative Education

The Cooperative Education Program is a partnership between the University and business, government, and industry that provides students the opportunity to obtain experience in their chosen engineering discipline by alternating periods of formal study with periods of work or through a parallel program which allows students to work part-time while taking courses. This program enhances a student's education through work-related experiences and by association with participating professional engineers, and also provides a competitive salary when working.

Students who successfully complete the Co-op Program will receive cooperative education certificates and have this accomplishment entered on their transcripts. Co-op Program students are expected to register each work term in an engineering course (ENGR 2100, ENGR 3100, ENGR 4100, ENGR 3000) specified by the Director of the Co-op Program. For enrollment reporting purposes only, students registered for one of these four courses will be considered full-time students. ENGR 2100 will be designated as the part-time co-op course. Students classified as full-time students under the Co-op Program are not eligible for financial aid, but can use this designation for enrollment reporting for insurance purposes. Students requiring financial aid must meet state and federal enrollment guidelines for enrollment in the required minimum semester credit hours each semester where aid is sought. The College of Engineering provides assistance in placing students with companies that are related to their specific needs and program of study.

Information on prerequisites for application and requirements for acceptance are available in the Cooperative Education Office, 242 Nedderman Hall, and on the College of Engineering web site (<http://www.uta.edu/engineering/>).

Research and Graduate Education:

The College of Engineering offers 9 doctoral degrees and 12 Master's degrees. The College of Engineering and its faculty, in conjunction with research centers, laboratories and groups across the University, have produced nearly \$55 million in engineering-related research expenditures from government agencies and private industry.

Working professionals interested in pursuing a graduate degree may choose from more than 130 online courses available most semesters.

Research Interests of Faculty

Bioengineering (<http://www.uta.edu/bioengineering/>)

Biomaterials, biosensors, drug delivery, ultrasound medical imaging, tissue engineering, regenerative medical engineering, acousto-optical imaging, biological signal processing, electroencephalogram (EEG) and magnetoencephalography (MEG), soft and hard-tissue mechanics, neural engineering.

Civil Engineering (<http://www.uta.edu/ce/>)

Construction, environmental, geotechnical, infrastructure, structural, transpiration and water resources engineering; service life prediction of infrastructure and pipelines, structural hazard mitigation; bridge design and rehabilitation; structural reliability; earthquake engineering; non-destructive testing of structural systems; advanced construction materials; resilient and sustainable construction; risk-based construction optimization; chemical analysis of construction materials; transportation planning, traffic flow theory; traffic engineering; highway capacity analysis; transportation systems analysis; operations research; hydrology; flood prediction; flood mitigation; remote sensing hydrology, water infrastructure, radar hydrology; active and passive remote sensing of water; climate change and hazard resilience of water infrastructure; toxic-waste abatement; biological and chemical processes in water quality control; water reclamation and reuse; natural systems for wastewater treatment; solid waste treatment; soil

stabilization and reliability based foundation design; geothermal energy; slope stabilization of bridge abutment using novel sustainable material; sustainable waste/resource management.

Computer Science and Engineering (<http://cse.uta.edu>)

Artificial intelligence, computer vision, machine learning, robotics, database, data analytics, data mining, data science, natural language processing, blockchain, cloud computing, cyber-physical systems, distributed systems, embedded systems, high-performance computing, Internet of things, mobile computing, networks, operating systems, sustainable computing, assistive technologies, biomedical computing, medical image analysis, smart assessment, human-computer interaction, human-robot interaction, training and rehabilitation technologies, cybersecurity, information security, privacy, software engineering, software testing, software analysis, reverse engineering, mobile software engineering.

Electrical Engineering (<http://www.uta.edu/ee/>)

Nanotechnology, quantum optics, quantum well devices, integrated optics, fiber optics, biophotonics, MEMS, electron-device modeling, nanoelectronics, analog and digital CMOS sensing ICs, neuromorphic circuit design, power electronics, power systems, utility deregulation issues, renewable energy and vehicular technology, robotics, UAS, feedback control, cooperative decisions and game theory, flight simulation and management, cyber physical systems, signal and image processing, deep learning and neural networks, machine learning, information extraction from large datasets, large system optimization, IoT and 5G communications, remote sensing and wave scattering, millimeter-wave beamforming antennas, real-time digital and analog systems, human performance.

Industrial, Manufacturing & Systems Engineering (<http://www.uta.edu/ie/>)

Decision analytics, design for producibility and reliability, manufacturing systems, automation, CAD/CAM, robotics, engineering design and development process, environmental health & safety, computer-integrated enterprise, statistical process control, manufacturing error analysis, linear models, work sampling, discrete event computer simulation, economic decision making, production and inventory control, engineering management, manufacturing, logistics, enterprise engineering, operations research, statistics.

Materials Science and Engineering (<http://www.uta.edu/mse/>)

Phase transformations and diffusion in materials; mechanical behavior, fatigue and fracture of materials; materials characterization and analysis; nanomaterials; nanotechnology; nanoelectronics; semiconductor processing; biomaterials and bio-sensors; soft materials; surface engineering, thin films and coatings; tribology; corrosion; high temperature materials; materials for energy applications; materials for microelectronics; materials reliability; computational materials science; construction and cementitious materials chemistry.

Mechanical & Aerospace Engineering (<http://www.uta.edu/mae/>)

Computational and experimental fluid dynamics, flight dynamics and controls, supersonic and hypersonic aerodynamics, hypersonic propulsion, detonations and pressure gain combustion, smart structures/materials. Dynamic systems and controls, design and manufacturing, fluid mechanics, heat transfer, sprays, and combustion, solid mechanics and structures, biomedical applications of heat and mass transfer. Composites: damage tolerance, fatigue and fracture analysis. Thermal science and energy systems: energy systems and sustainability, energy efficiency of data centers, and micro and power electronics packaging including heterogeneous integration.

The University hosts two formal research centers, The University of Texas at Arlington Research Institute and the Shimadzu Institute Nanotechnology Research Center, where a significant amount of the ongoing research is related to engineering and a number of the College's graduate students and faculty participate.

Many College of Engineering faculty members collaborate with professors and researchers in other colleges at UTA and other institutions in the state, around the U.S., and around the world. Therefore, for those interested in doing research as part of graduate training, there are many opportunities to work on research projects that are either within the home department or interdisciplinary with other departments.

Programs

Graduate work in engineering at UT Arlington may lead to the master of science, master of engineering or doctor of philosophy in the following programs:

- Aerospace Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/mechanical-and-aerospace-engineering/msae.php>), ME (<http://www.uta.edu/engineering/future-students/programs-masters/mechanical-and-aerospace-engineering/meae.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/aerospace-engineering-phd.php>))
- Biomedical Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/bioengineering/msb.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/biomedical-engineering-phd.php>))
- Civil Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/civil-engineering/msce.php>), ME (<http://www.uta.edu/engineering/future-students/programs-masters/civil-engineering/mece.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/civil-engineering-phd.php>))
- Computer Science (MS (<http://www.uta.edu/engineering/future-students/programs-masters/computer-science-and-engineering/mscs.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/computer-science-phd.php>))
- Computer Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/computer-science-and-engineering/msce.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/computer-engineering-phd.php>))

- Electrical Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/electrical-engineering/msee.php>), ME (<http://www.uta.edu/engineering/future-students/programs-masters/electrical-engineering/meee.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/electrical-engineering-phd.php>))
- Industrial Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/industrial-and-manufacturing-systems-engineering/msie.php>), ME (<http://www.uta.edu/engineering/future-students/programs-masters/industrial-and-manufacturing-systems-engineering/meie.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/industrial-engineering-phd.php>))
- Materials Science and Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/materials-science-and-engineering/msmse.php>), ME (<http://www.uta.edu/engineering/future-students/programs-masters/materials-science-and-engineering/memse.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/materials-science-and-engineering-phd.php>))
- Mechanical Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/mechanical-and-aerospace-engineering/msme.php>), ME (<http://www.uta.edu/engineering/future-students/programs-masters/mechanical-and-aerospace-engineering/meme.php>) and Ph.D. (<http://www.uta.edu/engineering/future-students/programs-phd/mechanical-engineering-phd.php>))

In addition, master's degree programs are available in:

- Engineering Management (MS (<http://www.uta.edu/engineering/future-students/programs-masters/industrial-and-manufacturing-systems-engineering/msem.php>))
- Software Engineering (MS (<http://www.uta.edu/engineering/future-students/programs-masters/computer-science-and-engineering/msse.php>))

And a new interdisciplinary master's degree is available in:

- Data Science (MS (<http://www.uta.edu/academics/schools-colleges/engineering/academics/masters/data-science-ms/>))

Graduate work leading to a practice-oriented master's degree usually requires a design project, report, internship or additional coursework. Details are given in the individual program descriptions that follow.

Biomedical Engineering is a joint program between the Bioengineering Department and The University of Texas Southwestern Medical Center. The Master of Science in Logistics and Master of Science in Engineering Management are offered in partnership with the College of Business.

In addition to specific graduate degrees, students currently enrolled in degree-earning graduate programs, as well as applicants who have earned undergraduate degrees elsewhere, may earn Graduate Certificates in various areas of specialization. Typically, graduate certificates require the completion of 12-15 hours of graduate course work in a specified set of courses. Details are provided in individual departmental sections of the catalog.

Please visit the graduate program Web Site <http://www.uta.edu/engineering/future-students/index.php> (<http://www.uta.edu/engineering/future-students/>) for detailed information.

Bioengineering

Undergraduate Degrees

- Bachelor of Science in Biomedical Engineering (p. 450)

Graduate Degrees

- Biomedical Engineering, M.S. (p. 445)
- Biomedical Engineering, B.S. to Ph.D. (p. 445)
- Biomedical Engineering, Ph.D. (p. 445)
- Bachelor of Science in Biology and Master of Science in Biomedical Engineering (p. 450)
- Fast Track for Master of Science in Biomedical Engineering and Bachelor of Science in Biomedical Engineering (p. 450)
- Fast Track for Master of Science in Biomedical Engineering and Bachelor of Science in Biochemistry (p. 450)
- Fast Track for Master of Science in Biomedical Engineering and Bachelor of Science in Physics (p. 450)

COURSES

BE 1000. UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

BE 1105. MEDICAL APPLICATIONS OF ENGINEERING. 1 Hour.

Introduction to basic biology and engineering problems associated with living systems and health care delivery. Examples will be used to illustrate how basic concepts and tools of science & engineering can be brought to bear in understanding, mimicking and utilizing biological processes.

BE 1325. INTRODUCTION TO BIOENGINEERING. 3 Hours.

Topics include introduction to basic engineering principles and quantitative methods, their applications in analyzing and solving problems in biology and medicine. Also includes new trends in the development of bioengineering and biotechnology.

BE 2000. UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

BE 2300. SPECIAL TOPICS IN BIOENGINEERING. 3 Hours.

A study of selected topics in Bioengineering. May be repeated when topics vary.

BE 2310. ENGINEERING APPROACHES TO SOLVING CLINICAL CHALLENGES. 3 Hours.

In this sophomore course, students will apply engineering principles to find solutions to current clinical problems presented to the class. As small groups, students will work as teams to design a process or system to meet the desired needs of the given clinical challenges based on the necessary constraints. As a final project presentation, students will use what they have learned to identify a new clinical challenge and work to define a meaningful set of manufacturing, fiscal, safety, ethical, and health-related constraints associated with the problem. Students will be highly encouraged to identify solutions to these newly derived clinical problems and to integrate this clinical challenge as part of their future senior design project. Prerequisite: C or better in BE 1105, BE 1325, MATH 2425, CHEM 1442, BE 2315, and either EE 2440 or CSE 2440 or consent of BE undergraduate advisor.

BE 2315. INTRODUCTORY COMPUTATIONAL TOOLS FOR BIOENGINEERS. 3 Hours.

Students learn programming concepts (variable, array, command, logics, do-loop, etc.) through the use of SolidWorks, MatLab, and Image J, etc. Students learn to use these computational tools by working on problems and exercises of biological, physiological relevance and clinical applications. Prerequisite: A course grade of C or better in BE 1325, MATH 1426, and ENGR 1250 (or ENGR 1300) or consent of BE undergraduate advisor.

BE 3000. UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum 3 times.

BE 3101. SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current research interest in the field of bioengineering. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3191. DIRECTED RESEARCH IN BIOENGINEERING. 1 Hour.

Student participates in a research project under the individual instruction of a faculty supervisor. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor and the instructor.

BE 3195. INTERNSHIP IN BIOENGINEERING. 1 Hour.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assign projects and a faculty member monitors the student's progress. Prerequisite: Completion of at least 70 undergraduate credit hours in BE and good standing in the undergraduate program. Permission of Undergraduate Academic Advisor.

BE 3295. INTERNSHIP IN BIOENGINEERING. 2 Hours.

Students receive training in a bioengineering company or a hospital to gain first hand industrial or clinical engineering experience. The company or hospital assigns projects and a faculty member monitors the student's progress. Prerequisite: Completion of at least 70 undergraduate credit hours in BE and good standing in the undergraduate program. Permission of Undergraduate Academic Advisor.

BE 3301. CELL PHYSIOLOGY FOR BIOENGINEERS. 3 Hours.

This course will cover principles of molecular omics (i.e., genomics, transcriptomics, proteomics and synthetic biology); the field of molecular bioengineering and processes involving inducible transcription and chimeric proteins; the composition of cell membranes, ion transport and the application of optogenetics in cell physiology regulation; the way cells communicate and integrate signals and translate them in intracellular metabolic cascades through the understanding of phosphoproteomics, energy metabolism, metabolomics, cellular motility, and molecular motors; the processes involved in cell proliferation, abnormal cell division dysregulation in cancer, and nanotechnology techniques for tumor treatment. Preferred background: basic understanding of general biology and general chemistry. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3310. BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LABORATORY. 3 Hours.

Following an introduction to the basics of solid, fluid mechanics, student learn the fundamental behavior of various biological materials, flow properties of blood, viscoelastic properties of cells, tissue matrix, as well as their roles in human physiology at normal and disease states. Examples also include the design aspects of medical prosthetic devices. The course will cover biomechanics across a wide range of scales from organism, organ, tissue, cell and to protein levels. Students learn computational modeling to formulate and solve bioengineering problems. Preferred background: basic understanding of general physics, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3317. LINEAR SYSTEMS IN BIOENGINEERING. 3 Hours.

Time-domain transient analysis, convolution, Laplace Transforms, Fourier Series, Transforms and their applications, transfer functions, signal flow diagrams, Bode plots, stability criteria, sampling, filter designs, and Discrete-time signals and systems. Examples with applications in bioengineering will be emphasized. Preferred background: basic understanding of general physics, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3320. MEASUREMENT LABORATORY. 3 Hours.

Hands-on experiments with use of transducers used for chemical, mechanical, electrical, and thermal biomedical measurements. Computer-based means of converting analog transducer output into digital form. Analysis of experimentally collected data including error analysis, repeatability, resolution, and functional specifications. Prerequisite: C or better in MATH 2326, BE 2315 and PHYS 1444 (PHYS 1444 may be taken concurrently), or consent of the BE undergraduate advisor.

BE 3325. FLUORESCENCE MICROSCOPY. 3 Hours.

Introduction to the anatomy of fluorescence microscopy and the physical principles of its operation; confocal and multi-photon microscopy; molecular imaging applications based on Forster Resonance Energy Transfer (FRET), Fluorescence Lifetime Imaging (FLIM), Fluorescence Correlation Spectroscopy (FCS), Fluorescence Recovery After Photobleaching (FRAP) and Total Internal Reflection Fluorescence (TIRF) Microscopy. Preferred background: basic understanding of general physics, general chemistry, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3327. TISSUE OPTICS. 3 Hours.

Introduction to the science and technology behind tissue optical imaging systems and their design requirements for different clinical applications; diffuse optical tomography; fluorescence tomography; bioluminescence tomography; multi-modality imaging. Preferred background: basic understanding of general physics, general chemistry, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3343. MATLAB AND APPLICATIONS FOR BIOENGINEERS. 3 Hours.

This course consists of two parts: the first part teaches students how to use MATLAB for engineering computation, quantitative analysis, scientific plotting/graphing presentation, and numerical modeling in solving real-world problems. After enabling students to generate arrays, files, functions, and to write MATLAB programs, the course will focus on using MATLAB for bioengineering applications, including 2D and 3D graphing for biological images, data processing for time-varying signals, and 2D Fourier transform for medical image processing. A variety of examples often encountered in the biological, biomedical engineering field will be used as class demonstration, presentation and project assignments. Preferred background: basic programming skills. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3344. BIOINSTRUMENTATION. 3 Hours.

Fundamental principles of bioinstrumentation, including operational amplifiers and instrumentation amplifiers; measurements of biopotentials; signals and noise in biological systems; mechanical transducers; resistive, inductive, capacitive transducers; measurement of temperature, blood pressure and flow; electrical safety. Prerequisite: C or better in EE 2440 or CSE 2440; accepted in BE Professional Program or consent of the BE undergraduate advisor.

BE 3346. MEDICAL IMAGING. 3 Hours.

This course introduces basic medical imaging modalities, including X-ray Computed Tomography (CT), Nuclear Medicine Imaging (PET and SPECT), Magnetic Resonance Imaging (MRI), and image-guided interventions. Through this course, the students will learn fundamental knowledge on how medical images are obtained and how they can be used for diagnosis, therapy, and surgery. Preferred background: basic understanding of general physics, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3352. DIGITAL PROCESSING OF BIOLOGICAL SIGNALS. 3 Hours.

Fundamental techniques for extraction of useful information from signals acquired from biological systems. Topics include time and frequency domain analysis, cross correlation, spectrum analysis, and convolution. Design of finite impulse response (FIR) and infinite impulse response (IIR) filters for processing biological signals are described. Examples include cardiac, respiratory, and biomechanical movements. Preferred background: basic understanding of general physics and differential equations. Prerequisite: Accepted into the BE Professional Program and BE 3317 (or equivalent course) or consent of the BE undergraduate advisor.

BE 3367. CELL CULTURE AND DRUG DELIVERY LABORATORY. 3 Hours.

This course will cover techniques commonly used in tissue engineering and biomaterial research, including culture media preparation, cell culture/subculture, degradable scaffold, their modification, histological staining, and imaging analyses. The course will also include development of systems for delivery of pharmaceutical agents used for treating different diseases; an understanding of the underlying pharmacokinetics principles is emphasized. Preferred background: basic understanding of general chemistry and general biology. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3380. HUMAN PHYSIOLOGY IN BE. 3 Hours.

An introduction to human physiology emphasizing biomedical engineering related topics. The course focuses on understanding basic function with the relationships on the cellular as well as organ level in both healthy and diseased states. Preferred background: basic understanding of general biology. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3395. INTERNSHIP IN BIOENGINEERING. 3 Hours.

Students receive training in a bioengineering company or a hospital to gain first hand industrial or clinical engineering experience. The company or hospital assigns projects and a faculty member monitors the student's progress. Prerequisite: Completion of at least 70 undergraduate credit hours in BE and good standing in the undergraduate program. Permission of Undergraduate Academic Advisor.

BE 3415. FUNDAMENTALS OF BIOMOLECULAR ENGINEERING. 4 Hours.

The course will introduce the principles of engineering living systems at the atomic, molecular, and cellular levels. Fundamentals covered in the course will include topics such as chemical bonding and reactions; synthesis, structure and function of carbohydrates, polypeptides, nucleic acids, and lipids; as well as analytical and engineering tools for characterization, design, and production of synthetic biological systems. A laboratory component will provide hands on experience including methods important to synthetic biochemistry, protein engineering, cellular reprogramming, and metabolic engineering. Knowledge of college level general chemistry is required. Prerequisite: C or better in BE 1105, BE 1325, CHEM 1442, and MATH 2425, or consent of the BE undergraduate advisor.

BE 4000. UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

BE 4191. DIRECTED RESEARCH IN BIOENGINEERING. 1 Hour.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 4291. DIRECTED RESEARCH IN BIOENGINEERING. 2 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 4300. SPECIAL TOPICS IN BIOENGINEERING. 3 Hours.

A study of selected topics in Bioengineering. May be repeated when topics vary. Prerequisite: Consent of instructor and undergraduate advisor.

BE 4312. TISSUE BIOMECHANICS AND BIOENGINEERING. 3 Hours.

This course introduces biomechanics as a means to describe mechanical behavior of biological tissues. A comprehensive course, it covers the fundamental concepts, experimental and theoretical approaches of biomechanics, and their applications in modern bioengineering, including mechano signal transduction, pathophysiology, tissue engineering and regeneration, medical implants, surgical intervention. Structural-mechanical properties of specific tissues, such as heart valves, cardiac tissues, blood vessels, tendon/ligament, skeletal muscles, cartilage, and meniscus will be discussed in great details. This course integrates the concepts of biomechanics, the underlying structural and biological mechanisms, illustrates how experimental, analytical and computational methods have been used to address clinical needs in enhancing the quality of health care delivery. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4314. BIOMEDICAL IMPLANTS. 3 Hours.

A comprehensive course covers the essential knowledge in biomedical implants. The goal is to provide students with the knowledge and skills to understand the clinical needs, the engineering principles, methodologies used in implant design, the resulting host-implant interaction, and the constraints, limitations on engineering design optimization, as well as the evaluation and assessment of the implant performance and clinical outcomes. Case studies include mechanical, bio-prosthetic and trans-catheter heart valves, vascular grafts, stents, pacemakers, orthopedic implants, dental implants, etc. The course also covers topics on regulatory issues, patent protection, design validation in animal models and clinical trials, IACUC, IRB, Good Manufacture Practice (GMP), and FDA regulations and approvals. Students are expected to be able to apply the learning to solve problems in the rapidly growing field of biomedical engineering. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4324. BIOMEDICAL OPTICS LABORATORY. 3 Hours.

The primary objective of this course is to provide students hands-on experience with fundamental optical techniques and instrumentation used in modern biomedical research and applications. The skills learned will be valuable to anyone who intends to work in an experimental setting that requires working knowledge of optical instrumentation and techniques. The course is divided into ten core lab modules that cover topics ranging from basic optical techniques to advanced imaging and spectroscopy techniques. Preferred background: satisfactory completion of BE 3320. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4325. FUNDAMENTALS OF BIOENGINEERING. 3 Hours.

Topics cover fundamentals of biosensors, bio-signal processing, and bioinstrumentation. An introduction to various imaging modalities such as ultrasound, magnetic resonance, optical tomography, and x-ray radiography is also presented. Other bioengineering topics may be included as time allows or as is appropriate. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4326. TISSUE ULTRASOUND-OPTICAL IMAGING. 3 Hours.

This course will introduce the fundamental principles of ultrasound and optical related imaging techniques, such as ultrasonic, tissue optical, and photoacoustic imaging techniques. Some topics related to the new progresses and applications in the related fields will be introduced. Students are expected to know the principles of these imaging techniques, and use mathematical, numerical simulation and experimental methods to understand these technologies and their biomedical applications. Preferred background: satisfactory completion of PHYS 1443, PHYS 1444 and BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4329. NEURAL ENGINEERING. 3 Hours.

This course consists of both lecture/discussion and laboratory. Lecture topics include central and peripheral nervous system injury and regeneration, brain/machine interfacing, primary culture of neural cells, neuroinflammatory and neurodegenerative disease. Laboratories include embryonic and neonatal rat derived neuronal culturing, immunostaining and quantitative analysis. Preferred background: satisfactory completion of BE 3367 and BE 3380. Prerequisites: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4330. MEDICAL IMAGE PROCESSING. 3 Hours.

Principles and computational methods in digitally processing medical images are presented. Topics include image reconstruction, two and three dimensional visualization, image registration, quantitative image analysis, image enhancement, and statistical processing methods including Monte Carlo methods. Prerequisites: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4331. BIOPOLYMERS AND BIOCOMPATIBILITY. 3 Hours.

This is a foundation course in polymeric biomaterial design, synthesis, characterization, and processing. The topics include design, surface-engineering, functionalization, characterization, as well as micro- and nano-fabrication of polymeric biomaterials. The biomedical applications of the polymeric biomaterials and their interaction with cell/tissue is discussed. Preferred background: basic understanding of general chemistry and successful completion of BE 3415. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4333. NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION. 3 Hours.

Synthesis, fabrication, characterization, and biomedical applications of nanobiomaterials. Topics include synthetic nanobiomaterials, biological nanobiomaterials (DNA nanomaterials, protein and peptide nanomaterials, etc.), biofunctionalization of nanobiomaterials, and use of nanobiomaterials in tissue engineering, drug delivery, gene delivery. Preferred background: basic understanding of general chemistry and successful completion of BE 3415. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4337. TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING. 3 Hours.

Principles of momentum, mass and heat transfer; description of blood flow, trans-capillary, interstitial, lymphatic fluid transport and pulmonary gas exchange. Applications in the design of blood oxygenator, dialysis devices, and strategies in drug delivery, hyperthermia treatment. Preferred background: basic understanding of general physics, biology and calculus, and successful completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4345. BIOSENSORS. 3 Hours.

The course will cover major classes of bio-sensing technologies currently used in practice and the emerging ones that are currently being evaluated. The basic operating principle behind bio-sensing technologies will be explained and its implementation in medical devices will be discussed. Explanation of biosensor operation will involve understanding the mechanism of bio-signal transduction (bio-parameter to biomechanical, electrical, optical or chemical signal), detection method, and their analysis. Methodology for device calibration and data interpretation of physiological parameters will be discussed. The course material will be derived from book chapters and review papers. Course includes hand-on learning experience in laboratory by deconstructing commercially available biosensors and using experimental bio-sensing instruments. Students will be required to design and implement a point-of-care biosensor. Preferred background: satisfactory completion of EE 2440 or CSE 2440. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4350. SENIOR DESIGN PROJECT I. 3 Hours.

First of two courses in design of biomedical systems and processes. Major design project in biomedical engineering, incorporating engineering standards and realistic design constraints. This course prepares students through a major design experience incorporating engineering principles and realistic constraints that include most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, and social consideration. Prerequisite: C or better in BE 3317, BE 3380 and BE 4382; accepted into the BE Professional Program, and consent of the BE undergraduate advisor.

BE 4355. SENIOR DESIGN PROJECT II. 3 Hours.

Second in two courses in design of biomedical systems. Proposals approved in BE 4350 will be completed. Teams will address, resolve limitations in the design and present final results through an oral presentation. Teams are required to submit a final project report with their design notebooks to the course instructors. Prerequisite: C or better in BE 4350.

BE 4360. FUNDAMENTALS OF ULTRASOUND IN BIOENGINEERING. 3 Hours.

This course instructs the students in the physics of ultrasound transducers, their operation, and their biomedical applications. The material includes modeling of the interaction of acoustic waves with various types of tissue and cells. Mathematical methods for analyzing the reflected and refracted waves as well as constructing images from the waves will be covered. Prerequisite: Accepted into the BE Professional Program and EE 2440 or CSE 2440, BE 3344, or consent of the BE undergraduate advisor.

BE 4364. TISSUE ENGINEERING LECTURE. 3 Hours.

Fundamentals of cell/extracellular matrix interactions in terms of cell spreading, migration, proliferation and function; soft and hard tissue wound healing and nerve regeneration; polymer scaffolding materials and fabrication methods; cell-polymer interactions; in vitro and in vivo tissue culture and organ replacement. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4365. TISSUE ENGINEERING LABORATORY. 3 Hours.

Each student will be given the opportunity to perform the techniques commonly used in tissue engineering and biomaterial research. These techniques are culture media preparation, cell culture/subculture, degradable scaffold preparation, scaffold modification, histological sections and staining, and cell imaging analyses. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4366. PROCESS CONTROL IN BIOTECHNOLOGY. 3 Hours.

Principles and methods and measurement, data acquisition, and analysis. Application of control theory in biological systems and in biotechnology processes; control of pressure, flow, temperature, and pH. Prerequisite: Accepted into the Professional Program and BE 3317 (or equivalent course) or consent of the BE undergraduate advisor.

BE 4368. AN INTRODUCTION TO TISSUE ENGINEERING AND DRUG DELIVERY. 3 Hours.

Topics include fundamentals of cell-ECM interactions, cell spreading, migration, proliferation and function; soft and hard tissue wound healing and nerve regeneration; polymer scaffolding materials and fabrication methods; cell-polymer interactions; in vitro and in vivo tissue culture and organ replacement. Students will be introduced to basic principles of pharmacokinetics and pharmacodynamics. Topics also include design and development of targeted and controlled drug delivery systems, including transdermal, inhalation, drug-eluting stents, stimulated-drug, as well as encapsulated nano and micro-particles for controlled release. Underlying principles of drug delivery, targeting, modification, distribution and diffusive transport will be discussed. Preferred background: satisfactory completion of BE 3380 (or co-requisite). Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4372. DRUG DELIVERY SYSTEMS. 3 Hours.

This class focuses on the development, design, and application of controlled and targeted drug delivery systems including transdermal, inhalation, drug eluting stents, stimulation-drug, as well as microparticles and nanoparticles for controlled drug delivery. Principles of drug delivery, targeting, modification, distribution and diffusion will be discussed. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4373. FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS. 3 Hours.

This class will provide students with hands-on experience in the development of drug delivery systems such as hydrogels, scaffolds, microparticles and/or nanoparticles that can be loaded with and release pharmaceutical agents to treat various diseases. The emphasis is synthesis, characterization and pharmacokinetic studies of these drug delivery systems. Preferred background: satisfactory completion of BE 4372. Prerequisite: Accepted into the BE Engineering Professional Program or consent of the BE undergraduate advisor.

BE 4382. LABORATORY PRINCIPLES. 3 Hours.

Introduction to fundamental biomedical engineering laboratory procedures including human studies and animal surgery; includes clinical laboratory projects, data collection, analysis, and interpretation. Preferred background: satisfactory completion of BE 3320 and BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4385. STEM CELL TISSUE ENGINEERING. 3 Hours.

Students will gain experience and expertise in stem cell culture and differentiation, and engineering stem cell-based 2D and 3D tissue constructs. Using phenotypic markers and appropriately integrating with biocompatible scaffolds, the engineered tissue constructs will be differentiated to several tissue types and functionally validated. Lectures will cover stem cells, designing scaffolds and multimodal imaging techniques. The final projects may include acquisition of big data images, data mining and development of pattern recognition algorithms. Prerequisite: Accepted into the BE Professional Program and BE 3380, BE 3301, BE 3367, or consent of the undergraduate advisor.

BE 4388. BIOMEDICAL PRODUCT DESIGN AND DEVELOPMENT. 3 Hours.

This course aims to provide, 1) A comprehensive knowledge of biomedical product design and development life cycle, 2) Basic knowledge on developing business plan, securing funding, designing product and process, conducting preclinical and clinical studies, 3) Basic training and classroom exercises on various biomedical product design and development tools, 4) Basic knowledge of FDA regulation and quality control, 5) Basic training on intellectual property and industrial project management. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4390. UNDERGRADUATE RESEARCH PROJECT. 3 Hours.

Student works on an independent, individual research or development project under supervision of faculty instructor. A final project report is required.

Prerequisite: Permission from Instructor.

BE 4391. DIRECTED RESEARCH IN BIOENGINEERING. 3 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5101. SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current interest in the field of bioengineering.

BE 5191. DIRECTED RESEARCH IN BIOENGINEERING. 1 Hour.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5193. MS COMPREHENSIVE EXAMINATION. 1 Hour.

Individual instruction, directed study, consultation, and comprehensive examination over coursework leading to the Thesis-Substitute Master of Science degree in bioengineering. Graded P/F/R. Required of all Thesis-Substitute MS students.

BE 5201. SEMINAR IN BIOENGINEERING. 2 Hours.

University and guest lecturers speak on topics of current research interest in the field of bioengineering. Students are expected to write a report for each topic to summarize the presentation and to offer critiques. Prerequisite: Graduate admission to the BE MS program.

BE 5281. BEST PRACTICES IN TEACHING AND LEARNING. 2 Hours.

Introduction to approaches and activities that can facilitate learning. Students gain insight into specific challenges of teaching, basics of designing a course, role of assessments and evaluations, good presentation skills and comparisons of various engagement levels. Students teach mock lessons and are given feedback.

BE 5291. DIRECTED RESEARCH IN BIOENGINEERING. 2 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5293. MASTERS COMPREHENSIVE EXAMINATION. 2 Hours.

Individual instruction, directed study, consultation, and comprehensive examination over coursework leading to the Master of Science degree in bioengineering. Required of all MS students.

BE 5300. SELECTED TOPICS IN BIOENGINEERING. 3 Hours.

Material may vary from semester to semester. May be repeated for credit if different topics are covered for each registration. Prerequisite: permission of the instructor.

BE 5301. CELL PHYSIOLOGY FOR BIOENGINEERS. 3 Hours.

This course will cover principles of molecular omics (i.e., genomics, transcriptomics, proteomics and synthetic biology). The field of Molecular bioengineering and processes involving inducible transcription and chimeric proteins. The composition of cell membranes, ion transport and the application of optogenetics in cell physiology regulation. The way cells communicate and integrate signals and translated them in intracellular metabolic cascades through the understanding of phosphoproteomics, energy metabolism, metabolomics, cellular motility, and molecular motors. The processes involved in cell proliferation, abnormal cell division dysregulation in cancer, and nanotechnology techniques for tumor treatment. Prerequisite: Graduate Level or Instructor Permission.

BE 5309. HUMAN PHYSIOLOGY IN BIOENGINEERING. 3 Hours.

An introduction to human physiology emphasizing biomedical engineering related topics. The course focuses on understanding basic function with the relationships on the cellular as well as organ level both in healthy and diseased states.

BE 5310. BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LAB. 3 Hours.

Follow an introduction to the basics of solid, fluid mechanics, student learn the fundamental behavior of various biological materials, flow properties of blood, viscoelastic properties of cells, tissue matrix, as well as their roles in human physiology at normal and disease states. Examples also include the design aspects of medical prosthetic devices. The course will cover biomechanics across a wide range of scales from organism, organ, tissue, cell and to protein levels. Students learn computational modeling to formulate and solve bioengineering problems. Prerequisite: Undergraduate solid and fluid mechanics courses or consent of the instructor.

BE 5312. TISSUE BIOMECHANICS AND BIOENGINEERING. 3 Hours.

This course introduces biomechanics as a means to describe mechanical behavior of biological tissues. A comprehensive course, it covers the fundamental concepts, experimental and theoretical approaches of biomechanics, and their applications in modern bioengineering, including mechano signal transduction, pathophysiology, tissue engineering and regeneration, medical implants, surgical intervention. Structural-mechanical properties of specific tissues, such as heart valves, cardiac tissues, blood vessels, tendon/ligament, skeletal muscles, cartilage, and meniscus will be discussed in great details. This course integrates the concepts of biomechanics, the underlying structural and biological mechanisms, illustrates how experimental, analytical and computational methods have been used to address clinical needs in enhancing the quality of health care delivery.

BE 5314. BIOMEDICAL IMPLANTS. 3 Hours.

A comprehensive course covers the essential knowledge in biomedical implants. The goal is to provide students with the knowledge and skills to understand the clinical needs, the engineering principles, methodologies used in implant design, the resulting host-implant interaction, and the constraints, limitations on engineering design optimization, as well as the evaluation and assessment of the implant performance and clinical outcomes. Case studies include mechanical, bio-prosthetic and trans-catheter heart valves, vascular grafts, stents, pacemakers, orthopedic implants, dental implants, etc. The course also covers topics on regulatory issues, patent protection, design validation in animal models and clinical trials, IACUC, IRB, Good Manufacture Practice (GMP), and FDA regulations and approvals. Students are expected to be able to apply the learning to solve problems in the rapidly growing field of biomedical engineering.

BE 5315. FUNDAMENTALS OF BIOMOLECULAR ENGINEERING. 3 Hours.

The course will introduce the principles of engineering living systems at the atomic, molecular, and cellular levels. Fundamentals covered in the course will include topics such as chemical bonding and reactions; synthesis, structure and function of carbohydrates, polypeptides, nucleic acids, and lipids; as well as analytical and engineering tools for characterization, design, and production of synthetic biological systems.

BE 5316. FUNDAMENTAL MATH AND PHYSICS FOR BIOENGINEERING. 3 Hours.

This course introduces the basic physics concepts such as introduction to electromagnetism, Maxwell's equations, computation of Fresnel coefficients, interference and diffraction of light, waveguides and optical fibers, photon counting statistics, and Beer-Lambert law. It also covers basic mathematical concepts such as curvilinear coordinates, vector calculus, Stokes theorem and solving differential equations with initial conditions and the diffusion equation.

BE 5323. INTRODUCTION TO BIOPHOTONICS. 3 Hours.

Introduction to properties of light, light-cell/tissue interactions, optical techniques, and optical instrumentation, in the context of biophotonic medical applications. Topics that will be covered include fundamental properties of optical wave fields, basic properties and characterization of laser sources and detectors used in modern biomedicine, interferometry, linear and nonlinear light-tissue interactions exploited for biomedical imaging and sensing applications, and spectroscopy.

BE 5324. BIOMEDICAL OPTICS LABORATORY. 3 Hours.

The primary objective of the Biomedical Optics Laboratory course is to provide students hands-on experience with fundamental optical techniques and instrumentation used in modern biomedical research and applications. The skills learned will be valuable to anyone who intends to work in an experimental setting that requires working knowledge of optical instrumentation and techniques. The course is divided into ten core lab modules that cover topics ranging from basic optical techniques to advanced imaging and spectroscopy techniques.

BE 5325. FLUORESCENCE MICROSCOPY. 3 Hours.

Introduction to the anatomy of a fluorescence microscope and the physical principles of its operation. Confocal and multi-photon microscopy. Molecular imaging applications based on Forster Resonance Energy Transfer (FRET), Fluorescence Lifetime Imaging (FLIM), Fluorescence Correlation Spectroscopy (FCS), Fluorescence Recovery After Photobleaching (FRAP) and Total Internal Reflection Fluorescence (TIRF) Microscopy.

BE 5326. TISSUE ULTRASOUND OPTICAL IMAGING. 3 Hours.

This course will introduce the fundamental principles of ultrasound and optical related imaging techniques, such as ultrasound, tissue optical, photo-acoustic and ultrasound-modulated optical imaging techniques. Lectures, laboratories, simulations, and paper presentations and discussion will be adopted in this course. Some topics related to the new progresses and applications in the related fields will be introduced. Prerequisite: Graduate level or instructor permission.

BE 5327. TISSUE OPTICS. 3 Hours.

Introduction to the science and technology behind tissue optical imaging systems and their design requirements for different clinical applications. Diffuse optical tomography, fluorescence tomography, bioluminescence tomography, multi-modality imaging.

BE 5329. NEURAL ENGINEERING. 3 Hours.

This course consists of both lecture/discussion and laboratory. Lecture topics include central and peripheral nervous system injury and regeneration, brain/machine interfacing, primary culture of neural cells, neuroinflammatory and neurodegenerative disease. Laboratories include embryonic and neonatal rat derived neuronal culturing, immunostaining and quantitative analysis.

BE 5331. POLYMERS AND BIOCOMPATIBILITY. 3 Hours.

This is a foundation course in polymeric biomaterial design, synthesis, characterization, and processing. The topics include design, surface-engineering, functionalization, characterization, as well as micro- and nano-fabrication of polymeric biomaterials. The biomedical applications of the polymeric biomaterials and their interaction with cell/tissue is discussed.

BE 5333. NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION. 3 Hours.

Synthesis, fabrication, characterization, and biomedical applications of nanobiomaterials. Topics include synthetic nanobiomaterials, biological nanobiomaterials (DNA nanomaterials, protein and peptide nanomaterials, etc.), biofunctionalization of nanobiomaterials, use of nanobiomaterials in tissue engineering, drug delivery, gene delivery.

BE 5335. BIOLOGICAL MATERIALS, MECHANICS, & PROCESSES. 3 Hours.

Typical functional behavior of various biological materials, flow properties of blood, bioviscoelastic fluids and solids, mass transfer in cardiovascular and pulmonary systems.

BE 5337. TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING. 3 Hours.

Principles of momentum, mass and heat transfer; description of blood flow, trans-capillary, interstitial, lymphatic fluid transport and pulmonary gas exchange. Applications in the design of blood oxygenator, dialysis devices, and strategies in drug delivery, hyperthermia treatment. Prerequisite: undergraduate courses in CE 2312 Statics/Dynamics, MAE 2314 Fluid Mechanics I or CE 3305 and MAE 3310 Thermodynamics I or CHEM 3321.

BE 5340. FINITE ELEMENT APPLICATIONS IN BIOENGINEERING. 3 Hours.

The course describes the fundamental principles of the finite element method and various numerical modeling techniques. Topics include variational and Galerkin formulations, linear and Hermitian elements, accuracy and convergence. Applications in biological systems and to the design of prosthetic devices are emphasized. Topic areas include linear elasticity, fluid dynamics, heat transfer, and mass transport processes.

BE 5343. IMAGE PROCESSING WITH MATLAB: APPLICATIONS IN MEDICINE AND BIOLOGY. 3 Hours.

This course focuses on introduction to image processing for applications in medicine and biology. After a review of how to use MATLAB arrays, files, functions, and to write MATLAB programs for quantitative computation and graphing, students will learn the fundamental tools in image processing, image analysis, and two-dimensional Fourier transform, using MATLAB functions available in the textbook. Topics also include image segmentation. Real-world research-based examples will be presented, and discussed in the course. With hands-on exercises, students will learn the basic skills, knowledge on MATLAB usage and the problem-solving techniques required for medical image processing. Prerequisite: MATH 3319 or consent of the instructor.

BE 5344. BIOINSTRUMENTATION I. 3 Hours.

Fundamental principles of bioinstrumentation, including operational amplifiers and instrumentation amplifiers; measurements of biopotentials; signals and noise in biological systems; mechanical transducers; resistive, inductive, capacitive transducers; measurement of temperature, blood pressure and flow; electrical safety.

BE 5345. BIOSENSOR. 3 Hours.

The course will cover major classes of bio-sensing technologies currently used in practice and the emerging ones that are currently being evaluated. The basic operating principle behind bio-sensing technologies will be explained and its implementation in medical devices will be discussed. Explanation of biosensor operation will involve understanding the mechanism of bio-signal transduction (bio-parameter to biomechanical, electrical, optical or chemical signal), detection method, and their analysis. Methodology for device calibration and data interpretation of physiological parameters will be discussed. The course material will be derived from book chapters and review papers. Course includes hand-on learning experience in laboratory by deconstructing commercially available biosensors and using experimental bio-sensing instruments. Students will be required to design and implement a point-of-care biosensor. Prerequisite: Undergraduate instrumentation courses or consent of the instructor.

BE 5346. MEDICAL IMAGING. 3 Hours.

This course introduces basic medical imaging modalities, including X-ray Computed Tomography (CT), Nuclear Medicine Imaging (PET and SPECT), Magnetic Resonance Imaging (MRI), and image-guided interventions. Through this course, the students will learn fundamental knowledge on how medical images are obtained and how they can be used for diagnosis, therapy, and surgery.

BE 5347. PRINCIPLES OF FUNCTIONAL MAGNETIC RESONANCE IMAGING. 3 Hours.

This course introduces basic principles of Magnetic Resonance Imaging (MRI) and functional MRI (fMRI) for brain functional imaging. After taking this course, the students will gain basic knowledge on how functional brain images are obtained from MRI and fMRI as well as how they can be used for diagnosis, therapy, and surgery. The emphasis in this course is on fMRI. This course will include lecture and some laboratory exercises involving actual fMRI measurement data.

BE 5350. MODELING AND CONTROL OF BIOLOGICAL SYSTEMS. 3 Hours.

Introduction to fundamental methods of modeling, analysis and control of biological systems. Linear system modeling, state space modeling, stability analysis, basic identification techniques. Examples from cardiopulmonary, visual, and motor control systems. Prerequisite: an undergraduate course in linear systems, control theory, or consent of the instructor.

BE 5352. DIGITAL PROCESSING OF BIOLOGICAL SIGNALS. 3 Hours.

Fundamental techniques for extraction of useful information from signals acquired from biological systems. Topics include time and frequency domain analysis, cross correlation, spectrum analysis, and convolution. Design of FIR and IIR filters for processing biological signals are described. Examples include cardiac, respiratory, and biomechanical movements. Prerequisite: an undergraduate engineering course in signals and systems analysis or consent of the instructor.

BE 5360. DESIGN AND APPLICATION OF ARTIFICIAL ORGANS. 3 Hours.

Fundamental principles of fluid mechanics, mass transfer and chemical reaction in engineered biological systems. Simple solutions are developed for the design of artificial ventricular assist devices, total artificial hearts, lungs and kidneys.

BE 5361. BIOMATERIALS AND BLOOD COMPATIBILITY. 3 Hours.

This course is an introduction to polymer structure and fabrication methods. Blood and tissue interactions with materials, and methods to improve the biocompatibility of materials are discussed.

BE 5364. TISSUE ENGINEERING LECTURE. 3 Hours.

Fundamentals of cell/extracellular matrix interactions in terms of cell spreading, migration, proliferation and function. Soft and hard tissue wound healing and nerve regeneration. Polymer scaffolding materials and fabrication methods. Cell-polymer interactions. In vitro and in vivo tissue culture and organ replacement.

BE 5365. TISSUE ENGINEERING LAB. 3 Hours.

Each student will be given the opportunity to perform the techniques commonly used in tissue engineering and biomaterial research. These techniques are culture media preparation, cell culture/subculture, degradable scaffold preparation, scaffold modification, histological sections and staining, and cell imaging analyses.

BE 5366. PROCESS CONTROL IN BIOTECHNOLOGY. 3 Hours.

Principles and methods of measurement, data acquisition and analysis. Application of control theory in biological systems and in biotechnology processes; control of pressure, flow, temperature, and pH. Prerequisite: an undergraduate course in control theory or consent of the instructor.

BE 5370. BIOMATERIAL - LIVING SYSTEMS INTERACTION. 3 Hours.

This course describes current developments in molecular structure and organization at synthetic material interfaces with tissues and the subsequent influences on cells and cell membranes. It is designed to lay the groundwork for an improved understanding of events at the biomaterial-living system interface.

BE 5372. DRUG DELIVERY. 3 Hours.

This class focuses on the development, design and application of controlled and targeted drug delivery systems including transdermal, inhalation, drug eluting stents, stimulated-drug as well as microparticles and nanoparticles for controlled drug delivery. Principles of drug delivery, targeting, modification, distribution and diffusion will be discussed.

BE 5373. FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS. 3 Hours.

This class will provide the students with hands-on experience for developing drug delivery systems such as microparticles and nanoparticles that deliver pharmaceutical agents to treat various diseases. The emphasis is on understanding the principles of pharmacokinetics and drug delivery systems to improve the clinical efficacy and reduce side effects.

BE 5382. LABORATORY PRINCIPLES. 3 Hours.

Introduction to fundamental biomedical engineering laboratory procedures including human studies and animal surgery; includes clinical laboratory projects; data collection, analysis, and interpretation. Prerequisite: permission of the instructor.

BE 5385. STEM CELL TISSUE ENGINEERING. 3 Hours.

Students will gain experience and expertise in stem cell culture and differentiation, and engineering stem cell-based 2D and 3D tissue constructs. Using phenotypic markers and appropriately integrating with biocompatible scaffolds, the engineered tissue constructs will be differentiated to several tissue types and functionally validated. Lectures will cover stem cells, designing scaffolds and multimodal imaging techniques. The final projects may include acquisition of big data images, data mining and development of pattern recognition algorithms.

BE 5388. BIOMEDICAL PRODUCT DESIGN AND DEVELOPMENT. 3 Hours.

This course aims to provide 1) A comprehensive knowledge of biomedical product design and development life cycle, 2) Basic knowledge on developing business plan, securing funding, designing product and process, conducting preclinical and clinical studies, 3) Basic training and classroom exercises on various biomedical product design and development tools, 4) Basic knowledge of FDA regulation and quality control, 5) Basic training on intellectual property and industrial project management.

BE 5390. RESEARCH PROJECT. 3 Hours.

Taken by students enrolled in the non-thesis option for the MS degree. Individual instruction in research and/or instrumentation development and evaluation conducted under supervision of the instructor. A final report required. Prerequisite: Permission of the instructor.

BE 5391. DIRECTED RESEARCH IN BIOENGINEERING. 3 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5395. INTERNSHIP IN BIOENGINEERING. 3 Hours.

Students receive training in a Bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. Permission of Graduate Academic Advisor.

BE 5398. THESIS. 3 Hours.

Prerequisite: graduate standing in biomedical engineering.

BE 5691. DIRECTED RESEARCH IN BIOENGINEERING. 6 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: Graduate standing in Biomedical Engineering.

BE 6101. PhD SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current research interests in the field of bioengineering. Prerequisite: Graduate admission to BE PhD program.

BE 6102. PhD SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current research interests in the field of bioengineering. Prerequisite: Graduate admission to BE PhD program.

BE 6103. PhD SEMINAR IN BIOENGINEERING. 1 Hour.

This course serves as a forum to present recent scientific and technological topics in Bioengineering and as a practical guide to organize and deliver proper and effective scientific oral presentations. Prerequisite: PhD student status.

BE 6194. DOCTORAL DIAGNOSTIC EXAMINATION. 1 Hour.

Individual instruction, directed study, consultation, and diagnostic examination. Required of all doctoral students in the semester when they take any portion of the diagnostic examination.

BE 6195. DOCTORAL COMPREHENSIVE EXAMINATION. 1 Hour.

Individual instruction, directed study, consultation, and comprehensive examination on a detailed prospectus of proposed dissertation research as well as an oral examination. Required of all doctoral students in the semester when they take the comprehensive examination. Prerequisite: BE 6194.

BE 6197. RESEARCH IN BIOENGINEERING. 1 Hour.

Individually approved research projects leading to a doctoral dissertation in the area of biomedical engineering.

BE 6297. RESEARCH IN BIOENGINEERING. 2 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of biomedical engineering.

BE 6395. INTERNSHIP IN BIOENGINEERING. 3 Hours.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE and good standing in the graduate program.

BE 6397. RESEARCH IN BIOENGINEERING. 3 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of bioengineering.

BE 6399. DISSERTATION. 3 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Biomedical Engineering.

BE 6499. DISSERTATION. 4 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. This course is only to be taken by students preparing a dissertation for submission that is supervised primarily by a University of Texas Southwestern Medical School faculty member and must be taken concurrently with a 5-hour dissertation course at that institution. To satisfy requirement that a P be awarded in a 9-hour dissertation course in their final semester of enrollment, a student must be concurrently enrolled in this course and the 5-hour dissertation course at the University of Texas Southwestern Medical School and receive a P in both courses at the end of that semester. If a P is not awarded in both classes, the two classes must be repeated until P grades are concurrently awarded.

BE 6695. INTERNSHIP IN BIOENGINEERING. 6 Hours.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE and good standing in the graduate program.

BE 6697. RESEARCH IN BIOENGINEERING. 6 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of bioengineering.

BE 6699. DISSERTATION. 6 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Biomedical Engineering.

BE 6995. INTERNSHIP IN BIOENGINEERING. 9 Hours.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE and good standing in the graduate program.

BE 6997. RESEARCH IN BIOENGINEERING. 9 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of bioengineering.

BE 6999. DISSERTATION. 9 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. Graded P/R/F. Prerequisite: admission to candidacy for the Ph.D. in Biomedical Engineering.

BE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Bioengineering - Graduate Programs

Objectives

The Biomedical Engineering Program is jointly offered by The University of Texas at Arlington and The University of Texas Southwestern Medical Center at Dallas (UT Southwestern). Research and teaching efforts of various departments in the biological, engineering, mathematical, physical, and medical sciences of both institutions are coordinated through the Committee on Graduate Studies in Biomedical Engineering. The goal of the program is to prepare students for bioengineering careers requiring skills in research, development, and teaching in a variety of settings in industry, in hospitals, in research facilities of educational and medical institutions and in government regulatory agencies. Internships are aimed to further prepare students for careers in the bioengineering industry.

The program includes coursework and research in medical imaging, biosensors, physiological control systems, biomedical signal processing, biomedical instrumentation, rehabilitation, orthopedics, biomechanics, biomaterials and tissue engineering and neurosciences. Specifically, during the first year of their studies, students in the master's and doctoral programs must select one of the concentration tracks in Bioengineering:

1. Bioinstrumentation
2. Biomaterials/Tissue Engineering
3. Biomechanics
4. Medical Imaging
5. Nanomedicine/Nanoengineering

A track advisor is available to advise students on the relevant courses and the research opportunities in each track.

Master's Program

The master's program is based upon graduate level work in Bioengineering, life sciences and related physical sciences.

Doctoral Program

The doctoral program is based upon graduate level work in Bioengineering, and extensive graduate training in the life sciences and related physical sciences. The program is aimed at the development of professional biomedical engineers capable of independent research.

Combined Degree Plan: Bachelor of Science in Biology and Master of Science in Bioengineering

This five-year curriculum prepares students for careers in the fast growing biotechnology and Bioengineering industries. The curriculum also prepares students for medical school and advanced study. Students are required to take courses from engineering, life sciences and liberal arts, culminating in a five-year Master of Science Degree in Biomedical Engineering, including a Bachelor of Science Degree in Biology. The curriculum is offered jointly by the College of Engineering and the College of Science.

Fast Track Programs for a Master's Degree in Biomedical Engineering

The Fast Track program enables outstanding undergraduate students in either Biomedical Engineering, or Physics, or Biochemistry to receive dual undergraduate and graduate course credit leading to receiving both a Bachelor of Science Degree in either Biomedical Engineering, or Physics, or Biochemistry and a Master's Degree in Biomedical Engineering. See the departmental advisors for additional information on these programs.

Description

Bioengineers use quantitative methods and innovation to analyze and to solve problems in biology and medicine. Students choose the Bioengineering field to serve people, to partake in the challenge and excitement of working with living systems, and to apply advanced technology to complex problems of medical care. Through this program, students learn the essentials of life science, engineering theory, and the analytical and practical tools that enable them to be successful in the biotechnology and Bioengineering industries. The program includes coursework in the basic sciences, core engineering, Bioengineering, and advanced biotechnology disciplines. Both didactic classroom lectures and hands-on laboratory experience are emphasized. Additionally, students are required to take general educational courses in literature, fine arts, history, political science, and social science.

Career Opportunities

The program prepares students as biomedical engineers for careers in industry, in hospitals, in research facilities of educational and medical institutions, and in government regulatory agencies. It also provides a solid foundation for those wishing to continue for advanced degrees. For those planning to pursue a medical degree, this cross-disciplinary curriculum offers a solid foundation in engineering, which is an advantage in preparing for a medical career.

See the UT Arlington Undergraduate Catalog (<http://www.uta.edu/catalog/>) for a more detailed description of this program.

Continuation

The Biomedical Engineering Graduate Program has established certain policies to fulfill its responsibility to graduate highly qualified professional engineers. In addition to the requirements of the Graduate School listed in this catalog under Advanced Degrees and Requirements, each bioengineering graduate student who wants to continue in the program must:

1. Maintain at least an overall GPA of 3.0 from all coursework, and
2. Demonstrate suitability for professional engineering practice.

At such time as questions are raised by bioengineering graduate faculty regarding either of the above, the student will be notified and will be provided the opportunity to respond to the Committee on Graduate Studies in Bioengineering. The Committee on Graduate Studies will review the student's performance and make a recommendation concerning the student's eligibility to continue in the program. Appeal of a decision on continuation may be made through normal procedures outlined in the section of this catalog entitled "Grievances Other than Grades."

Master's Admission

Application for admission should be made at either UT Arlington or UT Southwestern. Normally, the institution through which the student applies and is admitted is the student's home institution. In addition to admission requirements of the Graduate School, the bachelor's degree held by applicants to the program may be in engineering, biological, physical, or mathematical sciences. Depending on the applicant's background, some preparatory coursework may be required, prior to admission into the program. The UT Arlington Biomedical Engineering Program uses the following guidelines in the admission review process:

Unconditional Admission

1. Minimum undergraduate GPA of 3.0 in the last 60 hours of undergraduate work in an engineering discipline as calculated by the Graduate School.
2. GRE with total score (quantitative plus verbal) equal to or greater than 301 is preferred. Applicants from non-ABET accredited programs are required to take the GRE. Applicants from ABET accredited programs are not required to take the GRE. However, taking the GRE is strongly recommended for consideration of potential financial assistance.
3. A total TOEFL score of 79 or better for Internet-based testing for international applicants whose native language is not English.

Probationary Admission

1. If an applicant meets any one of the above items 1, or 2 and also provides three letters of recommendation from persons with relevant academic credentials.
2. A total TOEFL score of 79 or better for Internet-based testing for international applicants whose native language is not English.

Provisional Admission

An applicant who is unable to supply all required documents prior to the admission deadline, but who otherwise appears to meet admission requirements may be granted provisional admission.

Deferral

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

Denial

A candidate may be denied admission if he/she has less than satisfactory performance in two out of the three admission criteria, excluding TOEFL.

Degree Requirements

Master of Science Degree Plans

Students in the Thesis Degree plan must complete a minimum of 30 credit hours, including 6 hours of thesis. Students in the Thesis-Substitute Degree plan must complete a minimum of 30 credit hours as specified below.

Required Bioengineering

For thesis-option, one laboratory course in bioengineering, such as BE 5324 or BE 5365 or BE 5373 or BE 5382 approved by the graduate advisor, is required. For thesis-substitute-option, two laboratory courses are required

3-6

Bioengineering

Select five of the following (consistent with the student's track of study and approval of the Graduate Advisor):

BE 5300	SELECTED TOPICS IN BIOENGINEERING	3
BE 5310	BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LAB	3
BE 5312	TISSUE BIOMECHANICS AND BIOENGINEERING	3
BE 5314	BIOMEDICAL IMPLANTS	3

BE 5315	FUNDAMENTALS OF BIOMOLECULAR ENGINEERING	3
BE 5324	BIOMEDICAL OPTICS LABORATORY	3
BE 5325	FLUORESCENCE MICROSCOPY	3
BE 5326	TISSUE ULTRASOUND OPTICAL IMAGING	3
BE 5327	TISSUE OPTICS	3
BE 5329	NEURAL ENGINEERING	3
BE 5331	POLYMERS AND BIOCOMPATIBILITY	3
BE 5333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION	3
BE 5337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	3
BE 5343	IMAGE PROCESSING WITH MATLAB: APPLICATIONS IN MEDICINE AND BIOLOGY	3
BE 5344	BIOINSTRUMENTATION I	3
BE 5346	MEDICAL IMAGING	3
BE 5352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	3
BE 5361	BIOMATERIALS AND BLOOD COMPATIBILITY	3
BE 5364	TISSUE ENGINEERING LECTURE	3
BE 5365	TISSUE ENGINEERING LAB	3
BE 5366	PROCESS CONTROL IN BIOTECHNOLOGY	3
BE 5370	BIOMATERIAL - LIVING SYSTEMS INTERACTION	3
BE 5372	DRUG DELIVERY	3
BE 5373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	3
BE 5382	LABORATORY PRINCIPLES	3
BE 5385	STEM CELL TISSUE ENGINEERING	3
BE 5388	BIOMEDICAL PRODUCT DESIGN AND DEVELOPMENT	3
BE 5390	RESEARCH PROJECT	3

Engineering

Select one course from Bioengineering or other engineering departments, with the approval of the Graduate Advisor 3

Required Life Sciences

BE 5309 HUMAN PHYSIOLOGY IN BIOENGINEERING 3

One Three-Credit-Hour approved Life Science course. 3

Thesis Plan

BE 5698 THESIS (at the semester in which the student expects to submit and defend the thesis) 6

Thesis Substitute Plan

One Three-Credit-Hour BE elective course 3

One Three-Credit-Hour Biostatistics Course 3

After completion, the student will receive his or her Masters Degree in Biomedical Engineering.

Doctoral Admission

In addition to admission requirements of the Graduate School, the bachelor's degree held by applicants to the program may be in engineering, biological, physical, or mathematical sciences. Depending on the applicant's background, some preparatory coursework may be required, prior to admission into the program. The UT Arlington Biomedical Engineering program uses the following guidelines in the admission review process:

Unconditional Admission

1. Minimum GPA of 3.4 in the last 60 hours taken in the major field of study of engineering or physical sciences as calculated by the Graduate School.
2. GRE Total (quantitative plus verbal) must be greater than 308 with a verbal score of 146 or better.
3. Three favorable letters of recommendation.
4. A total TOEFL score of 79 or better for Internet-based testing for international applicants whose native language is not English.

Probationary Admission

1. If an applicant meets any two of the above items 1, 2, and 3.
2. A total TOEFL score of 79 or better for Internet-based testing for international applicants whose native language is not English.

Provisional Admission

An applicant who is unable to supply all required documents prior to the admission deadline, but who otherwise appears to meet admission requirements may be granted provisional admission.

Deferral

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

Denial

A candidate may be denied admission if he/she has less than satisfactory performance in two out of the three admission criteria, excluding TOEFL.

Fellowship

No additional requirements besides the information published by the Graduate School.

Degree Requirements

Doctor of Philosophy Degree Plan

The Ph.D. degree program consists of a minimum of 47 credit hours beyond the bachelor's degree level and includes the courses as specified below.

Required Bioengineering

BE 5101	SEMINAR IN BIOENGINEERING	1
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Ph.D. Seminar for at least two semesters:

BE 6103	PhD SEMINAR IN BIOENGINEERING	1
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BE 6103	PhD SEMINAR IN BIOENGINEERING	1
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Laboratory Course (BE 5324, BE 5365, BE 5373 or BE 5382)		3
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Elective Bioengineering

Select five of the following:

BE 5300	SELECTED TOPICS IN BIOENGINEERING	3
BE 5310	BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LAB	3
BE 5312	TISSUE BIOMECHANICS AND BIOENGINEERING	3
BE 5314	BIOMEDICAL IMPLANTS	3
BE 5315	FUNDAMENTALS OF BIOMOLECULAR ENGINEERING	3
BE 5324	BIOMEDICAL OPTICS LABORATORY	3
BE 5325	FLUORESCENCE MICROSCOPY	3
BE 5326	TISSUE ULTRASOUND OPTICAL IMAGING	3
BE 5327	TISSUE OPTICS	3
BE 5329	NEURAL ENGINEERING	3
BE 5331	POLYMERS AND BIOCOMPATIBILITY	3
BE 5333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION	3
BE 5337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	3
BE 5343	IMAGE PROCESSING WITH MATLAB: APPLICATIONS IN MEDICINE AND BIOLOGY	3
BE 5344	BIOINSTRUMENTATION I	3
BE 5346	MEDICAL IMAGING	3
BE 5347	PRINCIPLES OF FUNCTIONAL MAGNETIC RESONANCE IMAGING	3
BE 5352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	3
BE 5361	BIOMATERIALS AND BLOOD COMPATIBILITY	3
BE 5364	TISSUE ENGINEERING LECTURE	3
BE 5365	TISSUE ENGINEERING LAB	3
BE 5366	PROCESS CONTROL IN BIOTECHNOLOGY	3
BE 5370	BIOMATERIAL - LIVING SYSTEMS INTERACTION	3
BE 5372	DRUG DELIVERY	3
BE 5373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	3
BE 5382	LABORATORY PRINCIPLES	3
BE 5385	STEM CELL TISSUE ENGINEERING	3

BE 5388	BIOMEDICAL PRODUCT DESIGN AND DEVELOPMENT	3
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Other courses with the approval of the Graduate Advisor

Elective (3 credit hours)

One Three-Hour-Course from other engineering departments or a life science course with the approval of the Graduate Advisor	3
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Life Sciences (9 Credit Hours)

BE 5309	HUMAN PHYSIOLOGY IN BIOENGINEERING	3
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Select one of the following:	3
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Cell Physiology

Neuroscience

Tumor Physiology

Select one of the following:	3
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Biochemistry

Molecular Biology

Immunology

Mathematics, Statistics, Computer and Physical Sciences

One Three-Credit-Hour Biostatistics course as approved by the Graduate Advisor.

Ph.D. Examinations and Dissertation

All doctoral students must satisfactorily complete the following exams at the semester in which the student expects to submit and defend the dissertation:

BE 6194	DOCTORAL DIAGNOSTIC EXAMINATION	1
BE 6195	DOCTORAL COMPREHENSIVE EXAMINATION	1
BE 6999	DISSERTATION	9

Although qualified applicants may be accepted into the Ph.D. program without earning the Master of Science in Biomedical Engineering, all students must satisfactorily pass BE 6194 DOCTORAL DIAGNOSTIC EXAMINATION. This examination will cover all relevant coursework taken by the student. The examination may be written, oral, or both and consists of a timed, written analysis of a major problem in the student's general area of research interest, followed by an oral examination covering the same material. Elements of engineering, physical and biological science, mathematics, computer science and statistics may be included in this examination.

For completion of doctoral degree, a minimum of 38 semester hours of graduate coursework is expected for students entering with an appropriate master's degree, or a minimum of 47 semester hours of graduate coursework is expected for student's entering with a bachelor's degree, as approved by the Committee on Graduate Studies. Additional coursework may be required by the student's doctoral dissertation committee.

For additional information, applicants and students should contact the BE Graduate Advisor for a copy of the "Information Brochure" for related and amplified information about the graduate program. The information can also be found at <http://www.uta.edu/bioengineering/>.

After completion, the student will receive his or her PhD in Biomedical Engineering.

Bioengineering - Undergraduate Programs

Overview

The Department of Bioengineering offers a Bachelor of Science (BS) degree in Biomedical Engineering (BS BME). The goal of the program is to prepare students for bioengineering careers requiring skills in research, development, and teaching in a variety of setting in industry, hospitals, research facilities of educational and medical institutions and government regulatory agencies. Graduates may also pursue their continuing education in the medical and dental field or graduate studies in bioengineering.

BS BME degree offers two areas for concentration: Biomaterials and Tissue Engineering; and Medical Imaging.

Educational Objectives of the Undergraduate Program

The purpose of the Bioengineering Department is to advance the cause of the profession through teaching and research and to produce technically knowledgeable, well rounded graduates who have the capability of developing into professionally competent engineers pursuing lifelong learning and assuming leadership roles in the profession. The BE Department supports the University and College of Engineering mission by offering a broad-based undergraduate education leading to a degree of bachelor of science in Biomedical Engineering with emphasis on technical, professional, ethical, and societal responsibilities associated with the practice of engineering. Advanced masters and doctoral degrees are offered with emphasis on technical specialization and the advancement of knowledge in several areas of bioengineering.

The overall goal of the Biomedical Engineering undergraduate program is to promote intellectual development of those interested in the bioengineering profession, and to produce graduates who possess the knowledge, tools and traits necessary for a successful career, and for assuming a leadership role in the bioengineering profession. More specifically, the educational program objectives are to produce graduates who:

- Possess a broad-based bioengineering education to successfully obtain professional positions, and practice bioengineering in a wide range of professional settings including industries, healthcare facilities, and consulting firms.
- Exhibit professional growth throughout their careers by taking on increasing professional responsibilities, and pursue life-long learning by participation in job-related advanced training activities, and/or attending graduate school, or professional school (medical or dental school).
- Demonstrate success and leadership in practice of engineering by contributing to the economic well-being of their employers and society, and by dedicated service to professional societies.

Student Outcomes of the Undergraduate Program

From these Program Educational Objectives, the department designed its baccalaureate program to offer its graduates:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Admission Requirements

Requirements for admission as a Biomedical Engineering major are governed by the requirements stated under the College of Engineering section of this catalog. Biomedical Engineering majors are only allowed to enroll in pre-professional courses until they meet the requirements for the professional program as outlined below. They must register only for courses approved by their faculty advisor and obtain their advisor's authorization for add/drops.

Undergraduate Advising

Students entering directly from high school and those with less than 24 hours of transferrable credit are advised initially in the University College. Students are transitioned to advising in the College of Engineering as they progress successfully in their degree programs.

Biomedical Engineering majors are required to be advised by an assigned advisor during the period set aside each semester by the College of Engineering for this purpose. Students are responsible for meeting with their advisors during the advising period. Periods set aside for advising and registration may be different, and students who do not meet with their advisors during the regular advising period may not be able to complete registration. All students should consult the departmental bulletin board for advisors' names and periods set aside for advising.

Biomedical Engineering students who have not been admitted to the professional program must register only for courses approved by their faculty advisor and obtain their advisor's authorization for add/drops. Failure to do so is grounds for dismissal from the Biomedical Engineering program. Students, including those in the professional program, who enroll in courses before taking the proper prerequisites or co-requisites, will be subject to dismissal from the Biomedical Engineering program.

Transfer students registering for the first time are advised separately prior to the beginning of the semester they enroll in courses. They should contact the department to set up an appointment for advising with a departmental undergraduate advisor prior to registration.

Admission to the Professional Program

Requirement for admission to the professional program in Biomedical Engineering are in accordance with those of the College of Engineering and additional requirements as follows.

- Application to the professional program is to be submitted to the BE Department after completion of all the pre-professional required courses and prior to taking any Bioengineering 3000 level course.
- No 3000 level Bioengineering course may be taken until the student is admitted into the professional program or obtains the written consent for the BE Department Chair.
- Each student must complete all the courses in the pre-professional required courses with a minimum grade of C in each course and a minimum GPA of 2.25
 - a. in all courses,
 - b. in math, science, and engineering courses.
 - c. in bioengineering courses
- Upon receipt of the application, a student's record is individually reviewed including grades, academic and personal integrity, record of drops and course withdrawals, the order in which courses have been taken, the number of times a student has attempted a course for credit, and any other aspect of the student's record that may be deemed pertinent to admission.

The student must be admitted to the professional program and have an approved degree plan on file in order to graduate. The degree plan is generated upon entry to the professional program. Graduating seniors should apply to graduate during the next-to-last semester.

Prior Preparation and Course Requirements

The undergraduate baccalaureate degree in Biomedical Engineering is a four-year program and requirements for the degree are based upon prior high school preparation through either an honors or college track program. Students who have not had the appropriate prior preparation should contact the departmental advising office for a curriculum guide that will assist them in structuring a study plan that will include leveling courses. Students requiring leveling courses may require a period of time greater than four years to complete their undergraduate degree.

Academic Requirements

Academic performance requirements establishing satisfactory progress and grade point requirements are given in the College of Engineering section of this catalog.

Grade Requirements for BE Course Prerequisites

Biomedical Engineering majors (BE-Intended or BE) may not attempt a BE course until they have earned a grade of C or better in the prerequisite course(s).

Repeating Courses

Biomedical Engineering majors (BE-Intended or BE) may not attempt any course more than three times and apply that course toward a degree in Biomedical Engineering. Enrollment in a course for a period of time sufficient for assignment of a grade, including a grade of W, is considered an attempt.

Grounds for Dismissal from the BE Program

Requirements for grounds for dismissal as a Biomedical Engineering major are governed by the requirements stated under the College of Engineering section of this catalog.

Requirements for a Bachelor of Science Degree in Biomedical Engineering

Pre-Professional Courses

Recommended Core Requirements

UNIV 1131 or ENGR 1101	STUDENT SUCCESS (or) ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	1
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
ENGL 1301	RHETORIC AND COMPOSITION I	3

HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
MATH 1426	CALCULUS I ¹	4
MATH 2425	CALCULUS II	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
A course on Creative Arts chosen by the student.		3
A course on Language, Philosophy, & Culture (for Biomedical Engineering majors, PHIL 1304 must be used to satisfy this requirement.)		3
A course on Social and Behavioral Sciences chosen by the student.		3
A course on Communication (for Biomedical Engineering majors, COMS 2302 must be used to satisfy this requirement)		3

Program Requirements

BE 1105	MEDICAL APPLICATIONS OF ENGINEERING	1
BE 1325	INTRODUCTION TO BIOENGINEERING	3
BE 2315	INTRODUCTORY COMPUTATIONAL TOOLS FOR BIOENGINEERS	3
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4

Professional Courses

BE 3101	SEMINAR IN BIOENGINEERING	1
or BE 3191	DIRECTED RESEARCH IN BIOENGINEERING	
BE 3301	CELL PHYSIOLOGY FOR BIOENGINEERS	3
BE 3317	LINEAR SYSTEMS IN BIOENGINEERING	3
BE 3320	MEASUREMENT LABORATORY	3
BE 3380	HUMAN PHYSIOLOGY IN BE	3
BE 4350	SENIOR DESIGN PROJECT I	3
BE 3415	FUNDAMENTALS OF BIOMOLECULAR ENGINEERING	4
BE 4355	SENIOR DESIGN PROJECT II	3
BE 4382	LABORATORY PRINCIPLES	3
IE 3301	ENGINEERING PROBABILITY	3
or MATH 3316	STATISTICAL INFERENCE	

¹ The Mathematics Department requires passing a placement test provided by the Mathematics Department before enrolling in MATH 1426 CALCULUS I.

Tissue Engineering Concentration

BE 3310	BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LABORATORY	3
or BE 4312	TISSUE BIOMECHANICS AND BIOENGINEERING	
BE 3367	CELL CULTURE AND DRUG DELIVERY LABORATORY	3
or BE 4365	TISSUE ENGINEERING LABORATORY	
or BE 4373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	
BE 4333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION	3
or BE 4331	BIOPOLYMERS AND BIOCOMPATIBILITY	
BE 4337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	3
or BE 4314	BIOMEDICAL IMPLANTS	
BE 4368	AN INTRODUCTION TO TISSUE ENGINEERING AND DRUG DELIVERY	3
or BE 4364	TISSUE ENGINEERING LECTURE	
or BE 4372	DRUG DELIVERY SYSTEMS	
CSE 2440	CIRCUIT ANALYSIS	4
or EE 2440	CIRCUIT ANALYSIS WITH LAB	

Choose three additional courses from list available at BE Advising Office.	9
Total Hours	128

Medical Imaging Concentration

BE 3344	BIOINSTRUMENTATION	3
BE 3346	MEDICAL IMAGING	3
BE 3352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	3
BE 4324	BIOMEDICAL OPTICS LABORATORY	3
CSE 2440	CIRCUIT ANALYSIS	4
or EE 2440	CIRCUIT ANALYSIS WITH LAB	
Choose four additional courses from list available at BE Advising Office.		12
Total Hours		128

More hours may be required to strengthen student's program or demonstrate proficiency. See Prior Preparation and Course Requirements.

Note: Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical languages courses in addition to the previously listed requirements.

Refer to the College of Engineering section of this catalog for information concerning the following topics: Admission into Engineering, Admission into Pre-Engineering, Admission into the Professional Program, Counseling or Advising, Transfer and Change of Major Policies, Honors Program, Academic Regulations, Professional Engineering Registration, Cooperative Education, Academic Probation, Repeating Course Policy and Academic Dishonesty.

Health Profession Track (Pre-Med or Pre-Dental, etc.)

For those who plan to pursue degrees in medicine or dental science, the following additional course are required in preparation for taking MCAT or DAT. Six hours from the following listed BIOL courses.

BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3312	IMMUNOLOGY	3
BIOL 3315	GENETICS	3
BIOL 3442	HUMAN PHYSIOLOGY	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 4311	BIOCHEMISTRY I	3
PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
SOCI 1311	INTRODUCTION TO SOCIOLOGY	3

One of the above two can be taken under Social and Behavioral Science of General Core Requirement.

For details, please visit Health Professions Advisor, UT Arlington College of Science (<http://www.uta.edu/science/programs/health-professions.php>)

Minor in Biomedical Engineering

To receive a minor in Biomedical Engineering a student must complete at least 18 hours in bioengineering courses listed below with a grade of C or better in each. Admission to the minor program in Biomedical Engineering requires 1) a minimum GPA of 2.25 derived from courses completed at UTA and 2) approvals from Undergraduate Advisor of Bioengineering and the student's home department. Upon admission to the program, check with the BE Undergraduate Advisor for advising and for enrollment in courses.

Required Courses (3 courses at 9 hours)

BE 3380	HUMAN PHYSIOLOGY IN BE	3
BE 4382	LABORATORY PRINCIPLES	3
BE 1325	INTRODUCTION TO BIOENGINEERING	3

Elective Courses Choose a minimum of 3 courses (with hours > or = 9) from below

Courses in Tissue Engineering, Biomaterials, or Biomechanics Areas

BE 3367	CELL CULTURE AND DRUG DELIVERY LABORATORY	3
BE 4368	AN INTRODUCTION TO TISSUE ENGINEERING AND DRUG DELIVERY	3
BE 4329	NEURAL ENGINEERING	3

BE 4364	TISSUE ENGINEERING LECTURE	3
BE 4365	TISSUE ENGINEERING LABORATORY	3
BE 4372	DRUG DELIVERY SYSTEMS	3
BE 4373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	3
BE 4385	STEM CELL TISSUE ENGINEERING	3
BE 4331	BIOPOLYMERS AND BIOCOMPATIBILITY	3
BE 4333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION	3
BE 3310	BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LABORATORY	3
BE 4337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	3
BE 3415	FUNDAMENTALS OF BIOMOLECULAR ENGINEERING	4
BE 4312	TISSUE BIOMECHANICS AND BIOENGINEERING	3
BE 4314	BIOMEDICAL IMPLANTS	3
Courses in Medical Imaging or Bioinstrumentation Areas		
BE 3317	LINEAR SYSTEMS IN BIOENGINEERING	3
BE 3344	BIOINSTRUMENTATION	3
BE 4345	BIOSENSORS	3
BE 4324	BIOMEDICAL OPTICS LABORATORY	3
BE 3346	MEDICAL IMAGING	3
BE 3327	TISSUE OPTICS	3
BE 3325	FLUORESCENCE MICROSCOPY	3
BE 3352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	3
BE 4366	PROCESS CONTROL IN BIOTECHNOLOGY	3
BE 4326	TISSUE ULTRASOUND-OPTICAL IMAGING	3
EE 3407	ELECTROMAGNETICS	4
EE 2440	CIRCUIT ANALYSIS WITH LAB	4

Transfer Students and Transfer Credit

When a student transfers to the Bioengineering Department from another department or institution or vice versa, a loss of credit can occur and his/her academic plans may have to be changed. Courses that appear to be similar may be different in either content or level of difficulty and, as a result, cannot be used for degree credit. For transferred courses that cannot be deemed equivalent to a required UTA course in content or in credit hours, students will be required to submit acceptable scores from CLEP, ASE for Undergraduate Advisor's approval. When a student's record indicates weakness in certain areas of study, he/she will be required to retake courses or to take additional courses. Transfer students should contact the Department of Bioengineering after admission and prior to registration.

Transfer students with 24 hours or more of transferable credit must meet the following requirements:

- Completed prerequisites necessary to enroll in MATH 1426 CALCULUS I and PHYS 1443 GENERAL TECHNICAL PHYSICS I
- Students for whom English is a primary language must present two high school units in a single foreign language or will be admitted with a foreign language deficiency that must be removed prior to graduation.
- A GPA of 3.0 or above calculated on transferred credits which include at least 15 hours of applicable math, science, and engineering courses.
- Students must be prepared to repeat any transferred courses below a C until a grade of C or higher is obtained prior to enrolling in any course for which such courses are prerequisite. To transfer bioengineering course credits, the limitation on the number of times a course can be repeated is three.

Students who do not meet these criteria will be reviewed and considered on individual merits for admission into the BE Intended (or Pre) Major.

Prior to advising, a transfer student should present to an undergraduate advisor a transcript (official or copy) from each school previously attended. Only the equivalent courses in a program accredited by ABET or equivalent freshman and sophomore courses accepted by the department can be counted toward a degree in Biomedical Engineering. To be acceptable as an equivalent course, it must be equivalent to our corresponding course in credit value and course content. Junior and senior level courses taken at a college or university which does not have a Bioengineering program accredited by ABET cannot be used to satisfy the requirements for a degree in Biomedical Engineering.

A student in the Department of Bioengineering at UT Arlington who wishes to enroll in courses at another college or university for transfer credit toward a degree in Biomedical Engineering should, first, consult with an undergraduate advisor to verify that the course credits can be used in the student's Biomedical Engineering degree plan.

Competence in Oral Communication and Computer Use

Completion of COMS 2302 PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING, with a grade of C or better, is required to earn a degree in Biomedical Engineering. Also, successful completion of COMS 2302 PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING meets the University's oral communication requirement.

All Bioengineering students are required to complete BE 1105 MEDICAL APPLICATIONS OF ENGINEERING, and BE 1325 INTRODUCTION TO BIOENGINEERING with a grade of C or better in each. Successful completion of these courses satisfies the University's computer proficiency requirement.

Bioengineering Degree Programs at UT Arlington

At the undergraduate level, the department offers a Bachelor of Science in Biomedical Engineering degree with two concentrations for the undergraduate program:

1. Biomaterials and Tissue Engineering and,
2. Medical Imaging.

Descriptions of BE degree options are available in the BE Advising Office. All degree options are designed to provide a strong foundation in science, mathematics, and engineering science; technical competence in multiple areas of Bioengineering practice; and an understanding of the importance of ethics, safety, professionalism, and socioeconomic concerns in resolving technical problems through synthesis, planning, and design. Elements of design are introduced at the freshman level. This is followed by an analysis and design component in professional program courses, culminating in a comprehensive design experience.

At the graduate level, the Master of Engineering, Master of Science, and Doctor of Philosophy degrees are offered. Graduate bioengineering degrees are concentrated in one of the areas of specialization available within the department: Bioinstrumentation, Biomaterial/Tissue Engineering, Biomechanics/Orthopedics, Medical Imaging, or Protein Engineering (Doctor of Philosophy only)

The Department of Bioengineering has active student chapters associated with the Biomedical Engineer Student Society (BMESS). Students are encouraged to participate in the activities of the organization. Membership is by election and is limited to students in the upper third of the junior and senior classes who satisfy other requirements listed in the society's bylaws.

Fast Track Program for a Master of Science in Biomedical Engineering and a Bachelor of Science in Biomedical Engineering

The Fast Track Program enables outstanding UT Arlington senior undergraduate students in Biomedical engineering program to satisfy degree requirements leading to a master's degree in Biomedical Engineering while completing their undergraduate studies.

When students with Biomedical Engineering major are within 30 hours of completing their undergraduate degree requirements, they may take up to 9 hours of graduate level coursework approved by the program to satisfy both undergraduate and graduate degree requirements. In the limiting case, a student completing the maximum allowable hours (9) while in undergraduate status would have to take only 21 additional hours to meet the minimum requirements for graduation in a 30-hour thesis-substitute master's degree program. Students pursuing a thesis master's degree program would have to take 15 additional hours of coursework and to complete 6 hours of Master Thesis with a P grade at the graduating semester.

Students interested in this program should consult with Bioengineering Advisors when they are within 30 hours of completing their bachelor's degrees.

They must have completed at least 30 hours of relevant course work at UT Arlington, achieving a GPA of at least 3.0 in those courses, and have an overall GPA of 3.0 or better in all UT Arlington College of Engineering courses. Additionally, they must have completed a set of specified undergraduate foundation courses with a minimum GPA of 3.3 in those courses. Contact Bioengineering Advisors for more information about the program.

Fast Track Programs for a Master of Science in Biomedical Engineering and a Bachelor of Science in Physics, Biochemistry or Mathematics

The Department of Bioengineering also offers Fast Track dual degree program in collaboration with the Chemistry and Biochemistry, Physics, and Mathematics departments at UT Arlington. These programs offer the interested students an opportunity to earn a Master's Degree in Biomedical Engineering (MS) and a Bachelor of Science Degree in Biochemistry, Physics, or Mathematics. The Fast Track Program enables outstanding senior undergraduate students in Physics, Biochemistry or Mathematics to receive dual undergraduate and graduate course credits leading to receiving both a Bachelor of Science Degree in either Physics, Biochemistry, or Mathematics and a Master's Degree in Biomedical Engineering. See the departmental advisors for additional information on these programs.

Students interested in this program should consult with Bioengineering Advisors when they are within 30 hours of completing their bachelor's degrees.

They must have completed at least 30 hours of relevant course work at UT Arlington, achieving a GPA of at least 3.0 in those courses, and have an overall GPA of 3.0 or better in all UT Arlington College of Science courses. Additionally, they must have completed a set of specified undergraduate foundation courses with a minimum GPA of 3.3 in those courses. Contact Bioengineering Advisors for more information about the program.

Emphasis in Bioengineering

Undergraduate students in other engineering or science disciplines may develop a fundamental knowledge of the field of bioengineering. Student having permission from their department's undergraduate advisor may enroll in the courses listed below and obtain an emphasis in bioengineering. Ordinarily, the student will take these courses as technical elective, free electives and science electives. Interested students should contact the undergraduate advisor of the Department of Bioengineering for additional information.

Elective courses for students who wish to obtain an emphasis in bioengineering:

BE 1325	INTRODUCTION TO BIOENGINEERING	3
BE 3380	HUMAN PHYSIOLOGY IN BE	3
BE 4382	LABORATORY PRINCIPLES	3

At the graduate level, the Department of Bioengineering offers a program of studies leading to masters and doctoral degree in Biomedical Engineering.

Combined Degree Plan: Bachelor of Science in Biology and Master of Science in Biomedical Engineering

This five-year curriculum prepares students for careers in the fast growing biotechnology and bioengineering industries. The curriculum also prepares students for medical school and advanced study. Students are required to take courses from engineering, life sciences and liberal arts, culminating in a five-year Master of Science Degree in Biomedical Engineering and a Bachelor of Science Degree in Biology. The curriculum is offered jointly by the College of Engineering and the College of Science. In this program, two areas of emphasis are offered: Medical Imaging, and Biomaterials and Tissue Engineering.

Description

Bioengineers use quantitative methods and innovation to analyze and to solve problems in biology and medicine. Students choose the bioengineering field to be of service to people, to partake in the excitement of working with living systems, and to apply advanced technology to complex problems of medical care.

Through this program, students learn the essentials of life science, engineering theory, and the analytical and practical tools that enable them to be successful in the biotechnology and bioengineering industries. The program includes course work in the basic sciences, core engineering, biomedical engineering, and advanced biotechnology disciplines. Both didactic classroom lectures and hands-on laboratory experience are emphasized. Additionally, students are required to take general educational courses in literature, fine arts, history, political science, and social science.

Career Opportunities

The program prepares students as bioengineers for careers in industry, in hospitals, in research facilities of educational and medical institutions, and in government regulatory agencies. It also provides a solid foundation for those wishing to continue for advanced degrees. For those planning to pursue a medical degree, this cross-disciplinary curriculum offers a solid foundation in engineering, which is an advantage in preparing for a medical career.

Requirements

Regardless whether a student chooses Medical Imaging or Biomaterials and Tissue Engineering emphasis, after completion of 120 semester credit hours of the undergraduate courses from the list for the emphasis (below) and prior to taking any graduate course, the student must apply to the UT Arlington Graduate School for admission to the Bioengineering Department. A minimum grade point average of 3.0 in the 120 semester credit hours as well as a minimum average of 3.0 in the required English courses and a minimum average of 3.0 in the required Mathematics courses is required for admission to the Bioengineering Department.

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
Total Hours		20

The student should also submit two letters of recommendation, one from the Bioengineering five-year program advisor or a faculty member and one from the Biology undergraduate advisor.

Medical Imaging Emphasis Courses

Pre-Professional Courses

Recommended Core Requirements

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
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CHEM 1441	GENERAL CHEMISTRY I	4
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3

A course on Creative Arts chosen by the student.

3

A course on Language, Philosophy, & Culture chosen by the student.

3

A course on Social and Behavioral Sciences chosen by the student.

3

Program Requirements

BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3301	CELL PHYSIOLOGY	3
BIOL 3312	IMMUNOLOGY	3
BIOL 3315	GENETICS	3
BIOL 4365	TISSUE ENGINEERING LAB	3
BIOL 5314	BIOMETRY	3
CHEM 1442	GENERAL CHEMISTRY II	4
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	3
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 4311	BIOCHEMISTRY I	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3

Professional Courses

Core Engineering

BE 2315	INTRODUCTORY COMPUTATIONAL TOOLS FOR BIOENGINEERS	3
EE 2347	MATHEMATICAL FOUNDATIONS OF ELECTRICAL ENGINEERING	3
EE 2440	CIRCUIT ANALYSIS WITH LAB	4
EE 3318	ANALOG AND DIGITAL SIGNAL PROCESSING	3
EE 3407	ELECTROMAGNETICS	4
MAE 3319	DYNAMIC SYSTEMS MODELING AND SIMULATION	3

Bioengineering

BE 1325	INTRODUCTION TO BIOENGINEERING	3
BE 3317	LINEAR SYSTEMS IN BIOENGINEERING	3
BE 3344	BIOINSTRUMENTATION	3
BE 5309	HUMAN PHYSIOLOGY IN BIOENGINEERING	3
BE 5325	FLUORESCENCE MICROSCOPY	3
BE 5326	TISSUE ULTRASOUND OPTICAL IMAGING	3
BE 5327	TISSUE OPTICS	3
BE 5343	IMAGE PROCESSING WITH MATLAB: APPLICATIONS IN MEDICINE AND BIOLOGY	3
BE 5346	MEDICAL IMAGING	3
BE 5347	PRINCIPLES OF FUNCTIONAL MAGNETIC RESONANCE IMAGING	3
BE 5352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	3
BE 5324	BIOMEDICAL OPTICS LABORATORY	3

BE 5382	LABORATORY PRINCIPLES	3
Total Hours		157

Biomaterials and Tissue Engineering Emphasis Courses

Pre-Professional Courses

Recommended Core Requirements

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
A course on Creative Arts chosen by student.		3
A course on Language, Philosophy, & Culture chosen by the student.		3
A course on Social and Behavioral Sciences chosen by the student.		3

Program Requirements

BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 3301	CELL PHYSIOLOGY	3
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3312	IMMUNOLOGY	3
BIOL 3315	GENETICS	3
BIOL 4329	NEURAL ENGINEERING	3
BIOL 4365	TISSUE ENGINEERING LAB	3
BIOL 5314	BIOMETRY	3
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 4311	BIOCHEMISTRY I	3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3

Professional Courses

Core Engineering

BE 2315	INTRODUCTORY COMPUTATIONAL TOOLS FOR BIOENGINEERS	3
EE 2320	CIRCUIT ANALYSIS	3
MAE 3310	THERMODYNAMICS I	3

Bioengineering

BE 1325	INTRODUCTION TO BIOENGINEERING	3
BE 3317	LINEAR SYSTEMS IN BIOENGINEERING	3
BE 3320	MEASUREMENT LABORATORY	3
BE 4312	TISSUE BIOMECHANICS AND BIOENGINEERING	3
BE 4331	BIOPOLYMERS AND BIOCOMPATIBILITY	3
BE 4333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION	3
BE 5309	HUMAN PHYSIOLOGY IN BIOENGINEERING	3

BE 5310	BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LAB	3
BE 5337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	3
BE 5352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	3
BE 5364	TISSUE ENGINEERING LECTURE	3
BE 5372	DRUG DELIVERY	3
BE 5382	LABORATORY PRINCIPLES	3
Three BE Electives (approved by 5 year advisor)		9
Total Hours		158

Civil Engineering

Undergraduate Degree

- Bachelor of Science in Architectural Engineering (p. 476)
- Bachelor of Science in Civil Engineering (p. 489)
- Bachelor of Science in Construction Management (p. 509)

Graduate Degrees

- Civil Engineering, M.Engr. (p. 484)
- Civil Engineering, M.Engr. Fast Track (p. 484)
- Civil Engineering, M.S. (p. 484)
- Civil Engineering, Ph.D. (p. 484)
- Construction Management, M. (<http://catalog.uta.edu/engineering/civil/construction/>)

COURSES

CE 1000. FRESHMAN UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 1105. INTRODUCTION TO CIVIL ENGINEERING. 1 Hour.

Introduction to basic civil engineering practice. There are several writing assignments and an oral presentation. Use of spreadsheet and word processor software in solving civil engineering problems and presenting solutions. Professional engineering licensure and the various specializations within civil engineering are covered.

CE 1252. COMPUTER TOOLS - AUTOCAD. 2 Hours.

Introduction to computer aided design, using AutoCAD. Creation of precise two-and/or three- dimensional engineering drawings and solid models. Prerequisite: Grade of C or better in MATH 1421; or concurrent enrollment in:(1) MATH 1426 or 2) HONR-SC 1426.

CE 1353. INTRODUCTION TO COMPUTER AIDED DESIGN TOOLS IN CIVIL ENGINEERING. 3 Hours.

An introduction to computer aided design using AutoCAD interface built in Civil 3D. Students will be taught CAD commands, tools, 2D drawing objects, multi-view drawing, layer management, linetypes, object snap, polar tracking, and annotation. Civil 3D concepts and essential functions for creating, designing, and analyzing civil engineering drawings will be covered. Prerequisite: Grade of C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment).

CE 2000. SOPHOMORE UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 2152. COMPUTER TOOLS - MATHCAD. 1 Hour.

Introduction to computer aided mathematics, using Mathcad. Solution of engineering problems involving systems of simultaneous linear and nonlinear equations and elementary calculus, use of the tools for visualization. Prerequisite: Grade of C or better in PHYS 1443.

CE 2153. COMPUTER TOOLS - CIVIL 3D. 1 Hour.

Introduction to civil engineering construction documentation and building information modeling (BIM) using AutoCAD Civil 3D. Prerequisite: CE 1252.

CE 2191. PROBLEMS IN CIVIL ENGINEERING. 1 Hour.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore classification in civil engineering.

CE 2221. DYNAMICS. 2 Hours.

Planar and spatial kinematics and kinetics of particles and rigid bodies utilizing Newton's Laws of Motion, the principle of work and energy, and the principle of impulse and momentum; introduction to single degree of freedom vibration. Prerequisite: Grade of C or better in CE 2311; grade of C or better in MATH 2425.

CE 2291. PROBLEMS IN CIVIL ENGINEERING. 2 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore classification in civil engineering.

CE 2300. INTRODUCTION TO SUSTAINABLE ENGINEERING. 3 Hours.

Introduction to key sustainability concepts and challenges. The engineering design process and consideration of sustainability. Techniques for generating creative and innovative alternative solutions to sustainability problems. Use of life cycle assessment to quantify environmental, economic, and social impacts of various alternatives. Methods to incorporate life cycle assessment into alternatives evaluation. Case study project.

CE 2311. STATICS. 3 Hours.

Vector algebra; composition and resolution of forces; equivalence of force couple systems; equilibrium of force systems acting on particles, and force - couple systems acting on rigid bodies, and systems of rigid bodies; internal forces in rigid bodies; shear and moment diagrams; centroids and moments of inertia; frictional forces. Prerequisite: Grade of C or better in PHYS 1443.

CE 2312. STATICS AND DYNAMICS FOR NON-CE MAJORS. 3 Hours.

Principles of forces and force systems, resultants and components of force systems, forces due to friction, condition of equilibrium, forces acting on members of trusses and frame structures, centroids and moments of inertia, review of kinematics and kinetics of particle motion, and two-dimensional motion of rigid bodies. CE 2312 cannot be substituted for CE 2221 and CE 2311. Prerequisite: PHYS 1443 and MATH 2425 or concurrent enrollment.

CE 2313. MECHANICS OF MATERIALS I. 3 Hours.

Concepts of stress and strain; stress-strain relationships. Behavior of members subjected to tension, compression, shear, bending, torsion, and combined loading. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: Grade of C or better in CE 2311; Grade of C or better in MATH 2425.

CE 2331. ENGINEERING MEASUREMENT AND COMPUTER MODELING. 3 Hours.

Principles and theories of physical measurements of spatial quantities; the use of surveying instruments; introduction to engineering using computer modeling programs; and organization and programming for computer solutions. Prerequisite: Grade of C or better in CE 1252.

CE 2391. PROBLEMS IN CIVIL ENGINEERING. 3 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CE 3000. JUNIOR UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 3131. ENVIRONMENTAL ANALYSIS. 1 Hour.

Laboratory examinations of water, wastewater, and air. Water and air quality parameters and their significance. Sources and types of pollutants and their effects. Prerequisite: Concurrent enrollment in CE 3334 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3142. APPLIED FLUID MECHANICS LAB. 1 Hour.

Fluid flow measurements studied by means of performed laboratory experiments and/or digital computer programming of relevant equations. Prerequisite: Concurrent enrollment in CE 3342 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3143. PROPERTIES AND BEHAVIOR OF SOILS. 1 Hour.

An introduction to determination of civil engineering properties of soil and their behavior, identification, grain size analysis, Atterberg limits, compaction, permeability, consolidation, and shear strength. Also an introduction to sampling of soil materials. Prerequisite: Concurrent enrollment in CE 3343 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3161. CIVIL ENGINEERING MATERIALS LABORATORY. 1 Hour.

Various properties and behavior of civil engineering materials are investigated by laboratory experimentation. Prerequisite: Concurrent enrollment in CE 3261 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3210. CIVIL ENGINEERING COMMUNICATIONS. 2 Hours.

Technical writing, oral communication, professional presentations, and other related topics. Prerequisite: Grade of C or better in COMS 2302 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3253. APPLICATIONS OF COMPUTER-BASED DESIGN PROGRAMS IN CIVIL ENGINEERING. 2 Hours.

Applications of computer-based design programs including AutoCAD Civil 3D in civil engineering projects. Prerequisite: Grade of C or better in CE 1353 and CE 2331, and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3261. PROPERTIES AND BEHAVIOR OF CIVIL ENGINEERING MATERIALS. 2 Hours.

The nature and properties of materials used in civil engineering such as structural metals, concrete, timber, and bituminous materials. The engineering application and performance of materials are emphasized. Prerequisite: Grade of C or better in either CHEM 1465 or CHEM 1442; Grade of C or better in CE 2313; concurrent enrollment in CE 3161 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3301. STOCHASTIC MODELS FOR CIVIL ENGINEERING. 3 Hours.

Basic theory of probability and statistics with practical applications to civil and environmental engineering problems. Emphasis on sampling, distribution functions, tests of significance, and regression modeling. Prerequisite: Grade of C or better in MATH 2425; Permission of the CE Chair or Admission to the CE Professional Program.

CE 3302. TRANSPORTATION ENGINEERING. 3 Hours.

Planning, design, and operation of transportation facilities. Characteristics of vehicle movement; basic geometric design of highways; traffic flow relations in traffic streams; highway capacity; traffic engineering; and procedures for transportation planning. Prerequisite: Grade of C or better in CE 2331; and Grade of C or better in either CE 3301 or IE 3301 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3305. BASIC FLUID MECHANICS. 3 Hours.

Fundamentals of fluid statics, kinematics of fluid flow, fluid energy, fluid forces, similitude, and dimensional analysis. Related to steady flow of incompressible fluids in confined and free surface systems. Prerequisite: Grade of C or better in CE 2311; Grade of C or better in MATH 3319 or concurrent enrollment; Permission of the CE Chair or Admission to the CE Professional Program.

CE 3311. CONSTRUCTION ENGINEERING. 3 Hours.

Principles of construction engineering and the project management process, value engineering, specifications, different construction contracts and delivery methods, estimating and scheduling fundamentals and project control, and management of construction process. Prerequisite: Grade of C or better in IE 2308 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3328. WATER SYSTEM DESIGN. 3 Hours.

Hydraulic/hydrologic analysis and design of municipal water distribution, stormwater collection, and wastewater collection systems. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 3334. PRINCIPLES OF ENVIRONMENTAL ENGINEERING. 3 Hours.

Physical, chemical, and biological unit operations and processes in an air, water, and land environment. Prerequisites: Grade of C or better in CHEM 1465 or CHEM 1442; Grade of C or better in CE 3305; concurrent enrollment in CE 3131 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3341. STRUCTURAL ANALYSIS. 3 Hours.

Structural analysis/design process, structural forms, and basic structural elements. Analysis of statically determinate structures including beams, trusses, frames, and composite structures, shear and moment diagrams, influence lines, and moving loads. Methods to compute deflections including double integration, moment area, and virtual work. Methods of analysis for statically indeterminate structures including consistent deformation, slope deflection and moment distribution. Use of structural analysis programs. Prerequisite: Grade of C or better in CE 2313 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3342. WATER RESOURCES ENGINEERING. 3 Hours.

Hydrologic cycle, precipitation, evapotranspiration, water budget, rainfall-runoff, hydrograph, reservoir and streamflow routing, groundwater flow, catchment hydrology, probability concepts in design, hydrologic modeling, open channel and pipe network hydraulics, pumps, urban stormwater drainage. Prerequisite: Grade of C or better in CE 3301; grade of C or better in CE 3305; concurrent enrollment in CE 3142 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3343. SOIL MECHANICS. 3 Hours.

An introduction to the significant geophysical and soil science properties and behavior of materials making up the earth's crust as they apply to civil engineering, sources of materials, classification, plasticity, permeability, stress distribution, consolidation, shear strength, and settlement. Also an introduction to basic foundation engineering concepts. Prerequisite: Grade of C or better in CE 2313; concurrent enrollment in CE 3143 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3347. REINFORCED CONCRETE DESIGN. 3 Hours.

An analysis, design and synthesis course for concrete structures, emphasizing strength design method. Topics include strength and serviceability requirements, design of one way slabs, rectangular beams, flanged sections and columns, for strength, shear, bond, bearing, and serviceability. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in CE 3341 and admission to the CE Professional Program.

CE 3361. PROPERTIES & BEHAVIOR OF CIVIL ENGINEERING MATERIALS. 3 Hours.

The nature and properties of materials used in civil engineering such as structural metals, concrete, timber, and bituminous materials. The engineering application and performance of materials are emphasized. Laboratory experimentation is also used to investigate properties and behavior of civil engineering materials. Prerequisite: Grade of C or better in CE 2313; Grade of C or better in either CHEM 1465 or CHEM 1442; Permission of the CE Chair or Admission to the CE Professional Program.

CE 4000. SENIOR UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 4191. PROBLEMS IN CIVIL ENGINEERING. 1 Hour.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore standing in civil engineering.

CE 4291. PROBLEMS IN CIVIL ENGINEERING. 2 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the department chairperson and sophomore standing in civil engineering.

CE 4300. ADVANCED TOPICS IN CIVIL ENGINEERING. 3 Hours.

Advanced topics of current interest in any one of the various fields of civil engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: changes with topic; consent of instructor required and Admission to the CE Professional Program.

CE 4301. ADVANCED TOPICS IN CIVIL ENGINEERING WITH LAB. 3 Hours.

Advanced topics of current interest in any one of the various fields of civil engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Changes with topic; Consent of instructor required and Admission to the CE Professional Program.

CE 4302. ADVANCED CONCRETE MATERIALS. 3 Hours.

Providing a practical understanding of design and characterization of advanced concrete materials, this course is intended for graduate and senior undergraduate students who want to advance their knowledge in new concepts of materials in construction. Topics include the study of properties at the nanoscale and how they affect the material's properties at the macro level. Lectures will focus on the advances in the design and technology of cement based materials, with particular emphasis on the evolution of nanotechnology in construction. Prerequisite: Grade of C or better in CE 3361 and admission to the CE Professional Program.

CE 4303. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CE 5342. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4304. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both CE 4304 and CE 5378. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4305. TRENCHLESS TECHNOLOGY METHODS. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4306. INFRASTRUCTURE ASSET MANAGEMENT. 3 Hours.

Infrastructure inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations and case studies. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4307. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both CE 4307 and CE 5382. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4308. TEMPORARY STRUCTURES. 3 Hours.

Analysis and design of temporary structures. Topics include loads on temporary structures, shoring, formwork, falsework, scaffolding, bracing, soldier beam and lagging, sheet piling, equipment bridges, and support of existing structures. Prerequisite: Grade of C or better in CE 3341 and CE 3343; Admission to the CE Professional Program.

CE 4310. SYSTEM EVALUATION IN CIVIL ENGINEERING. 3 Hours.

Techniques necessary to perform economic and multi-criteria evaluations of civil engineering projects. These will be used to assess the strengths and weaknesses of different decision-making strategies and analyze contemporary topics and case studies in making civil engineering decisions. Prerequisite: Grade of C or better in IE 2308; Grade of C or better in CE 3301.

CE 4311. URBAN TRANSPORTATION INFRASTRUCTURE PLANNING. 3 Hours.

Urban transportation system design, planning, transportation modeling, economic theory, travel demand and travel estimation techniques. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4312. STREET AND HIGHWAY DESIGN. 3 Hours.

The geometric design concepts for urban and rural roadways. Consideration of vehicle and road user characteristics in roadway design, including horizontal and vertical alignments, intersections, interchanges, and roadway cross-section and right-of-way considerations. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4313. TRAFFIC ENGINEERING. 3 Hours.

Design and control of fixed-time, actuated, and computer-controlled traffic signals; optimization of traffic flow at intersections; capacity analysis of intersections, legal requirements and traffic studies for installation of traffic control devices; characteristics of signs, signals, and markings; traffic laws. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4314. INTRODUCTION TO RAILROAD ENGINEERING. 3 Hours.

Overview of the railroad industry in the United States; structure of track, base, and foundation; drainage, railroad structures (bridges and retaining walls); geometric design; communications and signaling; maintenance. Credit not granted for both CE 4314 and CE 5334. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4320. EARTH STRUCTURES DESIGN. 3 Hours.

Study of the states of stress and analysis/design techniques associated with cuts, fills, and retaining structures. Includes slope stability, conventional and reinforced earth retaining walls, excavation bracing, and sheet pile wharf structures. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4321. FOUNDATION ENGINEERING. 3 Hours.

Aspects of design and construction considerations for all types of foundation systems in most soil/rock support conditions, interactions between soils and structures, bearing capacity theories, consolidation, shrink-swell, and settlement. Numerical analyses of design are applied to most of the situations. Prerequisite: Grade of C or better in both CE 3341 and CE 3343 and Admission to the CE Professional Program.

CE 4322. APPLICATIONS WITH GEOSYNTHETICS. 3 Hours.

Definitions and properties of geotextiles, geogrids, geonets, geocomposites and geomembranes; reinforcement design applications in rigid and flexible pavements, foundations, embankments, slopes and retaining walls; drainage and filtration application designs, AASHTO design criteria; construction methods. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4323. LANDFILL DESIGN. 3 Hours.

Introduction and types of landfills, landfill site selection, siting and configuration, compacted and geosynthetic clay liners, final cover design, landfill settlement and slope stability, post closure uses of landfills, leachate and gas generation, collection and removal system, bioreactor landfills and future trends. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4324. MECHANICS OF MATERIALS II. 3 Hours.

Theories of stress and deformation, stress-strain tensors, stress and strain relationships, stresses due to various loading conditions, theories of failure, energy methods, shear-center, unsymmetrical bending, curved beams, torsion in closed and open cell cross-sections and buckling analysis. Prerequisite: Grade of C or better in CE 2313 and Admission to the CE Professional Program.

CE 4325. FUNDAMENTALS OF FINITE ELEMENT METHOD. 3 Hours.

Stiffness method using basic equations and virtual work; element equations using shape functions for axial, beam, frame, two dimensional elements; stiffness methods for three dimensional structures. Flexibility method; finite elements modeling and optimization of idealized structures. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4326. GIS/HYDROLOGIC AND HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS-developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, and the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4327. SITE REMEDIATION ENGINEERING. 3 Hours.

This course provides practical understanding of the engineering principles and practices associated with the characterization and remediation of contaminated sites. Methods for site characterization and risk assessment will be highlighted while the emphasis will be on remedial action screening processes and technology principles and conceptual design. In-situ and ex-situ treatment processes will be covered, including unit operations, coupled processes, and complete systems within the context of community implementation. Case studies with focus on developing communities will be used and computerized tools for process selection and design will be presented. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4330. HYDRAULIC DESIGN. 3 Hours.

Design methods for appurtenances of water conveyance systems under open channel and pressure flow conditions. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4332. CONSTRUCTION EQUIPMENT, METHODS, & MANAGEMENT. 3 Hours.

Introduction to the construction industry and the methods, equipment, and management techniques used. Topics include equipment operating characteristics, underground construction, job site safety, and field management. Credit not granted for both CE 4332 and CE 5344. Prerequisite: Grade of C or better in CE 3311 and Admission to the CE Professional Program.

CE 4335. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics; interpretation of geotechnical reports; site preparation; ground improvement; excavation including supports and dewatering; foundations including consideration of deep foundations and expansive soils; tunneling in soils and rock. Prerequisite: Grade of C or better in CE 3343 and admission to the CE Professional Program.

CE 4336. HOT MIX ASPHALT DESIGN & CONSTRUCTION. 3 Hours.

An in-depth study of the properties of constituent materials for asphalt concrete mixtures. Design methods for Hot-Mixes Asphalt (HMA) and Stone Matrix Asphalt (SMA). Theory and practice of asphalt concrete mix for pavements, including specifications and construction methods for hot-mix asphalt and surface treatments. Maintenance and rehabilitation of flexible pavements. Relationships of material engineering properties to pavement design and performance. Prerequisites: Grade of C or better in CE 3361 and Admission to the CE Professional Program.

CE 4337. PORTLAND CEMENT CONCRETE PAVEMENTS. 3 Hours.

Portland cement concrete mix design and production. Paving operations. Saw and seal operations. Subgrade preparation. Base selection. Drainage selection, design and construction. Bonded and unbonded concrete overlays. Whitetopping and Ultra-Thin Whitetopping. Concrete pavement restoration; Quality Assurance and Quality Control in Concrete Pavement Construction. Prerequisite: Grade of C or better in CE 3361 and Admission to the CE Professional Program.

CE 4348. STRUCTURAL DESIGN IN STEEL. 3 Hours.

A design synthesis course for structural steel structures using Allowable Strength Design and Load Resistance Factor Design. Topics include tension members, compression members, flexural members and simple connections. Building codes, American Institute of Steel Construction (AISC) specs, material specs, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4350. INTRODUCTION TO AIR POLLUTION. 3 Hours.

An introduction to the air pollution field, including: pollutant types, sources, effects; atmosphere and basic calculations; emission estimates; Clean Air Act; dispersion modeling; air pollution reduction strategies. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4351. PHYSICAL UNIT PROCESSES. 3 Hours.

Principles of unit process modeling using reactor and kinetic theory, and theory and design of mixing, mass transfer, flocculation, sedimentation, filtration, and gas transfer. Prerequisite: Grade of C or better in both CE 3131 and CE 3334 and Admission to the CE Professional Program.

CE 4352. PROFESSIONAL PRACTICE. 3 Hours.

Professional practice issues in the private and public sector are addressed by visiting practitioners. Topics include project management, teamwork, obtaining work, regulatory requirements, specifications, issues in design/build, design alternatives, cost estimation, design and construction drawings, contract and construction law, legal issues, ethics and professionalism, design reports, licensure, lifelong learning, ethical and engineering practice organizations. Learning principles of engineering practice by working as a team is emphasized. Oral and written presentations are required. Prerequisites: Grade of C or better in CE 3210 and CE 3311 and Admission to the CE Professional Program.

CE 4353. WATER CHEMISTRY. 3 Hours.

Principles of water chemistry applied to the theory and design of unit processes including coagulation, precipitation, corrosion, oxidation-reduction, and membrane processes. Prerequisites: Grade of C or better in both CE 3334 and CE 3131 and Admission to the CE Professional Program.

CE 4354. INTRODUCTION TO SOLID WASTE ENGINEERING. 3 Hours.

This course provides an overview of the various aspects of integrated municipal solid waste management (with the exception of landfilling, covered in CE 4323). Topics covered include waste generation, characterization, and collection; source reduction; waste processing; design of facilities for materials recovery (recycling centers) and energy recovery (combustors and anaerobic digesters); life cycle analysis of solid waste management facilities; case study project. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4355. DESIGN OF WATER AND WASTEWATER TREATMENT FACILITIES. 3 Hours.

Design of facilities commonly used in water and wastewater treatment plants including pumps, pipelines, channels, flow measurement and control devices, screens, grit removal, mixing, sludge removal, aeration equipment, and chemical feed and storage. Materials of construction, process control interface, and operation and maintenance factors are also discussed. Prerequisite: Grade of C or better in both CE 3334 and CE 3142 and Admission to the CE Professional Program.

CE 4356. ADVANCED STEEL DESIGN. 3 Hours.

Covers torsional design of beams, beams with web holes, composite design of beams, lateral-torsional buckling of beams, plate buckling, column design and behavior, frame stability, bracing requirements for compression members. Prerequisite: CE 4348 and Admission to the CE Professional Program.

CE 4357. INTRODUCTION TO BIOLOGICAL WASTEWATER TREATMENT SYSTEMS. 3 Hours.

Basic understanding of biological processes used in water quality control and to show how theoretical concepts can be applied in a practical design. The course will include a discussion of the theory, design, and operation of biological systems used for water and wastewater treatment. Credit is not granted for both CE 4357 and CE 5325. Prerequisite: Grade of C or better in CE 3334 and CE 3131; Admission to the CE Professional Program.

CE 4358. OPEN CONDUIT SYSTEM. 3 Hours.

Non-pressure conduit and channel flow, surface profiles, steady and gradually varied flow, hydraulic jumps, and specific energy. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4360. DESIGN OF STRUCTURAL MASONRY. 3 Hours.

Covers masonry unit types and mortar types, reinforcing and connections. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building Codes, Masonry Standards Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4361. ADVANCED REINFORCED CONCRETE DESIGN. 3 Hours.

Advanced topics on structural design of concrete structures. Topics include slender columns, shear walls, torsion, deep beams, brackets, retaining walls, strut and tie model for shear torsion, two-way slabs, and shear friction. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in CE 4347 and Admission to the CE Professional Program.

CE 4363. FUNDAMENTALS OF PRESTRESSED CONCRETE. 3 Hours.

Introduction to pre-tensioned and post-tensioned concrete structures, bonded and unbonded constructions, hardware, stress calculations, section proportioning, flexural design, shear design, prestress losses, deflections, allowable stress, load-balancing, and ultimate strength, design/analysis methods, including: partially prestressed systems shear design, analysis and design of composite beams, design of prestressed concrete bridges. Both American Concrete Institute (ACI-318) and American Association of State Highway and Transportation Officials (AASHTO-LRFD) provisions will be discussed. Prerequisite: Grade of C or better in CE 4347 and Admission to the CE Professional Program.

CE 4365. STRUCTURAL WOOD DESIGN. 3 Hours.

Covers material grade and properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and diaphragms. Building codes, National Design Specification for Wood Construction (NDS) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4366. FUNDAMENTALS OF FIBER REINFORCED COMPOSITES. 3 Hours.

Introduction to basic analysis, design and manufacture of composite materials for engineered structures. Fiber materials, tapes, cloths, resin system, elastic constants, matrix formulation, theory of failure. The course will also cover an introduction to design with composites, preliminary design, optimization, processing variables, product design. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4368. ADVANCED STRUCTURAL ANALYSIS. 3 Hours.

Advanced analysis of indeterminate beams, frames, trusses, arches, and cables. Credit will not be granted for both CE 5351 and CE 4368. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4369. LOADS ON STRUCTURES. 3 Hours.

Structural analysis of structures under gravity and lateral loads, emphasizing the logical reasoning process of analysis, synthesis and design. Use of recommended practice documents and commercial structural and mathematical software will assist in providing insight and understanding of load requirements, structural behavior and analysis tools. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4383. SENIOR PROJECT. 3 Hours.

Planning, analysis of alternatives, and designs of selected projects that cross various civil engineering disciplines, and include engineering standards and multiple realistic constraints. Application of computer-aided engineering in analysis and design. A final oral presentation and written report that presents pros and cons of alternative solutions, application of engineering standards and multiple realistic constraints are required. A team approach is emphasized. Prerequisite: Grade of C or better in CE 4352; Completion of all required 3000 level courses.

CE 4391. PROBLEMS IN CIVIL ENGINEERING. 3 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CE 4393. INDUSTRIAL INTERNSHIP. 3 Hours.

Student to experience industrial internship under supervision of an industrial mentor and internship committee. May not be repeated for credit. Credit not granted for both CE 4393 and CE 4394. Prerequisite: Completion of all required 3000 level courses and admission to the CE Professional Program.

CE 4394. RESEARCH INTERNSHIP. 3 Hours.

Student to experience research internship under supervision of a CE faculty. May not be repeated for credit. Credit not granted for both CE 4393 and CE 4394. Prerequisite: Completion of all required 3000 level courses and admission to the CE Professional Program.

CE 5191. ADVANCED STUDIES IN CIVIL ENGINEERING. 1 Hour.

Individual studies of advanced topics under the supervision of a professor or professors. Prerequisite: consent of instructor.

CE 5300. TOPICS IN CIVIL ENGINEERING. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: consent of instructor.

CE 5301. TOPICS IN CIVIL ENGINEERING WITH LAB. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: Consent of instructor.

CE 5302. ADVANCED CONCRETE MATERIALS. 3 Hours.

Providing a practical understanding of design and characterization of advanced concrete materials, this course is intended for graduate and senior undergraduate students who want to advance their knowledge in new concepts of materials in construction. Topics include the study of properties at the nanoscale and how they affect the material's properties at the macro level. Lectures will focus on the advances in the design and technology of cement based materials, with particular emphasis on the evolution of nanotechnology in construction. Prerequisite: CE 3361.

CE 5303. INTRODUCTION TO FINITE ELEMENT. 3 Hours.

Stiffness method using basic equations and virtual work; element equations using shape functions for axial, beam, frame, two dimensional elements; stiffness method for three dimensional structures. Flexibility method; finite element modeling and optimization of idealized structures. Credit not granted for both CE 4325 and CE 5303. Prerequisite: CE 3341.

CE 5304. LIGHT GAGE STEEL DESIGN. 3 Hours.

Covers structural design issues for cold formed steel structures. Includes initial buckling and post buckling, stiffened and unstiffened plate behavior, braced and unbraced beams, columns, connectors and shear diaphragms. Building codes, American Iron and Steel Institute (AISI) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: CE 4348 or CE 5306.

CE 5305. FIBER REINFORCED COMPOSITE DESIGN. 3 Hours.

Introduction to basic analysis, design and manufacture of composite materials for engineered structures. Fiber materials, tapes, cloths, resin systems, elastic constants, matrix formulation, theory of failure. The course will also cover an introduction to design with composites, preliminary design, optimization, processing variables, product design. Credit not granted for both CE 4366 and CE 5305. Prerequisite: CE 3341.

CE 5306. STRUCTURAL STEEL DESIGN. 3 Hours.

The basic design course for steel structures emphasizing Load Resistant Factor Design Method. Topics include tension members, compression members, flexural members, and simple connections. Building codes, American Institute of Steel Construction (AISC) specifications, material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4348 and CE 5306. Prerequisite: CE 3341.

CE 5307. STRUCTURAL TIMBER DESIGN. 3 Hours.

Covers material grade, properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and shear diaphragms. Building codes, National Design Specifications (NDS), material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4365 and CE 5307. Prerequisite: CE 3341.

CE 5308. STRUCTURAL MASONRY DESIGN. 3 Hours.

Covers masonry unit type and grades of mortar types, reinforcing and connectors. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building codes, Masonry Standard Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4360 and CE 5308. Prerequisite: CE 3341.

CE 5309. PRESTRESSED CONCRETE. 3 Hours.

Introduction to pre-tensioned and post-tensioned concrete structures, bonded and unbonded construction, hardware, stress calculations, section proportioning, flexural design, shear design, prestress losses, deflections, allowable stress, load-balancing, and ultimate strength design/analysis methods, including: partially prestressed systems shear design, analysis and design of composite beams, design of prestressed concrete bridges. Both American Concrete Institute (ACI 318-318) and American Association of State Highway and Transportation Officials Load and Resistance Factor Design (AASHTO LRFD) provisions will be discussed. Credit not granted for both CE 4363 and CE 5309. Prerequisite: CE 4347.

CE 5310. PLASTIC ANALYSIS AND DESIGN OF STRUCTURES. 3 Hours.

Behavior of structural members beyond elastic range; plastic analysis of steel and concrete members and framed structures; stepwise incremental load and mechanism methods; yield/failure mechanisms for various types of frames. Use of nonlinear structural analysis programs and design code provisions. Application to earthquake resistant design. Prerequisite: CE 4347 and CE 4348; or equivalent.

CE 5311. ADVANCED STEEL DESIGN I. 3 Hours.

Covers torsional design of beams, beams with web holes, composite design of beams, lateral-torsional buckling of beams, plate buckling, column design and behavior, frame stability, bracing requirements for compression members. Prerequisite: CE 4348 or CE 5306.

CE 5312. ADVANCED CONCRETE DESIGN I. 3 Hours.

Advanced topics on structural design of concrete structures. Topics include slender columns, shear walls, torsion, deep beams, brackets, retaining walls, strut and tie model for shear torsion, two-way slabs, and shear friction. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Credit not granted for both CE 4361 and CE 5312. Prerequisite: CE 4347.

CE 5313. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics and teaching of the foundation and underground excavation construction solely to graduate students specializing in construction engineering & management. Topics include interpretation of geotechnical reports, embankment construction, foundations on expansive soils, excavation supports, excavation dewatering, deep foundation construction, tunneling in soft ground as well as in soft/hard rock, and trenchless technology piping. Credit not granted for both CE 4335 and CE 5313. Prerequisite: CE 5379 and CE 5386.

CE 5314. ADVANCED STEEL DESIGN II. 3 Hours.

Covers structural design of beam columns and building connections. Rigid frame and multi-story building design issues. Building codes, American Institute of Steel Construction (AISC) specifications, and recommended practice documents. Prerequisite: CE 4348 or CE 5306.

CE 5315. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

Analysis of stresses and strains at a point, stress-strain relationships, stresses due to various loading conditions, theories of failure, energy methods, shear center, unsymmetrical bending, curved beams, torsion in closed and open cell cross-sections, principles of plastic analysis, and buckling analysis. Credit not granted for both CE 4324 and CE 5315. Prerequisite: CE 2313.

CE 5317. ENVIRONMENTAL ENGINEERING PROCESS AND ANALYSIS LAB. 3 Hours.

The course meets for 2 hours of lecture and 3 hours of lab each week. Lectures will cover advanced analytical procedures for the analyses of air, liquid, and other wastes, including optical, Chromatographic, electrical, and other instrumental methods of analysis. Lectures will also review the basics of physical/chemical processes. In the laboratory, students will demonstrate and analyze basic reactor types (CSTR, plug flow, and reactors in series) and treatment of contaminants, including gas transfer, adsorption, advanced oxidation processes, and membrane separation.

CE 5318. PHYSICAL-CHEMICAL PROCESSES I. 3 Hours.

Principles of unit process modeling using reactor and kinetic theory, theory and design of mixing, mass transfer, flocculation, sedimentation, filtration and gas transfer. Credit not granted for both CE 4351 and CE 5318. Prerequisite: CE 3131 and CE 3334; or consent of instructor.

CE 5319. PHYSICAL-CHEMICAL PROCESSES II. 3 Hours.

Principles of water chemistry applied to the theory and design of unit processes including coagulation, precipitation, corrosion, oxidation-reduction, and membrane processes. Credit not granted for both CE 4353 and CE 5319 Prerequisite: CE 3131 and CE 3334; or consent of instructor.

CE 5320. TEMPORARY STRUCTURES. 3 Hours.

Analysis and design of temporary structures. Topics include loads on temporary structures, shoring, formwork, falsework, scaffolding, bracing, soldier beam and lagging, sheet piling, equipment bridges, and support of existing structures. Prerequisite: CE 3341 and CE 3343.

CE 5321. ENGINEERING FOR ENVIRONMENTAL SCIENTISTS. 3 Hours.

Fundamental principles of engineering science applicable to the comprehension and design of engineered environmental systems. Includes water and air quality indices; kinetic and reactor theory; mass and energy balances; fluid system theory; and applications of physical, chemical and biological processes in the design of engineered environmental systems. May not be used to satisfy any of the requirements for a graduate degree in Civil Engineering. Prerequisite: PHYS 1441, CHEM 1442, and MATH 2425.

CE 5322. ADVANCED PHYSICAL-CHEMICAL PROCESSES. 3 Hours.

The course represents the fundamentals and applications of various advanced physical and chemical unit operations and processes for controlling drinking water quality. The course will cover 1) general overview on the standard, regulations, and goals of drinking water quality, 2) detailed discussion of the theory, design, and operation of advanced physical and chemical unit processes, including but not limited to, sorption, centrifugation, osmotic pressure, membrane separation, chemical oxidation and advanced oxidation, UV technology, and disinfection, and 3) post treatment issues. Prerequisites: CE 5318.

CE 5323. SUSTAINABLE ENGINEERING. 3 Hours.

Introduction to sustainability concepts and challenges through evaluation of case studies. The engineering design process and consideration of sustainability. Techniques for generating creative and innovative alternative solutions to sustainability problems. Training on Simapro software for life cycle assessment of environmental impacts. Evaluation of economic and social impacts of alternatives and decision-making.

CE 5324. INFRASTRUCTURE RELIABILITY & MONITORING. 3 Hours.

Durability and total cost of ownership for infrastructure; the physical, mechanical and chemical characteristics of deterioration and degradation for steel and other metals, Portland cement concrete, and organic materials; practical aspects of identification and remediation; a research literature review related to material durability.

CE 5325. BIOLOGICAL PROCESSES FOR WASTEWATER TREATMENT. 3 Hours.

Biological processes used in water quality control. Includes principles from microbiology and biochemistry applied to suspended and attached growth systems. Prerequisite: CE 5318.

CE 5326. WATER AND WASTEWATER TREATMENT FACILITIES DESIGN. 3 Hours.

Design of facilities commonly used in water and wastewater treatment plants including pumps, pipelines, channels, flow measurement and control devices, screens, grit removal, mixing, sludge removal, aeration equipment, and chemical feed and storage. Materials of construction, process control interface, and operation and maintenance factors are also discussed. Credit not granted for both CE 4355 and CE 5326. Prerequisite: CE 3131, CE 3142, and CE 3334.

CE 5327. ADVANCED PROJECT CONTROL. 3 Hours.

Fundamentals of construction estimating and scheduling, earned value, value engineering, risk allocations, jobsite management, safety and closeout.

CE 5328. FUNDAMENTALS OF AIR POLLUTION. 3 Hours.

An introduction to the air pollution field including: pollutant types, sources, effects; atmosphere and basic calculations; emission estimates; Clean Air Act; dispersion modeling; air pollution reduction strategies. Credit not granted for both CE 4350 and CE 5328. Prerequisite: concurrent enrollment in CE 3334 or CE 5321 or consent of instructor.

CE 5329. ENVIRONMENTAL RISK BASED CORRECTIVE ACTION. 3 Hours.

Process for the assessment and response to contamination; integrating risk and exposure practices to ensure protection of human health and environment. Includes characterization, EPA tier approach, general aspects of toxicology, dose exposure, pathways, receptors, migration and risk assessment. Prerequisite: consent of instructor.

CE 5330. CHARACTERISTICS OF TRAFFIC. 3 Hours.

The fundamental elements of traffic - the driver, the vehicle, and the roadway - are considered and then extended into studies of streams of traffic flow. Techniques of conducting traffic engineering studies, including methods of measuring speed, volume, and density, are covered along with methods for the determination of capacity on freeways and rural highways (uninterrupted flow facilities). Parking and accident studies are also included. Prerequisite: CE 3302; and CE 3301 or concurrent registration therein.

CE 5331. TRAFFIC ENGINEERING OPERATIONS. 3 Hours.

Methods of traffic regulation and control optimization. Traffic laws, motorist communication by means of traffic control devices, and the design and operation of both fixed time and actuated traffic signals at intersections. Analysis and design techniques for intersections using capacity and level of service concepts. Credit will not be granted for both CE 4313 and CE 5331. Prerequisite: CE 3302; and CE 3301 or concurrent registration therein.

CE 5332. HIGHWAY DESIGN. 3 Hours.

Geometric considerations necessary for the design of city streets, highways, and freeways such as the cross sections, vertical and horizontal alignment, sight distances and stopping distances. Includes the design of maneuver areas, channelization, ramps, intersections, and interchanges. Credit will not be granted for both CE 4312 and CE 5332. Prerequisite: CE 3302.

CE 5333. TRAFFIC CONTROL SYSTEMS. 3 Hours.

Control algorithms and optimization of splits, offsets, and cycle lengths for arterial progression and traffic signals in networks; computer simulation techniques; problem solving with computer simulation and optimization packages; freeway control using ramp meters and dynamic motorist communications. Prerequisite: CE 4313 or CE 5331 or Equivalent or Consent of Instructor.

CE 5334. INTRODUCTION TO RAILROAD ENGINEERING. 3 Hours.

Overview of railroad industry in the United States; structure of track, base, and foundation; drainage; railroad structures (bridges and retaining walls); geometric design; communications and signaling; maintenance. Credit not granted for CE 4314 and CE 5334. Prerequisite: CE 3302.

CE 5335. AIRPORT ENGINEERING. 3 Hours.

Airport master planning, for forecasting air travel demand, airside capacity, passenger terminal design, air traffic control, land access planning and design, landside operations, air cargo facility design. Prerequisite: CE 3302.

CE 5336. PAVEMENT DESIGN. 3 Hours.

Principles and theoretical concepts of rigid and flexible pavements for highways and airfields; effects of traffic loads, natural forces, and material quality; current design practices; and life cycle cost analysis. Prerequisite: CE 3302 and CE 3343.

CE 5337. URBAN TRANSPORTATION PLANNING. 3 Hours.

Theory and application of a comprehensive urban transportation planning methodology. Basic studies of population dynamics, urban growth, land use, forecasting trip generation and distribution, traffic assignment, mode split, evaluation, simulation models, characteristics of mass transit and other non-auto modes, and system design and evaluation. Credit will not be granted for both CE 4311 and CE 5337. Prerequisite: CE 3301 and CE 3302; or consent of instructor.

CE 5338. SYSTEM EVALUATION. 3 Hours.

Techniques necessary to perform economic and multi-criteria evaluations of civil engineering projects. These will be used to assess the strengths and weaknesses of different decision-making strategies and analyze contemporary topics and case studies in making civil engineering decisions. Prerequisite: IE 2308 and CE 3301 or IE 3301 or equivalents, or consent of instructor.

CE 5339. STATISTICS FOR CONSTRUCTION. 3 Hours.

Point estimation, interval estimation, sample size determination, tests of hypothesis, analysis of variance, linear regression, matrix methods for multiple linear regression, polynomial regression, transformations, non-linear regression. Prerequisite: CE 3301.

CE 5340. CONSTRUCTION PROJECT ACQUISITION. 3 Hours.

Fundamentals of acquiring the required goods and services necessary to fulfill the obligations of the construction contract. Service and subcontractor contracts, negotiating tactics and strategies, material pricing; and dispute resolution. The course includes negotiation practice based on typical construction acquisition situations to help prepare the student with experience of negotiating in the real world of construction and business. Prerequisite: consent of instructor.

CE 5341. PAVEMENT EVALUATION, REHABILITATION AND MANAGEMENT SYSTEMS. 3 Hours.

Pavement inventory; condition and structural evaluation techniques; serviceability concepts; deterioration modeling; maintenance vs. rehabilitation vs. reconstruction; economic considerations, selection of project alternatives and life cycle cost analysis. Prerequisite: CE 5336 or equivalent.

CE 5342. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CE 5342.

CE 5343. BUILDING INFORMATION MODELING. 3 Hours.

Introduction to current Building Information Modeling (BIM); Discussion of the role of BIM in the Construction Engineering and Management; Revit Architecture, Structure, and MEP; Creating sets, building elements, structural systems, and MEP systems; BIM and clash detection; BIM and Construction Cost Estimating and Scheduling.

CE 5344. CONSTRUCTION METHODS: FIELD OPERATIONS. 3 Hours.

Introduction to the methods, equipment, and management techniques used in the construction industry. Topics include equipment operating characteristics, job site safety, and field management. Credit not granted for CE 4332 and CE 5344.

CE 5345. INFRASTRUCTURE EVALUATION, MAINTENANCE, AND RENEWAL. 3 Hours.

This course is designed for engineers and managers involved in infrastructure development, sustainability, and replacement. Topics include asset management, inspection, evaluation, maintenance, and renewal alternatives for waste collection and water distribution systems, surface and subsurface drainage, pavements, bridges, culverts, buildings, and other structures. Prerequisite: Consent of instructor.

CE 5346. OPEN CHANNEL FLOW. 3 Hours.

Open channel hydraulic principles, flow classification, backwater curves, transitions, obstructions, bends, flood flow computations, and urban watershed applications. Credit not granted for both CE 4358 and CE 5346. Prerequisite: CE 3305 and CE 4328; or consent of instructor.

CE 5347. ADVANCED HYDROLOGY. 3 Hours.

Elements of hydrometeorology, infiltration, soil moisture, hydrographs, rainfall runoff relationships, and effects of these factors with regard to water resources, urban watersheds, flood control, and environmental issues. Prerequisite: CE 3342 and CE 4328 or equivalent.

CE 5348. GROUNDWATER HYDROLOGY. 3 Hours.

Hydrology and hydrogeology of groundwater to include aquifer and vadose properties and measurements, basic flow systems and solutions, well systems, elementary contaminate transport, water quality, recharge, subsidence, flow system analysis, flow nets, and leaky aquifers. Prerequisite: CE 3342 or consent of instructor.

CE 5349. ADVANCED GIS AND HYDROLOGIC AND HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply.

CE 5350. RISK MANAGEMENT. 3 Hours.

The risk management process including risk identification, monitoring, and control; integrated quantitative cost and schedule risk analysis.

CE 5351. ADVANCED STRUCTURAL ANALYSIS I. 3 Hours.

Advanced analysis of indeterminate beams, frames, trusses, arches, and cables. Credit will not be given for both CE 5351 and CE 4368. Prerequisite: CE 3341.

CE 5352. REMOTE SENSING-HYDROMETEOROLOGY. 3 Hours.

Atmospheric composition, radiative fluxes, thermodynamics, water vapor, stability, circulation, precipitation processes, fronts, thunderstorms and tropical storms; basics of remote sensing; observing precipitation using weather radar and satellite-borne sensors; prediction of precipitation by numerical weather models. The class will be a combination of lectures and in-class computer-based laboratory exercises. Prerequisite: CE 3342 and CE 4328.

CE 5353. ADVANCED HYDRAULICS. 3 Hours.

Flow resistance, St. Venant equations, solution of St. Venant by finite difference methods, dam break problem, water hammer intro to finite elements to open channel flow. Credit will not be granted for both CE 4330 and CE 5353. Prerequisite: CE 5346 and CE 5347; or consent of instructor.

CE 5354. WATER RESOURCES PLANNING. 3 Hours.

Historical and current water development concepts. Administrative and allocation concerns. General principles and procedures of water resource planning includes regional, multipurpose, economic and systems considerations. Prerequisites: CE 3301, CE 3342, and IE 2308; or consent of instructor.

CE 5355. CONSTRUCTION MATERIALS. 3 Hours.

Principles of construction related to construction regulations and standards, loads, fire safety, acoustics, joints and sealants. Systems of construction involving concrete, steel, wood, masonry, sealants, and soil, and including excavations, below grade construction, formwork, cladding, joints, windows, doors, roofing, and ceilings.

CE 5356. SURFACE WATER QUALITY MODELING. 3 Hours.

Contaminant transport and fate in surface water. Engineering methods assessing surface water and transport for water and sediment quality. Modeling dissolved oxygen, chemicals and waterborne substances. Prerequisite: CE 5346.

CE 5357. HYDROLOGIC TECHNIQUES. 3 Hours.

A study of current hydrologic techniques and methods for the analysis of hydrologic variables necessary in the design of projects such as bridges, culverts, reservoirs. Techniques involve extreme value statistics, model hydrographs, deterministic and stochastic methods for data analysis. Prerequisite: CE 5347 or consent of instructor.

CE 5358. SOLID WASTE ENGINEERING. 3 Hours.

This course provides an overview of the various aspects of integrated municipal solid waste management (with the exception of landfilling, covered in CE 5375). Topics covered include waste generation, characterization, and collection; source reduction; waste processing; design of facilities for materials recovery (recycling centers) and energy recovery (combustors and anaerobic digesters); life cycle analysis of solid waste management facilities; case study project. Credit not granted for both CE 4354 and CE 5358. Prerequisite: CE 3334 or CE 5321 or consent of instructor.

CE 5359. GROUNDWATER CONTAMINANT MODELING. 3 Hours.

Study of sources and fates of contamination in groundwater. Mathematical modeling of reactive and nonreactive pollutant movement. Aquifer restoration strategies. Prerequisite: CE 5348.

CE 5360. PROBABILITY, STATISTICS AND DECISIONS FOR CIVIL ENGINEERS. 3 Hours.

Topics include elements of probability theory, random variables and distributions, derived distributions, moments and expectation, common distribution models, introduction to statistics, estimation of model parameters, model verification, elementary Bayesian analysis and decision theory. No previous experience with probability is assumed. Prerequisite: CE 3301.

CE 5361. DESIGN AND CONSTRUCTION OF ASPHALT CONCRETE. 3 Hours.

An in-depth study of the properties of constituent materials for asphalt concrete mixtures. Design methods for Hot-Mixes Asphalt (HMA) and Stone Matrix Asphalt (SMA). Theory and practice of asphalt concrete mix for pavements, including specifications and construction methods for hot-mix asphalt and surface treatments. Maintenance and rehabilitation of flexible pavements. Relationships of material engineering properties to pavement design and performance. Credit not granted for both CE 4336 and CE 5361. Prerequisite: CE 3361 or equivalent.

CE 5362. RIGID PAVEMENTS. 3 Hours.

Portland cement concrete mix design and production. Paving operations. Saw and seal operations. Subgrade preparation. Base selection. Drainage selection, design and construction. Bonded and unbonded concrete overlays. Whitetopping and ultra-thin whitetopping. Concrete pavement restoration; quality assurance and quality control in concrete pavement construction. Credit not granted for both CE 4337 and CE 5362. Prerequisite: CE 3361 or equivalent.

CE 5363. CONSTITUTIVE MODELING OF SOILS. 3 Hours.

Fundamental aspects of elasto-plastic behavior of soils along axisymmetric stress paths, shear strength of soils in light of critical state soil mechanics, and constitutive models to predict soil response under saturated conditions, including Cam Clay and modified Cam Clay models. Prerequisite: CE 3343 or consent of instructor.

CE 5364. FOUNDATION ANALYSIS AND DESIGN. 3 Hours.

The design, construction, and performance of footings, rafts, and piles founded on or in sands, clays, silts, stratified soils, and weak rock. Includes the influence of various geologic terrain on selecting foundation type and constructability, in-situ investigations to determine material design parameters, bearing capacity, and settlement of foundations. Credit not granted for both CE 4321 and CE 5364. Prerequisite: CE 3343.

CE 5365. THEORETICAL SOIL MECHANICS. 3 Hours.

Theory of consolidation, magnitude, time rate, pore pressure dissipation with variable construction rate and layered soils. Secondary compression, preconsolidation, and preloading. Shear strength of soil. Critical state soil mechanics, dilation and strain-softening in drained shear, pore pressure response in undrained shear, including static liquefaction. Prerequisite: CE 3343 or consent of instructor.

CE 5366. SOIL DYNAMICS. 3 Hours.

Fundamental aspects of mechanical behavior and characterization of soils and earth structures subjected to dynamic loads, including wave propagation in soils, dynamic soil properties, liquefaction of soils, dynamic bearing capacity of shallow foundations, seismic design of retaining walls, and seismic slope stability. Prerequisites: CE 2221 and CE 3343; or consent of instructor.

CE 5367. DESIGN OF EARTH STRUCTURES. 3 Hours.

Study of the states of stress and analysis techniques associated with cuts, fills, and retaining structures. Includes slope stability, embankment reinforcement, conventional and reinforced earth retaining walls, excavation bracing, and sheet pile wharf structures. Credit not granted for both CE 4320 and CE 5367. Prerequisite: CE 3343 or consent of instructor.

CE 5368. UNSATURATED SOIL MECHANICS. 3 Hours.

Fundamental aspects of the mechanical behavior of unsaturated soils, including stress and volumetric state variables, matrix suction measurements and soil-water characteristic curves, shear-strain-strength and volume change responses, suction-controlled laboratory testing techniques and constitutive modeling. Prerequisite: CE 3343; or consent of instructor.

CE 5369. COMPUTATIONAL GEOTECHNICS. 3 Hours.

Introduction to analytical, finite differences, and finite element modeling, analyses of embankments, earth dams, slopes, excavation support systems including soldier pile and diaphragm walls, shallow and deep foundation systems, and other geotechnical structures using different geotechnical software. Prerequisite: CE 3343 or consent of instructor.

CE 5370. EXPERIMENTAL SOIL MECHANICS. 3 Hours.

Fundamentals of experimental studies of soil behavior, soil properties and their laboratory test methods which include consolidation, direct shear, static triaxial, cyclic triaxial, resonant column, bender elements and other advanced geotechnical laboratory tests, instrumentation and measurement techniques. Prerequisite: CE 3343 or consent of instructor.

CE 5371. SOIL BEHAVIOR. 3 Hours.

Fundamental aspects of soil behavior, bonding, crystal structure, surface characteristics, clay mineralogy, soil-water movement, fabric, effective stress concepts, conduction phenomena, consolidation, and shear strength. Prerequisite: CE 3343 or consent of instructor.

CE 5372. GEOSYNTHETICS. 3 Hours.

Geosynthetics properties and testing, design of geotextiles, geogrids, geonets, and geomembranes for applications in separation, pavement, embankment and retaining wall reinforcement, soil stabilization, filtration, drainage and liquid barrier, construction guidelines and case histories. Credit not granted for both CE 4322 and CE 5372. Prerequisite: CE 3343 or consent of instructor.

CE 5373. ENVIRONMENTAL GEOTECHNOLOGY. 3 Hours.

Physical and chemical principles of clays, clay mineralogy, coupled flow, hydraulic conductivity, in situ and laboratory tests, chemical transport, adsorption of chemicals, risk assessment and soil remediation technologies, bioremediation, phytoremediation, electrokinetics and soil washing, waste containment. Prerequisite: CE 5371 or consent of instructor.

CE 5374. GROUND IMPROVEMENT. 3 Hours.

Introduction and types of ground improvement for different problem soils including soft and expansive soils, shallow and deep soil densification, sand drains and wick drains, chemical modification, chemical binders and mechanisms of ground improvement, different types of grouting, deep mixing, stone columns, soil nailing, ground anchors, geosynthetics, MSE walls, reinforced slopes. Prerequisite: CE 3343 or consent of instructor.

CE 5375. GEOTECHNICAL ASPECTS OF LANDFILLS. 3 Hours.

Introduction and types of landfills, landfill site selection, siting and configuration, compacted and geosynthetic clay liners, final cover design, landfill settlement and slope stability, post closure uses of landfills, leachate and gas generation, collection and removal system, bioreactor landfills and future trends. Credit not granted for both CE 4323 and CE 5375. Prerequisite: CE 3343 or consent of instructor.

CE 5376. GIS IN GEOTECHNICS. 3 Hours.

Introduction to (GIS, Geographical Information Systems, ArcInfo/ArcView) based applications in geotechnical engineering, including bore-log database management and profiling, spatial analyses and assessment of liquefaction, ground motion amplification, landslide, and groundwater contamination hazard potentials. Prerequisite: CE 3343 or consent of instructor.

CE 5377. CONSTRUCTION FINANCE. 3 Hours.

Financial aspects and job costing of a construction project. Includes project management principles, budgets, cost codes, cost-to-complete, and financial reports specific to the management of a construction company and project control.

CE 5378. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for CE 4304 and CE 5378. Prerequisite: Consent of instructor.

CE 5380. MANAGEMENT OF INFRASTRUCTURE ASSETS. 3 Hours.

Overview of an infrastructure management system. Infrastructure asset development and management. Optimization of infrastructure asset procurement and preservation through good data input and the use of economic models, benefit cost studies, and good maintenance and rehabilitation practices to protect assets investments.

CE 5381. PUBLIC PRIVATE PARTNERSHIP FOR INFRASTRUCTURE PROJECTS. 3 Hours.

Public-private partnership (P3) arrangements as an innovative approach to deliver public infrastructure projects. Topics include P3 benefits, limitations, contracting and implementation strategies. Prerequisite: CE 3311 or IE 2308; or consent of instructor.

CE 5382. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Introduction to International Code Council's 2012 International Building Code and USGBC's LEED® New Construction Guidelines v.3 for constructing sustainable/green buildings. Review of building occupancy categories, construction types, allowable height and area, life safety requirements, rated building assemblies, and egress. Site selection, energy and water efficiency, material reuse and indoor air quality. Credit not granted for CE 4307 and CE 5382.

CE 5383. EXPERIMENTAL STRESS ANALYSIS. 3 Hours.

Introduction to experimental stress-analysis techniques. Theory and application of mechanical strain gages, electrical strain gages, introduction to photoelastic and thermal techniques, and brittle coatings. Prerequisite: CE 2313.

CE 5384. CONCRETE BRIDGE DESIGN AND EVALUATION. 3 Hours.

Analysis, design and evaluation of concrete highway bridges using AASHTO specifications. Analysis and design topics include bridge type selection, preliminary design, AASHTO LRFD bridge design philosophy, design loads, deck design, shear design, barrier design and substructure design. Evaluation topics include bridge inspection, non-destructive evaluation (NDE), load testing and load rating, using the AASHTO procedures. Prerequisite: CE 4363 or CE 5309.

CE 5385. STRUCTURAL DYNAMICS. 3 Hours.

Equation of motion for single degree of freedom systems including: free vibration; harmonic and periodic excitations; arbitrary, step and pulse excitations. Dynamic response of multi degree of freedom systems including: free vibration; computation of vibration properties of structures; damping in structures; modal analysis; and response history analysis. Dynamic analysis of systems with distributed mass. Prerequisite: CE 5303 or concurrent registration.

CE 5387. CONSTRUCTION PRODUCTIVITY. 3 Hours.

Evaluation of construction project management's effectiveness. An investigation of the advanced techniques required for improvement of construction projects including time, cost, quality management, preplanning, field evaluation techniques, time-lapse photograph, safety, human factors, and communications. Prerequisite: CE 5327.

CE 5388. PIPELINE CONSTRUCTION AND TRENCHLESS TECHNOLOGY. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Credit not granted for both CE 4305 and CE 5388. Prerequisite: graduate standing and consent of instructor.

CE 5389. PIPELINE SYSTEMS ASSET MANAGEMENT. 3 Hours.

Pipeline systems asset management, inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations, renewal technologies, and case studies. Credit not granted for both CE 4306 and CE 5389. Prerequisite: graduate standing and consent of instructor.

CE 5390. UNSATURATED SOIL MECHANICS II. 3 Hours.

Advanced principles of unsaturated soil behavior in light of critical state based soil mechanics. Topics: Cam-Clay model for saturated soils, Cam-Clay model for unsaturated soils, and calibration/programming of Barcelona Basic Model for unsaturated soils. Prerequisite: CE 5368 or consent of instructor.

CE 5391. ADVANCED STUDIES IN CIVIL ENGINEERING. 3 Hours.

Individual studies of advanced topics under the supervision of a professor or professors. Graded F, P, R. Prerequisite: consent of instructor.

CE 5392. SPECIAL TOPICS IN AIR POLLUTION. 3 Hours.

Sources, transport, fate, characteristics, and control of air contaminants. May be repeated for credit when topics vary. Topics include: Topic 1 - Air Quality Modeling. Mathematical models for predicting air pollutant transport and transformation in the atmosphere, to evaluate health impacts and potential control strategies. The course covers 4 types of air quality models: box models, photochemical grid models (for ozone and particulate matter), Gaussian dispersion models (major emphasis), and receptor models. Use of Gaussian dispersion modeling software. Topic 2 - Air Pollution Control System Design. Design of air pollution control systems for stationary sources, including particle control technologies (cyclones, electrostatic precipitators, fabric filters and wet scrubbers) and gaseous control technologies (incinerators, adsorption systems, absorption systems, biofilters, nitrogen oxide controls, mercury controls, and carbon dioxide controls). Topic 3 - Air Pollution Chemistry and Meteorology. Designed to give students an understanding of how pollutants react and travel in the atmosphere. Chemistry of ground-level ozone formation, ozone layer depletion, acid deposition, fine particle formation, and climate change; meteorological variables impacting pollutant transport in the atmosphere, such as atmospheric stability, turbulence and wind speed. Prerequisite: Graduate standing and consent of instructor.

CE 5393. ENVIRONMENTAL ORGANIC CHEMISTRY. 3 Hours.

Introduction to chemical structures, reactions, and transformations. Disposition of compounds of environmental significance utilizing sorption, bioaccumulation, acid-base reactions, hydrolysis reactions, biodegradation, and biotransformation. Prerequisite: CE 3334 or consent of instructor.

CE 5394. EARTHQUAKE DESIGN OF REINFORCED CONCRETE BUILDINGS. 3 Hours.

Design of earthquake resistant reinforced concrete (RC) building structures. ACI 318, ASCE 7, earthquake loads effects on buildings and related structural damage, properties of concrete and steel beyond the elastic range, development and anchorage, confined concrete, inelastic behavior of RC members under large load reversals, design of RC beams, columns, beam-column joints, special moment frames, coupling beams, special structural walls, and other structural systems. Prerequisite: CE 4347.

CE 5395. MASTER'S PROJECT. 3 Hours.

Non-thesis master's degree candidates with approval to include a project in their program. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 5396. SITE REMEDIATION ENGINEERING. 3 Hours.

This course provides practical understanding of the engineering principles and practices associated with the characterization and remediation of contaminated sites. Methods for site characterization and risk assessment will be highlighted while the emphasis will be on remedial action screening processes and technology principles and conceptual design. In-situ and ex-situ treatment processes will be covered, including unit operations, coupled processes, and complete systems within the context of community implementation. Case studies with focus on developing communities will be used and computerized tools for process selection and design will be presented. Prerequisite: CE 3334; or consent of instructor.

CE 5398. THESIS. 3 Hours.

Research and preparation pertaining to the master's thesis. Graded F, R.

CE 5695. MASTER'S PROJECT. 6 Hours.

Non-thesis master's degree candidates with approval to include a project in their program. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 5698. THESIS. 6 Hours.

Research and preparation pertaining to the master's thesis. Graded F, P, R.

CE 6197. RESEARCH IN CIVIL ENGINEERING. 1 Hour.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6297. RESEARCH IN CIVIL ENGINEERING. 2 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6300. ADVANCED TOPICS IN CIVIL ENGINEERING. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: consent of instructor.

CE 6306. PUBLIC TRANSIT PLANNING & OPERATIONS. 3 Hours.

Theory and application of technologies used for transit demand analysis, routing, scheduling, evaluation, crew assignment, maintenance strategies, and management. Land-use impact on public transit policy and operation is also introduced. Prerequisite: CE 4311 or CE 5337 or equivalent.

CE 6308. ANALYTICAL MODELS IN TRANSPORTATION. 3 Hours.

Development and analysis of mathematical models in transportation. Topics include travel demand, trip generation, distribution, mode choice, assignment, plan evaluation, spatial distribution, traffic control and flow models; principles of behavioral, econometric, deterministic, probabilistic, and chaotic simulation models, and their applications. Prerequisite: CE 4311 or CE 5337.

CE 6309. TRAFFIC FLOW THEORY. 3 Hours.

Speed, density relationships of vehicular traffic flow; statistical aspects of traffic events and queuing processes; deterministic models and simulation models of traffic flow behavior; applications of flow theory to traffic problem solutions. Prerequisite: CE 5330 or equivalent.

CE 6311. ADVANCED FOUNDATION DESIGN. 3 Hours.

Subsurface investigations; advanced design of mat foundations, retaining walls, reinforced retaining walls, anchor tiebacks, driven piles, and piers; destructive and nondestructive tests on deep foundations; group piles, laterally loaded piles, and design of foundations in expansive soils. Prerequisite: CE 4321 or CE 5364.

CE 6312. IN-SITU TESTING. 3 Hours.

Site characterization, in-situ testing procedures, and soil property interpretation methods for standard penetration tests, cone penetration tests utilizing friction cone, piezocone, and seismic cone, dilatometer, vane shear, pressure meter, and bore hole shear tests, non-destructive tests for pavement subgrade characterization. Prerequisite: CE 3143 or CE 5370 or consent of instructor.

CE 6313. DESIGN OF EARTH DAMS. 3 Hours.

Introduction to dams and levees, failure and damage analysis, erosion, seepage, filter, drainage design, foundation preparation for problematic subsoil conditions, seepage induced slope stability issues, desiccation crack and erosion control, numerical modeling and case studies, seismic issues. Prerequisite: CE 5367 or consent of instructor.

CE 6314. STORMWATER MODELING. 3 Hours.

Hydrologic modeling methods and issues, urban watershed modeling, methods of system analysis; analysis of hydrologic components as linear and nonlinear systems, watershed response, kinematic wave; and model parameters optimization. Prerequisite: CE 5346 and CE 5347; or consent of instructor.

CE 6315. ADVANCED GEOTECHNICAL MODELING. 3 Hours.

This course covers two numerical simulation methods: discrete element method (DEM) and finite element method (FEM). The four basic elements in DEM: initialization, search, contact models, velocity and displacement calculations will be introduced. This course will use FORTRAN as the coding language. A basic Fortran code will be provided. Students will learn how to make modifications to the basic code for their own applications. A term project will be required that consists of a numerical experiment. Fundamentals of FEM will be introduced including: basic elements, formulation methods, coordinate transformation, and boundary conditions. CAM clay model will be introduced and implemented in ABAQUS as a class exercise. Usage of ABAQUS will be introduced. Applications of FEM including pile soil interaction and simple beam simulation. Prerequisite: Grade of C or better in CE 5363; Grade of C or better in CE 5369; Programming language (FORTRAN, C, or MATLAB); and numerical analyses; or consent of instructor.

CE 6316. SEDIMENT TRANSPORT. 3 Hours.

Sourcing the sediment influx, the settling velocity, Shields critical shear stress, design with critical shear, bedload transport equations, suspended load transport, total transport equation, regime theory as index of stability. Prerequisite: CE 4358 or CE 5346; and CE 5347.

CE 6350. ADVANCED CONCRETE DESIGN II. 3 Hours.

Detailing of connections for ductility demands, modified compression field theory, strut and tie modeling of systems and areas, and design of shear walls and hybrid construction. Behavior of reinforced concrete structures, with emphasis on ductility and detailing. Prerequisite: CE 5312.

CE 6354. REPAIR AND REHABILITATION OF STRUCTURES. 3 Hours.

Causes of distress, evaluation methods for condition, strength, serviceability; repair materials, repair techniques, and quality control methods for repair of concrete. Criteria for rehabilitation; retrofit techniques for change in function, loading, and seismic forces. Prerequisite: CE 5311 and CE 5312.

CE 6355. EARTHQUAKE ENGINEERING. 3 Hours.

Earthquake characteristics; design of structures to resist earthquakes. Characterization of earthquakes for design. Development of design criteria for elastic and inelastic structural response. Seismic performance of various structural systems. Prediction of nonlinear seismic behavior. Basis for code design procedures. Preliminary design of steel and reinforced concrete structures. Evaluation of earthquake vulnerability of existing structures and rehabilitation of seismic deficiencies. Prerequisite: CE 5385.

CE 6356. ENERGY METHODS. 3 Hours.

Principles of mechanics; elastic beams and frames; variational method: curved cantilever beams; Rayleigh Ritz method; special form of Euler equation; differential equation for beam; variation of double integral; first variation of triple integral. Deformable bodies using indicial notation; buckling using energy method; Lagrange and Hamilton Principles; theory and analysis of plates; theory and buckling; and theory of vibration. Prerequisite: CE 5315.

CE 6357. STRUCTURAL STABILITY. 3 Hours.

Buckling of columns; approximate method of analysis for buckling problems; beam columns; structural system stability (buckling of frames); lateral torsional buckling; buckling of plates; and buckling of axially compressed cylindrical shells. Prerequisite: CE 5303 or concurrent registration therein.

CE 6358. ADVANCED ENGINEERING ANALYSIS. 3 Hours.

Introduction to matrices; vector spaces; tensors, Eigenvalue problems. Solution to discrete systems: steady state problems and propagation problems. Solution of continuous systems: differential formulation; variational method; and weighted residual methods. Solution of linear and nonlinear static equilibrium equations. Prerequisite: CE 5315 and MATH 3319.

CE 6360. THEORY OF ELASTICITY. 3 Hours.

Introductory mathematical concepts: vector calculus; tensor algebra. Theory of deformation; strain displacement relations in orthogonal curvilinear coordinate systems. Theory of stress; differential equation of equilibrium in curvilinear spatial coordinates; three dimensional equations of elasticity; nonlinear constitutive relationship; plane theory of elasticity; and plane elasticity in polar coordinates. Prerequisite: CE 5315.

CE 6391. ADVANCED PROJECTS IN CIVIL ENGINEERING. 3 Hours.

Projects related to advanced topics in graduate area. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 6397. RESEARCH IN CIVIL ENGINEERING. 3 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6399. DISSERTATION. 3 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 6697. RESEARCH IN CIVIL ENGINEERING. 6 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6699. DISSERTATION. 6 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 6997. RESEARCH IN CIVIL ENGINEERING. 9 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6999. DISSERTATION. 9 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, P, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Architectural Engineering - Undergraduate Program

Undergraduate Programs

The following sections apply to each student majoring in any undergraduate program housed in the Civil Engineering Department: Architectural Engineering, Civil Engineering, and Construction Management. In these sections, "program" refers to any of these programs and "student" refers to any student (UCOL, Intended, or Professional Program) majoring in any one of these programs.

Refer to the College of Engineering section of this catalog for additional information concerning the following topics: Admission to the College of Engineering, Advising, Admission into the Professional Program, College of Engineering Academic Regulations, Honors Degrees in Engineering, Professional Engineering Licensure, and Cooperative Education.

Admission Requirements

Admission as an Architectural Engineering major, a Civil Engineering major, or a Construction Management major is subject to the relevant requirements and policies of the University of Texas at Arlington and of the UTA College of Engineering. The Civil Engineering Department does not impose additional requirements.

Transfer Credit

When a student transfers, a loss of credit can occur that may require change in academic plans. A course, that appears to be similar, may be different in either content or level of difficulty and, as a result, cannot be used for degree credit. Another course may have no equivalent in a particular degree plan. More than one transferred course may satisfy a degree requirement when only one is required. The UTA Civil Engineering Department encourages students interested in our programs to make early contact with our advisors so that we can help avoid these problems.

A student must earn a grade of C or better for a course to be transferred. Any course that is offered under the Texas Common Course Numbering system is accepted as equivalent to the corresponding UTA course. It is the responsibility of the student to establish the equivalence of any other course or courses to a course required in a program. The student should be prepared to provide a syllabus or similar documents to establish equivalence. To be acceptable as equivalent, at a minimum, a transferred course must have no less credit value than the corresponding course and contain substantially equivalent course content. To be accepted in transfer, junior and senior level courses must be taken at a college or university with the same accreditation as UTA in the area offering the course. For example, a Civil Engineering course must come from an ABET accredited Civil Engineering program.

When a student's record or performance indicates weakness in certain areas of study, they may be required to retake courses or to take additional courses.

Before enrolling in a course at another institution to transfer for credit toward a program degree, a student should consult with a program advisor to verify that the course can be used in the student's degree plan and to obtain the necessary written permission.

Advising

Academic advisement is required for every undergraduate student before class enrollment each semester.

A new student with fewer than 24 hours of transferrable credit, including any student entering directly from high school, is advised in the University Advising Center of University College. After one or more semesters and sufficient progress in the degree program, this student is released by the University Advising Center to the program advisors.

Prior to enrollment, a new student with 24 or more hours of transferrable credit must make an appointment with the transfer advisor of their program. However, if all of the student's transfer credit was earned at a Texas community college, an appointment may be scheduled with any advisor for their program. The advising appointment should be scheduled as soon as possible after admission, but certainly prior to registration. A transfer student should not make an advising appointment with a transfer advisor after the initial evaluation of their transfer credit is complete.

During each long semester, a specified period is set aside for the academic advisement of continuing students. Each continuing student is responsible for meeting with their program advisor during this advising period. Continuing students will receive instructions prior to each advising period related to preparing for and making an advising appointment. Academic advising will be available at other times but a student who does not meet with their program advisor during the regular advising period may have fewer alternatives when selecting courses.

Academic Rules, Regulations, and Policies

In addition to the rules, regulations, and policies established below and in the individual program sections, each student is subject to the rules, regulations, and policies of the University of Texas at Arlington and of the UTA College of Engineering. Each student should become familiar with these. The rules, regulations, and policies of the University of Texas at Arlington and of the UTA College of Engineering are set forth in other sections of this

catalog. It is the responsibility of each student to follow the applicable published rules. Failure to follow these rules may be grounds for dismissal from the program.

CE Department Course Requisites

- A student must have the written approval of their program advisor to register for any course that will satisfy a requirement of their degree program.
- A student must have specific written permission of their program advisor to register at a different institution for any course that will satisfy a requirement of their degree program.
- A student may not attempt a CE Department course without satisfying all current requisite requirements. A prerequisite course requirement is satisfied by earning a grade of C or better. A co-requisite course requirement is satisfied by earning a grade of C or better or by concurrent enrollment in the course at UTA.
- A student may not drop a course which is co-requisite to a CE Department course without also dropping the CE Department course.
- No professional program courses may be attempted until the student is admitted into the professional program or obtains the written permission of the Department Chair.

Repeating Courses

A student may not attempt any course more than three times and apply that course toward a program degree. Enrollment in a course for a period of time sufficient for assignment of a grade, including a grade of W, is considered an attempt.

Admission to the Professional Program

Requirements for admission to the professional program in each program are in accordance with those of the College of Engineering with the following added stipulations:

- Application to the professional program is to be made to the CE Department during the semester that the advancement requirements are being completed.
- Each student must complete all pre-professional courses stipulated under "Requirements for a Bachelor of Science Degree in" the program with a minimum grade of C in each course and a minimum GPA of 2.25 in: a) all courses, b) in all math, science, and engineering courses, and c) in all program specific courses.
- Upon receipt of the application, a student's record is individually reviewed including grades, academic and personal integrity, record of drops and course withdrawals, the order in which courses have been taken, the number of times a student has attempted a course for credit, and any other aspect of the student's record that may be deemed pertinent to admission.

The student must be admitted to the professional program and have an approved degree plan on file in order to graduate. The degree plan is generated upon entry to the professional program. Graduating seniors should apply to graduate during the next-to-last semester.

Grounds for Dismissal From the CE Program

A student whom the UTA Office of Student Conduct has found to have violated the UTA Code of Student Conduct a second time is subject to dismissal from the CE program.

Minor Field of Study

The Civil Engineering Department does not support the option of pursuing a minor in Architectural Engineering, in Civil Engineering, or in Construction Management by other engineering or non-engineering majors.

Educational and Professional Career Paths

Architectural Engineering is an engineering discipline that prepares engineers to design buildings through structural analysis and design by using different construction materials. An Architectural Engineer is an integral part of a comprehensive Architecture, Engineering and Construction (AEC) team. Architectural Engineers work for engineering firms, construction companies or architecture firms to apply engineering to the analysis, design, and construction of buildings. They are specially trained to effectively communicate with both engineers and architects and their project roles include structural engineer, construction management, building information modeling, project management, façade design and more.

Architectural engineering graduates are prepared for advanced graduate degrees and a wide range of career paths with AEC firms in industry, consulting firms, and governmental agencies.

Fast Track Program for Master's Degree in Civil Engineering (Structures)

The Fast Track Program enables outstanding senior undergraduate Architectural Engineering students to receive undergraduate and graduate credit for up to six hours of coursework. Senior level courses, which are dual-listed as graduate courses, will satisfy both bachelor's and master's degree requirements. Students pursuing an Master of Engineering CE degree in structural engineering may take up to two courses for dual credit.

Interested undergraduate Architectural Engineering students should apply for admission to the Fast Track Program when they are within 30 hours of completing their bachelor's degree (and before graduation). For admission consideration, they must have completed at least 30 hours at UT Arlington and have an overall and College of Engineering GPA of at least 3.30 (in both). Additionally, they must have completed a set of specified, basic undergraduate foundation courses with a grade of B or higher in each course, and a GPA of at least 3.30 in these foundation courses.

In their final semester as an undergraduate, Fast Track students in good standing will automatically be admitted to graduate school with consent of the Graduate Advisor. No fees, transcripts, or test scores will be required. Students must start their master's program the long semester or summer semester immediately following their graduation or the next long semester. For further information about this program, contact an undergraduate advisor or the Graduate Advisor in Civil Engineering. A list of approved, required departmental structures courses are available in the CE Advising Office.

Architectural Engineering BS Degree at UT Arlington

The Bachelor of Science in Architectural Engineering degree program is designed to provide a strong foundation in science, mathematics, and engineering science; technical competence in the structural engineering area of civil engineering; and an understanding of the importance of ethics, safety, professionalism, and socioeconomic concerns in resolving technical problems through synthesis, planning, and design. Elements of design are introduced at the freshman level. This is followed by an analysis and design component in professional program courses, culminating in a comprehensive design experience.

The four basic architectural engineering curriculum areas are building structures, building mechanics systems, building electrical systems, and construction/construction management. Graduates are expected to reach the synthesis (design) level in building structures, application level in construction/construction management, and comprehension level in building mechanical and electrical systems.

The Civil Engineering Department will seek accreditation by the Engineering Accreditation Commission of ABET, www.abet.org (<https://na01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fabet.org%2F&data=02%7C01%7Cjthomps%40uta.edu%7Ce3dc0eac7f4641bad38108d68df4d4ba%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636852480007606919&sdata=0ZYuqlh12X3RAB0LOHfTZFYIIF5aunO3dWrvVnJ86dl%3D&reserved=0>). ABET is recognized by the U. S. Department of Education as the sole agency responsible for accreditation of education programs leading to degrees in engineering. Graduation from an ABET accredited program is an important factor in attaining registration as a Professional Engineer in the State of Texas and other states. The Architectural Engineering program is housed in the Civil Engineering Department.

Educational Objectives of the Undergraduate Program

Most alumni of the AREN program will attain the following Program Educational Objectives (PEOs) within a few years after graduation:

- Obtain professional position and practice architectural engineering, or pursue graduate studies.
- Be involved in continuing education and professional development activities.
- Obtain PE licensure or other professional certification.

Student Outcomes of the Undergraduate Program

In order to produce graduates who will achieve the Program Educational Objectives a few years after graduation, it is expected that the undergraduate students will attain the following Student Outcomes by the time of graduation:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Requirements for a Bachelor of Science Degree in Architectural Engineering

Courses Fulfilling the University General Core Requirements (minimum 42 hours required)

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Communication (minimum 6 hours required)

ENGL 1301	RHETORIC AND COMPOSITION I
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING ¹

Creative Arts (minimum 3 hours required)

ARCH 1301	INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN
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Government/Political Science (minimum 6 hours required)

POLS 2311	GOVERNMENT OF THE UNITED STATES
POLS 2312	STATE AND LOCAL GOVERNMENT

Language, Philosophy & Culture (minimum 3 hours required)

Approved Language, Philosophy, and Culture elective ²

Mathematics (minimum 6 hours required)

MATH 1426	CALCULUS I
MATH 2425	CALCULUS II

Life & Physical Sciences (minimum 6 hours required)

PHYS 1443	GENERAL TECHNICAL PHYSICS I
PHYS 1444	GENERAL TECHNICAL PHYSICS II

Social & Behavioral Sciences (minimum 3 hours required)

IE 2308	ECONOMICS FOR ENGINEERS
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US History (minimum 6 hours required)

Any courses which satisfies the University Core Curriculum requirement for US History is accepted.

Foundational Component Area Option (minimum 3 hours required)

MATH 2326	CALCULUS III
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AREN Pre-Professional Program Courses

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Of the core courses, ARCH 1301, COMS 2302, ENGL 1301, IE 2308, MATH 1426, MATH 2425, MATH 2326, PHYS 1443, and PHYS 1444 are part of the AREN Pre-Professional Program.

ARCH 2341	DESIGN COMMUNICATION FOR ENGINEERS
AREN 1205	INTRODUCTION TO ARCHITECTURAL ENGINEERING
AREN 2252	INTRODUCTION TO CONSTRUCTION DRAFTING
AREN 2311	STATICS
AREN 2313	MECHANICS OF MATERIALS I
AREN 2315	CONSTRUCTION MATERIALS AND METHODS
CHEM 1465	CHEMISTRY FOR ENGINEERS
UNIV 1131	STUDENT SUCCESS
or ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS

AREN Professional Program Courses

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AREN 3213	BUILDING SCIENCE
ARCH 3336	STRUCTURAL SYSTEMS FOR ARCHITECTURAL ENGINEERS
ARCH 3357	DESIGN TECHNOLOGIES - BUILDING INFORMATION MODELING FOR ARCHITECTS/ENGINEERS
ARCH 3551	BASIC DESIGN FOR ENGINEERS
AREN 3143	PROPERTIES AND BEHAVIOR OF SOILS
AREN 3301	STOCHASTIC MODELS FOR CIVIL ENGINEERING
AREN 3311	CONSTRUCTION ENGINEERING
AREN 3331	MECHANICAL AND ELECTRICAL SYSTEMS
AREN 3341	STRUCTURAL ANALYSIS
AREN 3343	SOIL MECHANICS
AREN 3347	REINFORCED CONCRETE DESIGN
AREN 4309	THERMODYNAMICS FOR ARCHITECTURAL ENGINEERS
AREN 4346	ELECTRICAL SYSTEMS & LIGHTING FOR ARCHITECTURAL ENGINEERS

AREN 4348	STRUCTURAL DESIGN IN STEEL
AREN 4352	PROFESSIONAL PRACTICE
AREN 4383	SENIOR PROJECT
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA
3 credit hours of Senior Electives from the following list:	
ARCH 4332	ENERGY USE AND CONSERVATION IN ARCHITECTURE
ARCH 4346	CONSTRUCTION DRAWINGS
AREN 4307	CONSTRUCTION SUSTAINABILITY
AREN 4326	GIS/HYDROLOGIC & HYDRAULIC MODELING
AREN 4360	DESIGN OF STRUCTURAL MASONRY
AREN 4365	STRUCTURAL WOOD DESIGN

Total Hours**120**

¹Completion of COMS 2302 PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING satisfies the University's communication competence requirement.

²An approved list of Language, Philosophy, and Culture electives is available from the department.

³Completion of AREN 1205 INTRODUCTION TO ARCHITECTURAL ENGINEERING and AREN 2252 INTRODUCTION TO CONSTRUCTION DRAFTING satisfies the University's computer proficiency requirement.

More hours may be required to strengthen student's program or demonstrate proficiency. See Prior Preparation and Course Requirements.

Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical languages courses in addition to the previously listed requirements.

Suggested Course Sequence

A suggested course sequence for the Pre-Professional and Professional Program courses is available on the CE Department's web site.

Prior Preparation and Course Requirements

The undergraduate baccalaureate degree in architectural engineering is a four-year program and requirements for the degree are based upon prior high school preparation through either an honors or college track program. Students who have not had the appropriate prior preparation should contact the departmental advising office for a curriculum guide that will assist them in structuring a study plan that will include leveling courses. Students requiring leveling courses may require a period of time greater than four years to complete their undergraduate degree.

COURSES

AREN 1105. INTRODUCTION TO ARCHITECTURAL ENGINEERING. 1 Hour.

Introduction to basic architectural engineering practice. There are several writing assignments and an oral presentation. Use of spreadsheet and word processor software in solving architectural engineering problems and presenting solutions. Professional engineering licensure and the various specializations within civil engineering are covered.

AREN 1205. INTRODUCTION TO ARCHITECTURAL ENGINEERING. 2 Hours.

This course introduces students to the education and practice of architectural engineering, a discipline of engineering that prepares engineers to work effectively on teams that are creating buildings. Course content addresses engineering ethics, professional licensure, sustainability, creative approaches to problem solving and the role of architectural engineering and other engineering disciplines on building construction projects.

AREN 1252. COMPUTER TOOLS - AUTOCAD. 2 Hours.

Introduction to computer aided design, using AutoCAD. Creation of precise two-dimensional engineering drawings and solid models. Prerequisite: Grade of C or better in MATH 1421.

AREN 2152. COMPUTER TOOLS - MATHCAD. 1 Hour.

Introduction to computer aided mathematics, using Mathcad. Solution of engineering problems involving systems of simultaneous linear and nonlinear equations and elementary calculus, use of the tools for visualization. Prerequisite: Grade of C or better in PHYS 1443.

AREN 2153. COMPUTER TOOLS - CIVIL 3D. 1 Hour.

Introduction to civil engineering construction documentation and building information modeling (BIM) using AutoCAD Civil 3D. Prerequisite: Grade of C or better in AREN 1252.

AREN 2191. PROBLEMS IN ARCHITECTURAL ENGINEERING. 1 Hour.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 2221. DYNAMICS. 2 Hours.

Planar and spatial kinematics and kinetics of particles and rigid bodies utilizing Newton's Laws of Motion, the principle of work and energy, and the principle of impulse and momentum; introduction to single degree of freedom vibration. Prerequisite: Grade of C or better in AREN 2311; grade of C or better in MATH 2425.

AREN 2252. INTRODUCTION TO CONSTRUCTION DRAFTING. 2 Hours.

This course will introduce students to basic concepts of construction drafting including an introduction to orthographic drawings (plans, sections, elevations), principles of scale, line weight, drawing types and drawing conventions. The course introduces students to 2-dimensional Computer Aided Design tools which they use to produce the construction drawings. Prerequisite: Grade of C or better in MATH 1421; or concurrent enrollment in MATH 1426 or HONR-SC 1426; or grade of C or better in MATH 1426 or HONR-SC 1426.

AREN 2291. PROBLEMS IN ARCHITECTURAL ENGINEERING. 2 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 2311. STATICS. 3 Hours.

Vector algebra; composition and resolution of forces; equivalence of force couple systems; equilibrium of force systems acting on particles, and force - couple systems acting on rigid bodies, and systems of rigid bodies; internal forces in rigid bodies; shear and moment diagrams; centroids and moments of inertia; frictional forces. Prerequisite: Grade of C or better in PHYS 1443.

AREN 2313. MECHANICS OF MATERIALS I. 3 Hours.

Concepts of stress and strain; stress-strain relationships. Behavior of members subjected to tension, compression, shear, bending, torsion, and combined loading. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: Grade of C or better in AREN 2311; Grade of C or better in MATH 2425.

AREN 2315. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

Materials, methods and sequences of the construction process; emphasis on design, specification, purchase and use of concrete, steel, masonry and wood. An understanding of the uses of construction materials. Prerequisite: Grade of C or better in AREN 1205.

AREN 2391. PROBLEMS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

AREN 3110. ARCHITECTURAL ENGINEERING COMMUNICATIONS. 1 Hour.

Technical writing, oral communication, professional presentations, and other related topics. Prerequisite: Grade of C or better in COMS 2302.

AREN 3143. PROPERTIES AND BEHAVIOR OF SOILS. 1 Hour.

An introduction to determination of civil engineering properties of soil and their behavior, identification, grain size analysis, Atterberg limits, compaction, permeability, consolidation, and shear strength. Also an introduction to sampling of soil materials. Prerequisite: Concurrent enrollment in AREN 3343.

AREN 3191. PROBLEMS IN ARCHITECTURAL ENGINEERING. 1 Hour.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 3213. BUILDING SCIENCE. 2 Hours.

The interactions between humans and indoor environments are critical for accessing human comfort and energy efficiency in buildings. This course introduces the physical phenomena that affect building design and energy performance with respect to human comfort in buildings. Topics include both indoor environmental quality (thermal comfort, indoor air quality, visual comfort, aural comfort), relevant building systems (mechanical, electrical, envelope systems), and sustainable buildings. Prerequisite: Grade of C or better in CHEM 1465 and PHYS 1444.

AREN 3218. ARCHITECTURAL ENGINEERING GEOMETRIC DESIGN TOOLS. 2 Hours.

This course will address principles of Euclidean and non-Euclidean Geometry in the area of architectural engineering. Topics include golden ratio, golden mean, geodesics on surfaces, conic sections, parametric equations with focus on the techniques, skills, and modern engineering tools necessary for architectural engineering practices. Prerequisite: MATH 1421 or equivalent, AREN 1205.

AREN 3291. PROBLEMS IN ARCHITECTURAL ENGINEERING. 2 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 3301. STOCHASTIC MODELS FOR CIVIL ENGINEERING. 3 Hours.

Basic theory of probability and statistics with practical applications to civil and environmental engineering problems. Emphasis on sampling, distribution functions, tests of significance, and regression modeling. Prerequisite: Grade of C or better in MATH 2425.

AREN 3305. BASIC FLUID MECHANICS. 3 Hours.

Fundamentals of fluid statics, kinematics of fluid flow, fluid energy, fluid forces, similitude, and dimensional analysis. Related to steady flow of incompressible fluids in confined and free surface systems. Prerequisite: Grade of C or better in AREN 2311; Grade of C or better in MATH 3319 or concurrent enrollment.

AREN 3311. CONSTRUCTION ENGINEERING. 3 Hours.

Principles of construction engineering and the project management process, value engineering, specifications, different construction contracts and delivery methods, estimating and scheduling fundamentals and project control, and management of construction process. Prerequisite: Grade of C or better in IE 2308.

AREN 3331. MECHANICAL AND ELECTRICAL SYSTEMS. 3 Hours.

Mechanical and electrical systems with a major emphasis on estimating and installation, design and control of the electrical, heating, ventilation and cooling system, site planning and acoustical treatments. Prerequisite: Grade of C or better in PHYS 1444.

AREN 3341. STRUCTURAL ANALYSIS. 3 Hours.

Structural analysis/design process, structural forms, and basic structural elements. Analysis of statically determinate structures including beams, trusses, frames, and composite structures, shear and moment diagrams, influence lines, and moving loads. Methods to compute deflections including double integration, moment area, and virtual work. Methods of analysis for statically indeterminate structures including consistent deformation, slope deflection and moment distribution. Use of structural analysis programs. Prerequisite: Grade of C or better in AREN 2313.

AREN 3343. SOIL MECHANICS. 3 Hours.

An introduction to the significant geophysical and soil science properties and behavior of materials making up the earth's crust as they apply to civil engineering, sources of materials, classification, plasticity, permeability, stress distribution, consolidation, shear strength, and settlement. Also an introduction to basic foundation engineering concepts. Prerequisite: Grade of C or better in AREN 2313; Concurrent enrollment in AREN 3143.

AREN 3347. REINFORCED CONCRETE DESIGN. 3 Hours.

An analysis, design and synthesis course for concrete structures, emphasizing strength design method. Topics include strength and serviceability requirements, design of one way slabs, rectangular beams, flanged sections and columns, for strength, shear, bond, bearing, and serviceability. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in AREN 3341 and admission to the AREN Professional Program.

AREN 3391. PROBLEMS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 4300. ADVANCED TOPICS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Advanced topics of current interest in any one of the various fields of architectural engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Consent of instructor required and Admission to the AREN Professional Program.

AREN 4301. ADVANCED TOPICS IN ARCHITECTURAL ENGINEERING WITH LAB. 3 Hours.

Advanced topics of current interest in any one of the various fields of architectural engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Consent of instructor required and Admission to the AREN Professional Program.

AREN 4307. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both AREN 4307 and CE 5382. Prerequisite: Grade of C or better in AREN 3311; Admission to the AREN Professional Program.

AREN 4309. THERMODYNAMICS FOR ARCHITECTURAL ENGINEERS. 3 Hours.

Basic concepts and definitions of thermodynamics, entropy, and introduction to first law of thermodynamics, second law of thermodynamics, and introduction to conductive, convective, and radiative transfer. Application of thermodynamics to building heating, cooling and ventilation (HVAC) systems; use of modern techniques for design and specifications of selected thermal and mechanical systems for buildings. Prerequisite: Grade of C or better in MATH 2425 (or HONR-SC 2425), PHYS 1444, and CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment).

AREN 4326. GIS/HYDROLOGIC & HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS-developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, and the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply. Prerequisite: Grade of C or better in AREN 3305; Admission to the AREN Professional Program.

AREN 4346. ELECTRICAL SYSTEMS & LIGHTING FOR ARCHITECTURAL ENGINEERS. 3 Hours.

Basic fundamentals of electrical principles and electric lighting principles; application of basic electrical science for the design and specification of electrical systems and lighting for buildings using modern techniques; safety and protection systems in buildings and national electrical code and standards. Prerequisite: Grade of C or better in MATH 2425 (or HONR-SC 2425) and PHYS 1444; Admission to the AREN Professional Program.

AREN 4348. STRUCTURAL DESIGN IN STEEL. 3 Hours.

A design synthesis course for structural steel structures using Allowable Strength Design and Load Resistance Factor Design. Topics include tension members, compression members, flexural members and simple connections. Building codes, American Institute of Steel Construction (AISC) specs, material specs, test methods, and recommended practice documents. Prerequisite: Grade of C or better in AREN 3341 and admission to the AREN Professional Program.

AREN 4352. PROFESSIONAL PRACTICE. 3 Hours.

Professional practice issues in the private and public sector are addressed by visiting practitioners. Topics include project management, teamwork, obtaining work, regulatory requirements, specifications, issues in design/build, design alternatives, cost estimation, design and construction drawings, contract and construction law, legal issues, ethics and professionalism, design reports, licensure, lifelong learning, ethical and engineering practice organizations. Learning principles of engineering practice by working as a team is emphasized. Oral and written presentations are required. Prerequisite: Admission to the AREN Professional Program.

AREN 4360. DESIGN OF STRUCTURAL MASONRY. 3 Hours.

Covers masonry unit types and mortar types, reinforcing and connections. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building Codes, Masonry Standards Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in AREN 3341; Admission to the AREN Professional Program.

AREN 4365. STRUCTURAL WOOD DESIGN. 3 Hours.

Covers material grade and properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and diaphragms. Building codes, National Design Specification for Wood Construction (NDS) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in AREN 3341; Admission to the AREN Professional Program.

AREN 4383. SENIOR PROJECT. 3 Hours.

This course will provide architectural engineering students the opportunity to apply tools, skills and principles of architecture engineering towards the planning, analysis of alternatives, and designs of engineering solutions for projects identified by the instructor. Projects will address engineering standards and multiple realistic constraints. Application of computer-aided design and engineering tools will be utilized for analysis and design. Student presentations will address alternative solutions, application of building code and engineering standards within architectural context. Students will work together and submit a team project. Prerequisite: Grade of C or better in AREN 4348; Completion of all required 3000 level courses; or permission of instructor.

AREN 4391. PROBLEMS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

AREN 4393. INDUSTRIAL INTERNSHIP. 3 Hours.

Student to experience industrial internship under supervision of an industrial mentor and internship committee. Prerequisite: Admission to the AREN Professional Program.

AREN 4394. RESEARCH INTERNSHIP. 3 Hours.

Student to experience research internship under supervision of a CE faculty. Prerequisite: Admission to the AREN Professional Program.

Civil Engineering - Graduate Programs

Objective

The objective of the graduate program in civil engineering is to prepare students for continued professional and scholarly development consistent with their technical interests. Students, with the assistance of a faculty advisor in their area of interest, plan their programs of study in one of the technical areas in civil engineering. Typical program and research areas are:

1. Construction Engineering and Management;
2. Environmental (water and air quality control, and solid and hazardous materials control);
3. Geotechnical (soil mechanics and foundations);
4. Infrastructure Systems Engineering and Management;
5. Structures and Applied Mechanics;
6. Transportation (traffic planning, highways, airports and transit);
7. Water Resources (hydrology and hydraulics)

Masters (M.S. and M.Engr.) Student Learning Outcomes

1. *Fundamental Knowledge:* Graduates will have extensive basic and applied knowledge in their selected Civil Engineering Program (CEP) interest area.
2. *Independent Abilities:* Graduates will have the ability to conduct independent and original study ranging from gathering of information to application, analysis, creation, documentation of the study, and its resolution.
3. *Critical Thinking:* Graduates will have extensive breadth and ability to critique and synthesize literature, review results and to apply this knowledge in developing new ideas, in designing and evaluating scientific investigations, and in assessing, interpreting and understanding data relating to their selected CEP interest area.
4. *Advanced Knowledge:* Graduates will demonstrate extensive mastery of the subject matter at a deeper theoretical and applied level beyond the fundamental knowledge gained in his/her undergraduate course sequence.
5. *Effective Communication:* Graduates will have the ability to present scientific results in both written and oral format in various forums including thesis defense, master's defense, project reports, manuscripts, professional society meetings, journals, and performing class lectures, presentations, and reports.
6. *Professional Development:* A student graduating with a master's degree in civil engineering is expected to demonstrate interest in pursuing lifelong learning by attaining professional licenses, and obtaining professional development hours by attendance at conferences, higher educational classes, short courses and seminars, conducting classes, and publishing.

Ph.D. Student Learning Outcomes

1. *Fundamental Knowledge:* Graduates will command profound basic and applied knowledge in their specialty area within their Civil Engineering Program (CEP) interest area.
2. *Independent Abilities:* Graduates will have the ability to conduct a major independent and original research study that includes gathering of information, gaining an understanding of the process of academic or commercial exploitation of research results, demonstrating an understanding of contemporary research issues, effective project management, synthesis and evaluation, and appropriate dissemination of research findings.
3. *Critical Thinking:* Graduates will have a profound ability to critique and synthesize literature, review results and to apply knowledge gained from literature to develop new ideas, to design and evaluate scientific investigations, and to assess, interpret and understand data related to their specialty area within their CEP interest area.
4. *Advanced Knowledge:* Graduates will demonstrate profound mastery of the subject matter at a deeper theoretical and applied level well beyond fundamental knowledge gained in the undergraduate course sequence and the higher-level knowledge gained in the master's level course sequence.
5. *Effective Communication:* Graduates will have the ability to construct coherent arguments and articulate ideas clearly to an audience, through a variety of techniques, constructively defend research outcomes, justify their research to the profession and promote the public understanding of their research fields.
6. *Professional Development:* A student graduating with a doctoral degree in civil engineering is expected to demonstrate interest in pursuing life long learning by attaining professional licenses, and obtaining professional development hours by attendance at conferences, higher educational classes, short courses and seminars, conducting classes, and publishing.

Grade Requirements and Continuation

The Civil Engineering Graduate Program has established rules, regulations, policies, and procedures for continuation in the graduate program and fulfilling graduation requirements. These can be found in the Civil Engineering Graduate Handbook available in the Civil Engineering Office. In addition to the requirements of the Graduate Studies listed elsewhere, to continue in the program each civil engineering graduate student must:

- For the M.S. program, maintain an overall GPA of 3.00 or higher.
- For the M.E. program, maintain an overall GPA of 3.00 or higher and a GPA of 3.00 or higher in core courses.
- For Ph.D. or BS-Ph.D. program, student must maintain a minimum GPA of 3.50 or higher in their Ph.D. Civil Engineering coursework and a 3.25 GPA outside of CE to take the comprehensive examination and to graduate from the Civil Engineering Ph.D. program or BS-Ph.D. program.

No organized course in which a grade of P is received can be used to satisfy course requirements for a graduate degree in civil engineering.

Degree Requirements

The student is responsible for knowing the rules, regulations, and filing deadlines of the Graduate School and the Civil Engineering Committee on Graduate Studies (see Civil Engineering Graduate Handbook available in Civil Engineering Office). Requirements of the Graduate Studies and the Civil Engineering Committee on Graduate Studies must be met. The degrees offered and minimum course requirements are identified in the Master's (p. 485) and Doctoral (p. 487) tabs in the Civil Engineering section of this catalog.

Undergraduate Coursework Credit

A limited number (not to exceed a total of nine semester hours) of 4000 level Civil Engineering elective courses may be applicable toward a graduate degree if approved in advance by the Civil Engineering Graduate Advisor.

Admission Requirements

Performance on the GRE will not be the sole criterion for admitting applicants or the primary criterion to deny admission to either the Master's or Ph.D. program. In cases where GRE performance is relatively poor all other qualifications presented by the applicant will be carefully evaluated for evidence of potential for success.

Unconditional Admission

A student must meet the following requirements for unconditional admission:

1. A Bachelor's Degree in Civil Engineering (Applicant with an appropriate Bachelor's Degree in another discipline is considered, subject to satisfactory completion of deficiency courses for area of interest.)
2. An undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School, is typical of a successful applicant.
3. A Graduate Record Exam (GRE) Quantitative score of 700 (old score system) or 155 (new score system) or higher is typical of a successful applicant.
4. A Graduate Record Exam Verbal score of 390 (old score system) or 146 (new score system) or higher is typical of a successful applicant.
5. For applicants whose native language is not English, a minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL), 79 on TOEFL iBT, 50 on the SPEAK, 146 on Verbal GRE, 85 on MELAB (Michigan English Language Assessment Battery), or 6.5 on the IELTS (International English Language Testing System). (MELAB and IELTS are used only when other tests are not available in the applicant's country.)

Probationary Admission

If applicants do not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission may require that the applicant receive a B or better in at least their first 9 hours of graduate coursework applicable to their degree being sought at UT Arlington, take additional English courses, and/or deficiency courses as required.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline, but whom otherwise appears to meet admission requirements may be granted provisional admission.

Deferred Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate.

Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

Waiver of Graduate Record Exam

A waiver of the Graduate Record Exam (GRE) may be considered for a UT Arlington graduate who graduated within the past 3 years and has completed an engineering or science degree closely related to Civil Engineering. The student's GPA must equal or exceed 3.0 in the last 60 hours of study which must have been completed at UTA.

Facilitated Admission of Outstanding UT Arlington Undergraduates

Facilitated Admission may be considered for a student who has graduated from UT Arlington no more than one academic year prior to proposed entrance to the graduate program. Students must complete the last 60 hours of study at UT Arlington. The student's UT Arlington GPA must equal or

exceed 3.5 in the last 60 hours of undergraduate study and all undergraduate coursework completed at UT Arlington. The applicant's records will be assessed for evidence of strengths relevant to success in the Civil Engineering graduate program. Meeting the minimum GPA requirement shall not be the sole determinant or the primary criterion for granting facilitated admission.

Fast Track Program for Master's Degree in Civil Engineering

The Fast Track Program enables outstanding senior undergraduate Civil Engineering students to receive undergraduate and graduate credit for up to six hours of coursework. Technical electives which are dual-listed as graduate courses will satisfy both bachelor's and master's degree requirements. Students pursuing an MECE or MSCE degree may take up to two courses for dual credit.

Interested undergraduate Civil Engineering students should apply for admission to the Fast Track Program when they are within 30 hours of completing their bachelor's degree (and before graduation). For admission consideration, they must have completed at least 30 hours at UT Arlington and have an overall and College of Engineering GPA of at least 3.00 (in both) for the MECE option and the MSCE option. Additionally, they must have completed a set of specified, basic undergraduate foundation courses with a grade of B or higher in each course and a GPA of at least 3.30 in these foundation courses. The specific foundation courses vary according to the student's desired specialty area for the master's degree.

In their final semester as an undergraduate, Fast Track students in good standing will be automatically admitted to graduate school with consent of the Graduate Advisor. No fees, transcripts, or test scores will be required. For further information about this program, contact an undergraduate advisor or the Graduate Advisor in Civil Engineering. Descriptions of CE Fast Track degree options are also available in the CE Advising Office.

Departmental Scholarships

Students that are unconditionally admitted will be eligible to apply for available scholarships. Recipients must maintain at least a 3.0 overall GPA, and must be enrolled in a minimum of 9 hours of coursework in both long semesters to retain their scholarship. Additional requirements may be imposed by the department selection committee.

Master's Degree Requirements

The Master of Science degree is a research-oriented program in which completion of a thesis is mandatory. The program consists of a minimum of 24 credit hours of coursework and an acceptable thesis (six credit hours). The Master of Engineering degree is an engineering practice-oriented program requiring a minimum of 30 credit hours of coursework.

Additional Master's Degree Graduation Requirements

1. Master's students whose core course GPA is below 3.0 are required to take written exams only on the core courses in which they made lower than B grades, or they may retake those courses and make a grade of B or better.
2. Each core course exam will be similar to a final exam and will be 1.5 to 2.5 hours in duration, at the discretion of the faculty giving the exam. Also at the discretion of the faculty, the exams may be open book, closed book, or a combination of both. Students who must take exams on multiple core course subjects, may take those at different times or days.
3. Each exam must be passed with a grade of 75% or higher. In case of failing an exam subject, students will be allowed only one additional attempt on that subject.
4. In lieu of taking the exams, either the initial time or a second time, students can opt to repeat the respective core course as a 5300 class, in which case the course must be passed with a grade of B or better. The option to repeat a course as a 5300 class can only be exercised once.
5. Given this potential additional graduation requirement and in order not to postpone one's graduation, master's students are strongly encouraged to take their core courses as early as possible, ideally within the first two long semesters.

Dual Program Degree

Students in the Civil Engineering program may participate in a dual degree program whereby they can earn a Master's Degree in Civil Engineering and a Master of City and Regional Planning. By participating in a dual degree program, students can apply a number of semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours required to earn both degrees separately. The number of hours that may be jointly applied ranges from 6 to 18 hours, subject to the approval of each program's Committee on Graduate Studies and Graduate Advisor. Those interested in the dual degree program should consult the appropriate graduate programs for further information on course requirements, including information regarding which courses are suitable for joint application of credit hours.

To participate in the dual degree program, students must make a separate application to each program, be accepted by each program, and must submit separate Programs of Work for each degree showing only courses that meet requirements for the specified degree, including those joint courses that meet requirements for both degrees. A student must be admitted to the second program before completing more than 15 semester hours in the first, exclusive of leveling, deficiency, or foundation courses, and must complete the second degree within one academic year following completion of the first. See also the statement on "Dual Degree Programs" in the general admission section of this catalog.

Admissions Requirements

Performance on the GRE will not be the sole criterion for admitting applicants or the primary criterion to deny admission to either the Master's or Ph.D. program. In cases where GRE performance is relatively poor all other qualifications presented by the applicant will be carefully evaluated for evidence of potential for success.

Unconditional Admission

A student must meet the following requirements for unconditional admission:

1. A Master's Degree or at least 30 hours of graduate coursework in Civil Engineering. (Applicant with a Master's Degree in another discipline is considered, subject to satisfactory completion of deficiency courses for the CE area of interest.)
2. No specific GPA requirement (application considered as a whole). However, a graduate coursework GPA of 3.5 on a 4.0 scale, as calculated by the Graduate School, is typical of a successful applicant.
3. A Graduate Record Exam (GRE) Quantitative score of 740 (old score system) or 158 (new score system) or higher is typical of a successful applicant.
4. A competitive Graduate Record Exam (GRE) Verbal score. A successful applicant typically has a Verbal score of 420 (old score system) or 148 (new score system).
5. For applicants whose native language is not English, a minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL), 79 on TOEFL iBT, 50 on the SPEAK, 148 on Verbal GRE, 86 on MELAB (Michigan English Language Assessment Battery), or 6.5 on the IELTS (International English Language Testing System). (MELAB and IELTS are used only when other tests are not available in the applicant's country.)
6. Favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.

Probationary Admission

If applicants do not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission may require that the applicant receive a B or better in at least their first 9 hours of graduate coursework applicable to their degree being sought at UT Arlington, take additional English courses, and/or deficiency courses as required.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline, but whom otherwise appears to meet admission requirements may be granted provisional admission.

Deferred Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate.

Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

CE BS-Ph.D. Program

Unconditional Admission

A student must meet the following requirements for unconditional admission:

1. No Specific GPA requirement (application considered as a whole). However, an undergraduate coursework GPA of 3.5 on a 4.0 scale, as calculated by the Graduate School, is typical of a successful applicant.
2. A Graduate Record Exam (GRE) Quantitative score of 740 (old score system) or 158 (new score system) or higher is typical of a successful applicant.
3. A competitive Graduate Record Exam (GRE) Verbal score. A successful applicant typically has a Verbal score of 420 (old score system) or 148 (new score system).
4. For applicants whose native language is not English, a minimum score of 550 on the paper-based Test of English as a Foreign Language (TOEFL), 79 on the TOEFL iBT, 50 on the SPEAK, 86 on MELAB (Michigan English Language Assessment Battery), or 6.5 on the IELTS (International English Language Testing System). (MELAB and IELTS are used only when other tests are not available in the applicant's country.)
5. Favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.

Probationary Admission

If applicants do not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission may require that the applicant receive a B or better in at least their first 9 hours of graduate coursework applicable to their degree being sought at UT Arlington, take additional English courses, and/or deficiency courses as required.

Doctoral Degree Requirements

Doctor of Philosophy (Ph.D.) is a research oriented degree and, as such, requires the candidate to successfully carry out original and independent research in a civil engineering area acceptable to the civil engineering faculty. In addition to research, student's Ph.D. advisor and Ph.D. Committee will evaluate the student's fundamental knowledge of the master's core courses and determine the required coursework. For B.S.-Ph.D., students are required to complete a minimum of 30 credit hours of coursework, which must include master's core courses. A total of nine (9) hours of dissertation courses (CE 6399, 6699, or 6999) must be taken; at least three (3) of those hours must be in the semester of graduation.

Civil Engineering - Undergraduate Programs

Undergraduate Programs

The following sections apply to each student majoring in any undergraduate program housed in the Civil Engineering Department: Architectural Engineering, Civil Engineering, and Construction Management. In these sections, "program" refers to any of these programs and "student" refers to any student (UCOL, Intended, or Professional Program) majoring in any one of these programs.

Refer to the College of Engineering section of this catalog for additional information concerning the following topics: Admission to the College of Engineering, Advising, Admission into the Professional Program, College of Engineering Academic Regulations, Honors Degrees in Engineering, Professional Engineering Licensure, and Cooperative Education.

Admission Requirements

Admission as an Architectural Engineering major, a Civil Engineering major, or a Construction Management major is subject to the relevant requirements and policies of the University of Texas at Arlington and of the UTA College of Engineering. The Civil Engineering Department does not impose additional requirements.

Transfer Credit

When a student transfers, a loss of credit can occur that may require change in academic plans. A course, that appears to be similar, may be different in either content or level of difficulty and, as a result, cannot be used for degree credit. Another course may have no equivalent in a particular degree plan. More than one transferred course may satisfy a degree requirement when only one is required. The UTA Civil Engineering Department encourages students interested in our programs to make early contact with our advisors so that we can help avoid these problems.

A student must earn a grade of C or better for a course to be transferred. Any course that is offered under the Texas Common Course Numbering system is accepted as equivalent to the corresponding UTA course. It is the responsibility of the student to establish the equivalence of any other course or courses to a course required in a program. The student should be prepared to provide a syllabus or similar documents to establish equivalence. To be acceptable as equivalent, at a minimum, a transferred course must have no less credit value than the corresponding course and contain substantially equivalent course content. To be accepted in transfer, junior and senior level courses must be taken at a college or university with the same accreditation as UTA in the area offering the course. For example, a Civil Engineering course must come from an ABET accredited Civil Engineering program.

When a student's record or performance indicates weakness in certain areas of study, they may be required to retake courses or to take additional courses.

Before enrolling in a course at another institution to transfer for credit toward a program degree, a student should consult with a program advisor to verify that the course can be used in the student's degree plan and to obtain the necessary written permission.

Advising

Academic advisement is required for every undergraduate student before class enrollment each semester.

A new student with fewer than 24 hours of transferrable credit, including any student entering directly from high school, is advised in the University Advising Center of University College. After one or more semesters and sufficient progress in the degree program, this student is released by the University Advising Center to the program advisors.

Prior to enrollment, a new student with 24 or more hours of transferrable credit must make an appointment with the transfer advisor of their program. However, if all of the student's transfer credit was earned at a Texas community college, an appointment may be scheduled with any advisor for their program. The advising appointment should be scheduled as soon as possible after admission, but certainly prior to registration. A transfer student should not make an advising appointment with a transfer advisor after the initial evaluation of their transfer credit is complete.

During each long semester, a specified period is set aside for the academic advisement of continuing students. Each continuing student is responsible for meeting with their program advisor during this advising period. Continuing students will receive instructions prior to each advising period related to preparing for and making an advising appointment. Academic advising will be available at other times but a student who does not meet with their program advisor during the regular advising period may have fewer alternatives when selecting courses.

Academic Rules, Regulations, and Policies

In addition to the rules, regulations, and policies established below and in the individual program sections, each student is subject to the rules, regulations, and policies of the University of Texas at Arlington and of the UTA College of Engineering. Each student should become familiar with these. The rules, regulations, and policies of the University of Texas at Arlington and of the UTA College of Engineering are set forth in other sections of this catalog. It is the responsibility of each student to follow the applicable published rules. Failure to follow these rules may be grounds for dismissal from the program.

CE Department Course Requisites

- A student must have the written approval of their program advisor to register for any course that will satisfy a requirement of their degree program.
- A student must have specific written permission of their program advisor to register at a different institution for any course that will satisfy a requirement of their degree program.
- A student may not attempt a CE Department course without satisfying all current requisite requirements. A prerequisite course requirement is satisfied by earning a grade of C or better. A co-requisite course requirement is satisfied by earning a grade of C or better or by concurrent enrollment in the course at UTA.
- A student may not drop a course which is co-requisite to a CE Department course without also dropping the CE Department course.
- No professional program courses may be attempted until the student is admitted into the professional program or obtains the written permission of the Department Chair.

Repeating Courses

A student may not attempt any course more than three times and apply that course toward a program degree. Enrollment in a course for a period of time sufficient for assignment of a grade, including a grade of W, is considered an attempt.

Admission to the Professional Program

Requirements for admission to the professional program in each program are in accordance with those of the College of Engineering with the following added stipulations:

- Application to the professional program is to be made to the CE Department during the semester that the advancement requirements are being completed.
- Each student must complete all pre-professional courses stipulated under "Requirements for a Bachelor of Science Degree in" the program with a minimum grade of C in each course and a minimum GPA of 2.25 in: a) all courses, b) in all math, science, and engineering courses, and c) in all program specific courses.
- Upon receipt of the application, a student's record is individually reviewed including grades, academic and personal integrity, record of drops and course withdrawals, the order in which courses have been taken, the number of times a student has attempted a course for credit, and any other aspect of the student's record that may be deemed pertinent to admission.

The student must be admitted to the professional program and have an approved degree plan on file in order to graduate. The degree plan is generated upon entry to the professional program. Graduating seniors should apply to graduate during the next-to-last semester.

Grounds for Dismissal from the CE Program

A student whom the UTA Office of Student Conduct has found to have violated the UTA Code of Student Conduct a second time is subject to dismissal from the CE program.

Minor Field of Study

The Civil Engineering Department does not support the option of pursuing a minor in Architectural Engineering, in Civil Engineering, or in Construction Management by other engineering or non-engineering majors.

Educational and Professional Career Paths

Civil engineering is the oldest and broadest of the engineering disciplines. A civil engineer works with a wide spectrum of individuals in both the public and private sectors to meet today's challenges of pollution, infrastructure rehabilitation, traffic congestion, floods, earthquakes, and urban development. Civil engineers plan, design, construct, maintain, manage, and operate facilities essential to modern, civilized human life. Projects requiring civil engineering expertise vary widely in nature, size, and scope, such as: bridges, tunnels, transportation systems, airports, storm water drainage systems, dams, buildings, foundations, water treatment and distribution, wastewater collection and treatment, hazardous waste treatment, environmental remediation, environmental protection, and air pollution control.

Civil engineering graduates are prepared for advanced graduate degrees and a wide range of career paths in civil engineering including consulting, governmental agencies, and industry. In addition to the traditional careers in civil engineering, graduates may take advantage of their strong, broad-based engineering education to pursue careers in professions such as medicine, law, business, or teaching.

Fast Track Program for Master's Degrees in Civil Engineering

The Fast Track Program enables outstanding senior undergraduate Civil Engineering students to receive undergraduate and graduate credit for up to six hours of coursework. Technical electives which are dual-listed as graduate courses will satisfy both bachelor's and master's degree requirements. Students pursuing an MECE or MSCE degree may take up to two courses for dual credit.

Interested undergraduate Civil Engineering students should apply for admission to the Fast Track Program when they are within 30 hours of completing their bachelor's degree (and before graduation). For admission consideration, they must have completed at least 30 hours at UT Arlington and have an overall and College of Engineering GPA of at least 3.00 (in both) for the MECE option and the MSCE option. Additionally, they must have completed

a set of specified, basic undergraduate foundation courses with a grade of B or higher in each course and a GPA of at least 3.30 in these foundation courses. The specific foundation courses vary according to the student's desired specialty area for the master's degree.

In their final semester as an undergraduate, Fast Track students in good standing will be automatically admitted to graduate school with consent of the Graduate Advisor. No fees, transcripts, or test scores will be required. Students must start their master's program the long semester or summer semester immediately following their graduation or the next long semester. For further information about this program, contact an undergraduate advisor or the Graduate Advisor in Civil Engineering. Descriptions of CE Fast Track degree options and a list of approved, required departmental courses are also available in the CE Advising Office.

Civil Engineering BS Degree at UT Arlington

At the undergraduate level, the department offers a Bachelor of Science in Civil Engineering degree designed to provide a strong foundation in science, mathematics, and engineering science; technical competence in multiple areas of civil engineering practice; and an understanding of the importance of ethics, safety, professionalism, and socioeconomic concerns in resolving technical problems through synthesis, planning, and design. Elements of design are introduced at the freshman level. This is followed by an analysis and design component in professional program courses, culminating in a comprehensive design experience.

The UT Arlington Civil Engineering BS degree has been accredited since October 1967 by the Engineering Accreditation Commission of ABET, www.abet.org (<http://www.abet.org/>). ABET is recognized by the U.S. Department of Education as the sole agency responsible for accreditation of educational programs leading to degrees in engineering. Graduation from an ABET accredited program is an important factor in attaining registration as a Professional Engineer in the State of Texas and other states.

Educational Objectives of the Undergraduate Program

Most alumni of the CE program will attain the following Program Educational Objectives (PEOs) within a few years after graduation:

- Obtain professional position and practice civil engineering, or pursue graduate studies.
- Be involved in continuing education and professional development activities.
- Obtain PE licensure or other professional certification.

Student Outcomes of the Undergraduate Program

In order to produce graduates who will achieve the Program Educational Objectives a few years after graduation, it is expected that the undergraduate students will attain the following Student Outcomes by the time of graduation:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Requirements for a Bachelor of Science Degree in Civil Engineering

Courses Fulfilling the University General Core Requirements (minimum 42 hours required)

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Communication (minimum 6 hours required)

ENGL 1301	RHETORIC AND COMPOSITION I
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING ²

Creative Arts (minimum 3 hours required)

Any course which satisfies the University Core Curriculum requirement for Creative Arts is accepted.

Government/Political Science (minimum 6 hours required)

POLS 2311	GOVERNMENT OF THE UNITED STATES
POLS 2312	STATE AND LOCAL GOVERNMENT

Language, Philosophy & Culture (minimum 3 hours required)

Any course which satisfies the University Core Curriculum requirement for Language, Philosophy & Culture is accepted.

Mathematics (minimum 6 hours required)

MATH 1426	CALCULUS I
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MATH 2425	CALCULUS II
Life & Physical Sciences (minimum 6 hours required)	
PHYS 1443	GENERAL TECHNICAL PHYSICS I
PHYS 1444	GENERAL TECHNICAL PHYSICS II
Social & Behavioral Sciences (minimum 3 hours required)	
IE 2308	ECONOMICS FOR ENGINEERS
US History (minimum 6 hours required)	
Any courses which satisfies the University Core Curriculum requirement for US History is accepted.	
Foundational Component Area Option (minimum 3 hours required)	
MATH 2326	CALCULUS III
Pre-Professional Program Courses	
Of the core courses, COMS 2302, ENGL 1301, IE 2308, MATH 1426, MATH 2425, MATH 2326, PHYS 1443, and PHYS 1444 are part of the CE Pre-Professional Program.	
CHEM 1465	CHEMISTRY FOR ENGINEERS
CE 1105	INTRODUCTION TO CIVIL ENGINEERING ¹
CE 1353	INTRODUCTION TO COMPUTER AIDED DESIGN TOOLS IN CIVIL ENGINEERING
CE 2221	DYNAMICS
CE 2311	STATICS
CE 2313	MECHANICS OF MATERIALS I
CE 2331	ENGINEERING MEASUREMENT AND COMPUTER MODELING
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA
UNIV 1131	STUDENT SUCCESS
or ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS
CE Professional Program Courses	
CE 3131	ENVIRONMENTAL ANALYSIS
CE 3142	APPLIED FLUID MECHANICS LAB
CE 3143	PROPERTIES AND BEHAVIOR OF SOILS
CE 3210	CIVIL ENGINEERING COMMUNICATIONS
CE 3253	APPLICATIONS OF COMPUTER-BASED DESIGN PROGRAMS IN CIVIL ENGINEERING
CE 3301	STOCHASTIC MODELS FOR CIVIL ENGINEERING
CE 3302	TRANSPORTATION ENGINEERING
CE 3305	BASIC FLUID MECHANICS
CE 3311	CONSTRUCTION ENGINEERING
CE 3328	WATER SYSTEM DESIGN
CE 3334	PRINCIPLES OF ENVIRONMENTAL ENGINEERING
CE 3341	STRUCTURAL ANALYSIS
CE 3342	WATER RESOURCES ENGINEERING
CE 3343	SOIL MECHANICS
CE 3347	REINFORCED CONCRETE DESIGN
CE 3361	PROPERTIES & BEHAVIOR OF CIVIL ENGINEERING MATERIALS
CE 4352	PROFESSIONAL PRACTICE
CE 4383	SENIOR PROJECT
GEOL 3340	GEOLOGY FOR ENGINEERS
12 hours of senior technical electives	
Nine hours of CE technical electives to be selected from three of the following six areas: Construction, Environmental, Geotechnical, Structures, Transportation or Water Resources. One remaining three-hour course may be from any CE technical elective area, CE 4393 (Industrial Internship), or CE 4394 (Research Internship).	
Civil Engineering Technical Electives are all CE 4000-level courses, except CE 4352 (Professional Practice) and CE 4383 (Senior Project).	
The classification of each CE technical elective is provided on a form by the Civil Engineering Department.	
Total Hours	

23

61

130

1

Completion of CE 1105 INTRODUCTION TO CIVIL ENGINEERING and CE 1353 INTRODUCTION TO COMPUTER AIDED DESIGN TOOLS IN CIVIL ENGINEERING satisfies the University's computer proficiency requirement.

- ² Completion of COMS 2302 PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING satisfies the University's communication requirement.

More hours may be required to strengthen student's program or demonstrate proficiency. See Prior Preparation and Course Requirements.

Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical languages courses in addition to the previously listed requirements.

Suggested Course Sequence

A suggested course sequence for the Pre-Professional and Professional Program courses is available on the CE Department's web site.

Prior Preparation and Course Requirements

The undergraduate baccalaureate degree in civil engineering is a four-year program and requirements for the degree are based upon prior high school preparation through either an honors or college track program. Students who have not had the appropriate prior preparation should contact the departmental advising office for a curriculum guide that will assist them in structuring a study plan that will include leveling courses. Students requiring leveling courses may require a period of time greater than four years to complete their undergraduate degree.

COURSES

CE 1000. FRESHMAN UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 1105. INTRODUCTION TO CIVIL ENGINEERING. 1 Hour.

Introduction to basic civil engineering practice. There are several writing assignments and an oral presentation. Use of spreadsheet and word processor software in solving civil engineering problems and presenting solutions. Professional engineering licensure and the various specializations within civil engineering are covered.

CE 1252. COMPUTER TOOLS - AUTOCAD. 2 Hours.

Introduction to computer aided design, using AutoCAD. Creation of precise two-and/or three- dimensional engineering drawings and solid models. Prerequisite: Grade of C or better in MATH 1421; or concurrent enrollment in:(1) MATH 1426 or 2) HONR-SC 1426.

CE 1353. INTRODUCTION TO COMPUTER AIDED DESIGN TOOLS IN CIVIL ENGINEERING. 3 Hours.

An introduction to computer aided design using AutoCAD interface built in Civil 3D. Students will be taught CAD commands, tools, 2D drawing objects, multi-view drawing, layer management, linetypes, object snap, polar tracking, and annotation. Civil 3D concepts and essential functions for creating, designing, and analyzing civil engineering drawings will be covered. Prerequisite: Grade of C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment).

CE 2000. SOPHOMORE UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 2152. COMPUTER TOOLS - MATHCAD. 1 Hour.

Introduction to computer aided mathematics, using Mathcad. Solution of engineering problems involving systems of simultaneous linear and nonlinear equations and elementary calculus, use of the tools for visualization. Prerequisite: Grade of C or better in PHYS 1443.

CE 2153. COMPUTER TOOLS - CIVIL 3D. 1 Hour.

Introduction to civil engineering construction documentation and building information modeling (BIM) using AutoCAD Civil 3D. Prerequisite: CE 1252.

CE 2191. PROBLEMS IN CIVIL ENGINEERING. 1 Hour.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore classification in civil engineering.

CE 2221. DYNAMICS. 2 Hours.

Planar and spatial kinematics and kinetics of particles and rigid bodies utilizing Newton's Laws of Motion, the principle of work and energy, and the principle of impulse and momentum; introduction to single degree of freedom vibration. Prerequisite: Grade of C or better in CE 2311; grade of C or better in MATH 2425.

CE 2291. PROBLEMS IN CIVIL ENGINEERING. 2 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore classification in civil engineering.

CE 2300. INTRODUCTION TO SUSTAINABLE ENGINEERING. 3 Hours.

Introduction to key sustainability concepts and challenges. The engineering design process and consideration of sustainability. Techniques for generating creative and innovative alternative solutions to sustainability problems. Use of life cycle assessment to quantify environmental, economic, and social impacts of various alternatives. Methods to incorporate life cycle assessment into alternatives evaluation. Case study project.

CE 2311. STATICS. 3 Hours.

Vector algebra; composition and resolution of forces; equivalence of force couple systems; equilibrium of force systems acting on particles, and force - couple systems acting on rigid bodies, and systems of rigid bodies; internal forces in rigid bodies; shear and moment diagrams; centroids and moments of inertia; frictional forces. Prerequisite: Grade of C or better in PHYS 1443.

CE 2312. STATICS AND DYNAMICS FOR NON-CE MAJORS. 3 Hours.

Principles of forces and force systems, resultants and components of force systems, forces due to friction, condition of equilibrium, forces acting on members of trusses and frame structures, centroids and moments of inertia, review of kinematics and kinetics of particle motion, and two-dimensional motion of rigid bodies. CE 2312 cannot be substituted for CE 2221 and CE 2311. Prerequisite: PHYS 1443 and MATH 2425 or concurrent enrollment.

CE 2313. MECHANICS OF MATERIALS I. 3 Hours.

Concepts of stress and strain; stress-strain relationships. Behavior of members subjected to tension, compression, shear, bending, torsion, and combined loading. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: Grade of C or better in CE 2311; Grade of C or better in MATH 2425.

CE 2331. ENGINEERING MEASUREMENT AND COMPUTER MODELING. 3 Hours.

Principles and theories of physical measurements of spatial quantities; the use of surveying instruments; introduction to engineering using computer modeling programs; and organization and programming for computer solutions. Prerequisite: Grade of C or better in CE 1252.

CE 2391. PROBLEMS IN CIVIL ENGINEERING. 3 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CE 3000. JUNIOR UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 3131. ENVIRONMENTAL ANALYSIS. 1 Hour.

Laboratory examinations of water, wastewater, and air. Water and air quality parameters and their significance. Sources and types of pollutants and their effects. Prerequisite: Concurrent enrollment in CE 3334 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3142. APPLIED FLUID MECHANICS LAB. 1 Hour.

Fluid flow measurements studied by means of performed laboratory experiments and/or digital computer programming of relevant equations. Prerequisite: Concurrent enrollment in CE 3342 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3143. PROPERTIES AND BEHAVIOR OF SOILS. 1 Hour.

An introduction to determination of civil engineering properties of soil and their behavior, identification, grain size analysis, Atterberg limits, compaction, permeability, consolidation, and shear strength. Also an introduction to sampling of soil materials. Prerequisite: Concurrent enrollment in CE 3343 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3161. CIVIL ENGINEERING MATERIALS LABORATORY. 1 Hour.

Various properties and behavior of civil engineering materials are investigated by laboratory experimentation. Prerequisite: Concurrent enrollment in CE 3261 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3210. CIVIL ENGINEERING COMMUNICATIONS. 2 Hours.

Technical writing, oral communication, professional presentations, and other related topics. Prerequisite: Grade of C or better in COMS 2302 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3253. APPLICATIONS OF COMPUTER-BASED DESIGN PROGRAMS IN CIVIL ENGINEERING. 2 Hours.

Applications of computer-based design programs including AutoCAD Civil 3D in civil engineering projects. Prerequisite: Grade of C or better in CE 1353 and CE 2331, and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3261. PROPERTIES AND BEHAVIOR OF CIVIL ENGINEERING MATERIALS. 2 Hours.

The nature and properties of materials used in civil engineering such as structural metals, concrete, timber, and bituminous materials. The engineering application and performance of materials are emphasized. Prerequisite: Grade of C or better in either CHEM 1465 or CHEM 1442; Grade of C or better in CE 2313; concurrent enrollment in CE 3161 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3301. STOCHASTIC MODELS FOR CIVIL ENGINEERING. 3 Hours.

Basic theory of probability and statistics with practical applications to civil and environmental engineering problems. Emphasis on sampling, distribution functions, tests of significance, and regression modeling. Prerequisite: Grade of C or better in MATH 2425; Permission of the CE Chair or Admission to the CE Professional Program.

CE 3302. TRANSPORTATION ENGINEERING. 3 Hours.

Planning, design, and operation of transportation facilities. Characteristics of vehicle movement; basic geometric design of highways; traffic flow relations in traffic streams; highway capacity; traffic engineering; and procedures for transportation planning. Prerequisite: Grade of C or better in CE 2331; and Grade of C or better in either CE 3301 or IE 3301 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3305. BASIC FLUID MECHANICS. 3 Hours.

Fundamentals of fluid statics, kinematics of fluid flow, fluid energy, fluid forces, similitude, and dimensional analysis. Related to steady flow of incompressible fluids in confined and free surface systems. Prerequisite: Grade of C or better in CE 2311; Grade of C or better in MATH 3319 or concurrent enrollment; Permission of the CE Chair or Admission to the CE Professional Program.

CE 3311. CONSTRUCTION ENGINEERING. 3 Hours.

Principles of construction engineering and the project management process, value engineering, specifications, different construction contracts and delivery methods, estimating and scheduling fundamentals and project control, and management of construction process. Prerequisite: Grade of C or better in IE 2308 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3328. WATER SYSTEM DESIGN. 3 Hours.

Hydraulic/hydrologic analysis and design of municipal water distribution, stormwater collection, and wastewater collection systems. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 3334. PRINCIPLES OF ENVIRONMENTAL ENGINEERING. 3 Hours.

Physical, chemical, and biological unit operations and processes in an air, water, and land environment. Prerequisites: Grade of C or better in CHEM 1465 or CHEM 1442; Grade of C or better in CE 3305; concurrent enrollment in CE 3131 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3341. STRUCTURAL ANALYSIS. 3 Hours.

Structural analysis/design process, structural forms, and basic structural elements. Analysis of statically determinate structures including beams, trusses, frames, and composite structures, shear and moment diagrams, influence lines, and moving loads. Methods to compute deflections including double integration, moment area, and virtual work. Methods of analysis for statically indeterminate structures including consistent deformation, slope deflection and moment distribution. Use of structural analysis programs. Prerequisite: Grade of C or better in CE 2313 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3342. WATER RESOURCES ENGINEERING. 3 Hours.

Hydrologic cycle, precipitation, evapotranspiration, water budget, rainfall-runoff, hydrograph, reservoir and streamflow routing, groundwater flow, catchment hydrology, probability concepts in design, hydrologic modeling, open channel and pipe network hydraulics, pumps, urban stormwater drainage. Prerequisite: Grade of C or better in CE 3301; grade of C or better in CE 3305; concurrent enrollment in CE 3142 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3343. SOIL MECHANICS. 3 Hours.

An introduction to the significant geophysical and soil science properties and behavior of materials making up the earth's crust as they apply to civil engineering, sources of materials, classification, plasticity, permeability, stress distribution, consolidation, shear strength, and settlement. Also an introduction to basic foundation engineering concepts. Prerequisite: Grade of C or better in CE 2313; concurrent enrollment in CE 3143 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3347. REINFORCED CONCRETE DESIGN. 3 Hours.

An analysis, design and synthesis course for concrete structures, emphasizing strength design method. Topics include strength and serviceability requirements, design of one way slabs, rectangular beams, flanged sections and columns, for strength, shear, bond, bearing, and serviceability. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in CE 3341 and admission to the CE Professional Program.

CE 3361. PROPERTIES & BEHAVIOR OF CIVIL ENGINEERING MATERIALS. 3 Hours.

The nature and properties of materials used in civil engineering such as structural metals, concrete, timber, and bituminous materials. The engineering application and performance of materials are emphasized. Laboratory experimentation is also used to investigate properties and behavior of civil engineering materials. Prerequisite: Grade of C or better in CE 2313; Grade of C or better in either CHEM 1465 or CHEM 1442; Permission of the CE Chair or Admission to the CE Professional Program.

CE 4000. SENIOR UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 4191. PROBLEMS IN CIVIL ENGINEERING. 1 Hour.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore standing in civil engineering.

CE 4291. PROBLEMS IN CIVIL ENGINEERING. 2 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the department chairperson and sophomore standing in civil engineering.

CE 4300. ADVANCED TOPICS IN CIVIL ENGINEERING. 3 Hours.

Advanced topics of current interest in any one of the various fields of civil engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: changes with topic; consent of instructor required and Admission to the CE Professional Program.

CE 4301. ADVANCED TOPICS IN CIVIL ENGINEERING WITH LAB. 3 Hours.

Advanced topics of current interest in any one of the various fields of civil engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Changes with topic; Consent of instructor required and Admission to the CE Professional Program.

CE 4302. ADVANCED CONCRETE MATERIALS. 3 Hours.

Providing a practical understanding of design and characterization of advanced concrete materials, this course is intended for graduate and senior undergraduate students who want to advance their knowledge in new concepts of materials in construction. Topics include the study of properties at the nanoscale and how they affect the material's properties at the macro level. Lectures will focus on the advances in the design and technology of cement based materials, with particular emphasis on the evolution of nanotechnology in construction. Prerequisite: Grade of C or better in CE 3361 and admission to the CE Professional Program.

CE 4303. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CE 5342. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4304. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both CE 4304 and CE 5378. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4305. TRENCHLESS TECHNOLOGY METHODS. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4306. INFRASTRUCTURE ASSET MANAGEMENT. 3 Hours.

Infrastructure inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations and case studies. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4307. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both CE 4307 and CE 5382. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4308. TEMPORARY STRUCTURES. 3 Hours.

Analysis and design of temporary structures. Topics include loads on temporary structures, shoring, formwork, falsework, scaffolding, bracing, soldier beam and lagging, sheet piling, equipment bridges, and support of existing structures. Prerequisite: Grade of C or better in CE 3341 and CE 3343; Admission to the CE Professional Program.

CE 4310. SYSTEM EVALUATION IN CIVIL ENGINEERING. 3 Hours.

Techniques necessary to perform economic and multi-criteria evaluations of civil engineering projects. These will be used to assess the strengths and weaknesses of different decision-making strategies and analyze contemporary topics and case studies in making civil engineering decisions. Prerequisite: Grade of C or better in IE 2308; Grade of C or better in CE 3301.

CE 4311. URBAN TRANSPORTATION INFRASTRUCTURE PLANNING. 3 Hours.

Urban transportation system design, planning, transportation modeling, economic theory, travel demand and travel estimation techniques. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4312. STREET AND HIGHWAY DESIGN. 3 Hours.

The geometric design concepts for urban and rural roadways. Consideration of vehicle and road user characteristics in roadway design, including horizontal and vertical alignments, intersections, interchanges, and roadway cross-section and right-of-way considerations. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4313. TRAFFIC ENGINEERING. 3 Hours.

Design and control of fixed-time, actuated, and computer-controlled traffic signals; optimization of traffic flow at intersections; capacity analysis of intersections, legal requirements and traffic studies for installation of traffic control devices; characteristics of signs, signals, and markings; traffic laws. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4314. INTRODUCTION TO RAILROAD ENGINEERING. 3 Hours.

Overview of the railroad industry in the United States; structure of track, base, and foundation; drainage, railroad structures (bridges and retaining walls); geometric design; communications and signaling; maintenance. Credit not granted for both CE 4314 and CE 5334. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4320. EARTH STRUCTURES DESIGN. 3 Hours.

Study of the states of stress and analysis/design techniques associated with cuts, fills, and retaining structures. Includes slope stability, conventional and reinforced earth retaining walls, excavation bracing, and sheet pile wharf structures. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4321. FOUNDATION ENGINEERING. 3 Hours.

Aspects of design and construction considerations for all types of foundation systems in most soil/rock support conditions, interactions between soils and structures, bearing capacity theories, consolidation, shrink-swell, and settlement. Numerical analyses of design are applied to most of the situations. Prerequisite: Grade of C or better in both CE 3341 and CE 3343 and Admission to the CE Professional Program.

CE 4322. APPLICATIONS WITH GEOSYNTHETICS. 3 Hours.

Definitions and properties of geotextiles, geogrids, geonets, geocomposites and geomembranes; reinforcement design applications in rigid and flexible pavements, foundations, embankments, slopes and retaining walls; drainage and filtration application designs, AASHTO design criteria; construction methods. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4323. LANDFILL DESIGN. 3 Hours.

Introduction and types of landfills, landfill site selection, siting and configuration, compacted and geosynthetic clay liners, final cover design, landfill settlement and slope stability, post closure uses of landfills, leachate and gas generation, collection and removal system, bioreactor landfills and future trends. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4324. MECHANICS OF MATERIALS II. 3 Hours.

Theories of stress and deformation, stress-strain tensors, stress and strain relationships, stresses due to various loading conditions, theories of failure, energy methods, shear-center, unsymmetrical bending, curved beams, torsion in closed and open cell cross-sections and buckling analysis. Prerequisite: Grade of C or better in CE 2313 and Admission to the CE Professional Program.

CE 4325. FUNDAMENTALS OF FINITE ELEMENT METHOD. 3 Hours.

Stiffness method using basic equations and virtual work; element equations using shape functions for axial, beam, frame, two dimensional elements; stiffness methods for three dimensional structures. Flexibility method; finite elements modeling and optimization of idealized structures. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4326. GIS/HYDROLOGIC AND HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS-developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, and the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4327. SITE REMEDIATION ENGINEERING. 3 Hours.

This course provides practical understanding of the engineering principles and practices associated with the characterization and remediation of contaminated sites. Methods for site characterization and risk assessment will be highlighted while the emphasis will be on remedial action screening processes and technology principles and conceptual design. In-situ and ex-situ treatment processes will be covered, including unit operations, coupled processes, and complete systems within the context of community implementation. Case studies with focus on developing communities will be used and computerized tools for process selection and design will be presented. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4330. HYDRAULIC DESIGN. 3 Hours.

Design methods for appurtenances of water conveyance systems under open channel and pressure flow conditions. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4332. CONSTRUCTION EQUIPMENT, METHODS, & MANAGEMENT. 3 Hours.

Introduction to the construction industry and the methods, equipment, and management techniques used. Topics include equipment operating characteristics, underground construction, job site safety, and field management. Credit not granted for both CE 4332 and CE 5344. Prerequisite: Grade of C or better in CE 3311 and Admission to the CE Professional Program.

CE 4335. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics; interpretation of geotechnical reports; site preparation; ground improvement; excavation including supports and dewatering; foundations including consideration of deep foundations and expansive soils; tunneling in soils and rock. Prerequisite: Grade of C or better in CE 3343 and admission to the CE Professional Program.

CE 4336. HOT MIX ASPHALT DESIGN & CONSTRUCTION. 3 Hours.

An in-depth study of the properties of constituent materials for asphalt concrete mixtures. Design methods for Hot-Mixes Asphalt (HMA) and Stone Matrix Asphalt (SMA). Theory and practice of asphalt concrete mix for pavements, including specifications and construction methods for hot-mix asphalt and surface treatments. Maintenance and rehabilitation of flexible pavements. Relationships of material engineering properties to pavement design and performance. Prerequisites: Grade of C or better in CE 3361 and Admission to the CE Professional Program.

CE 4337. PORTLAND CEMENT CONCRETE PAVEMENTS. 3 Hours.

Portland cement concrete mix design and production. Paving operations. Saw and seal operations. Subgrade preparation. Base selection. Drainage selection, design and construction. Bonded and unbonded concrete overlays. Whitetopping and Ultra-Thin Whitetopping. Concrete pavement restoration; Quality Assurance and Quality Control in Concrete Pavement Construction. Prerequisite: Grade of C or better in CE 3361 and Admission to the CE Professional Program.

CE 4348. STRUCTURAL DESIGN IN STEEL. 3 Hours.

A design synthesis course for structural steel structures using Allowable Strength Design and Load Resistance Factor Design. Topics include tension members, compression members, flexural members and simple connections. Building codes, American Institute of Steel Construction (AISC) specs, material specs, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4350. INTRODUCTION TO AIR POLLUTION. 3 Hours.

An introduction to the air pollution field, including: pollutant types, sources, effects; atmosphere and basic calculations; emission estimates; Clean Air Act; dispersion modeling; air pollution reduction strategies. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4351. PHYSICAL UNIT PROCESSES. 3 Hours.

Principles of unit process modeling using reactor and kinetic theory, and theory and design of mixing, mass transfer, flocculation, sedimentation, filtration, and gas transfer. Prerequisite: Grade of C or better in both CE 3131 and CE 3334 and Admission to the CE Professional Program.

CE 4352. PROFESSIONAL PRACTICE. 3 Hours.

Professional practice issues in the private and public sector are addressed by visiting practitioners. Topics include project management, teamwork, obtaining work, regulatory requirements, specifications, issues in design/build, design alternatives, cost estimation, design and construction drawings, contract and construction law, legal issues, ethics and professionalism, design reports, licensure, lifelong learning, ethical and engineering practice organizations. Learning principles of engineering practice by working as a team is emphasized. Oral and written presentations are required. Prerequisites: Grade of C or better in CE 3210 and CE 3311 and Admission to the CE Professional Program.

CE 4353. WATER CHEMISTRY. 3 Hours.

Principles of water chemistry applied to the theory and design of unit processes including coagulation, precipitation, corrosion, oxidation-reduction, and membrane processes. Prerequisites: Grade of C or better in both CE 3334 and CE 3131 and Admission to the CE Professional Program.

CE 4354. INTRODUCTION TO SOLID WASTE ENGINEERING. 3 Hours.

This course provides an overview of the various aspects of integrated municipal solid waste management (with the exception of landfilling, covered in CE 4323). Topics covered include waste generation, characterization, and collection; source reduction; waste processing; design of facilities for materials recovery (recycling centers) and energy recovery (combustors and anaerobic digesters); life cycle analysis of solid waste management facilities; case study project. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4355. DESIGN OF WATER AND WASTEWATER TREATMENT FACILITIES. 3 Hours.

Design of facilities commonly used in water and wastewater treatment plants including pumps, pipelines, channels, flow measurement and control devices, screens, grit removal, mixing, sludge removal, aeration equipment, and chemical feed and storage. Materials of construction, process control interface, and operation and maintenance factors are also discussed. Prerequisite: Grade of C or better in both CE 3334 and CE 3142 and Admission to the CE Professional Program.

CE 4356. ADVANCED STEEL DESIGN. 3 Hours.

Covers torsional design of beams, beams with web holes, composite design of beams, lateral-torsional buckling of beams, plate buckling, column design and behavior, frame stability, bracing requirements for compression members. Prerequisite: CE 4348 and Admission to the CE Professional Program.

CE 4357. INTRODUCTION TO BIOLOGICAL WASTEWATER TREATMENT SYSTEMS. 3 Hours.

Basic understanding of biological processes used in water quality control and to show how theoretical concepts can be applied in a practical design. The course will include a discussion of the theory, design, and operation of biological systems used for water and wastewater treatment. Credit is not granted for both CE 4357 and CE 5325. Prerequisite: Grade of C or better in CE 3334 and CE 3131; Admission to the CE Professional Program.

CE 4358. OPEN CONDUIT SYSTEM. 3 Hours.

Non-pressure conduit and channel flow, surface profiles, steady and gradually varied flow, hydraulic jumps, and specific energy. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4360. DESIGN OF STRUCTURAL MASONRY. 3 Hours.

Covers masonry unit types and mortar types, reinforcing and connections. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building Codes, Masonry Standards Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4361. ADVANCED REINFORCED CONCRETE DESIGN. 3 Hours.

Advanced topics on structural design of concrete structures. Topics include slender columns, shear walls, torsion, deep beams, brackets, retaining walls, strut and tie model for shear torsion, two-way slabs, and shear friction. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in CE 4347 and Admission to the CE Professional Program.

CE 4363. FUNDAMENTALS OF PRESTRESSED CONCRETE. 3 Hours.

Introduction to pre-tensioned and post-tensioned concrete structures, bonded and unbonded constructions, hardware, stress calculations, section proportioning, flexural design, shear design, prestress losses, deflections, allowable stress, load-balancing, and ultimate strength, design/analysis methods, including: partially prestressed systems shear design, analysis and design of composite beams, design of prestressed concrete bridges. Both American Concrete Institute (ACI-318) and American Association of State Highway and Transportation Officials (AASHTO-LRFD) provisions will be discussed. Prerequisite: Grade of C or better in CE 4347 and Admission to the CE Professional Program.

CE 4365. STRUCTURAL WOOD DESIGN. 3 Hours.

Covers material grade and properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and diaphragms. Building codes, National Design Specification for Wood Construction (NDS) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4366. FUNDAMENTALS OF FIBER REINFORCED COMPOSITES. 3 Hours.

Introduction to basic analysis, design and manufacture of composite materials for engineered structures. Fiber materials, tapes, cloths, resin system, elastic constants, matrix formulation, theory of failure. The course will also cover an introduction to design with composites, preliminary design, optimization, processing variables, product design. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4368. ADVANCED STRUCTURAL ANALYSIS. 3 Hours.

Advanced analysis of indeterminate beams, frames, trusses, arches, and cables. Credit will not be granted for both CE 5351 and CE 4368. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4369. LOADS ON STRUCTURES. 3 Hours.

Structural analysis of structures under gravity and lateral loads, emphasizing the logical reasoning process of analysis, synthesis and design. Use of recommended practice documents and commercial structural and mathematical software will assist in providing insight and understanding of load requirements, structural behavior and analysis tools. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4383. SENIOR PROJECT. 3 Hours.

Planning, analysis of alternatives, and designs of selected projects that cross various civil engineering disciplines, and include engineering standards and multiple realistic constraints. Application of computer-aided engineering in analysis and design. A final oral presentation and written report that presents pros and cons of alternative solutions, application of engineering standards and multiple realistic constraints are required. A team approach is emphasized. Prerequisite: Grade of C or better in CE 4352; Completion of all required 3000 level courses.

CE 4391. PROBLEMS IN CIVIL ENGINEERING. 3 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CE 4393. INDUSTRIAL INTERNSHIP. 3 Hours.

Student to experience industrial internship under supervision of an industrial mentor and internship committee. May not be repeated for credit. Credit not granted for both CE 4393 and CE 4394. Prerequisite: Completion of all required 3000 level courses and admission to the CE Professional Program.

CE 4394. RESEARCH INTERNSHIP. 3 Hours.

Student to experience research internship under supervision of a CE faculty. May not be repeated for credit. Credit not granted for both CE 4393 and CE 4394. Prerequisite: Completion of all required 3000 level courses and admission to the CE Professional Program.

CE 5191. ADVANCED STUDIES IN CIVIL ENGINEERING. 1 Hour.

Individual studies of advanced topics under the supervision of a professor or professors. Prerequisite: consent of instructor.

CE 5300. TOPICS IN CIVIL ENGINEERING. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: consent of instructor.

CE 5301. TOPICS IN CIVIL ENGINEERING WITH LAB. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: Consent of instructor.

CE 5302. ADVANCED CONCRETE MATERIALS. 3 Hours.

Providing a practical understanding of design and characterization of advanced concrete materials, this course is intended for graduate and senior undergraduate students who want to advance their knowledge in new concepts of materials in construction. Topics include the study of properties at the nanoscale and how they affect the material's properties at the macro level. Lectures will focus on the advances in the design and technology of cement based materials, with particular emphasis on the evolution of nanotechnology in construction. Prerequisite: CE 3361.

CE 5303. INTRODUCTION TO FINITE ELEMENT. 3 Hours.

Stiffness method using basic equations and virtual work; element equations using shape functions for axial, beam, frame, two dimensional elements; stiffness method for three dimensional structures. Flexibility method; finite element modeling and optimization of idealized structures. Credit not granted for both CE 4325 and CE 5303. Prerequisite: CE 3341.

CE 5304. LIGHT GAGE STEEL DESIGN. 3 Hours.

Covers structural design issues for cold formed steel structures. Includes initial buckling and post buckling, stiffened and unstiffened plate behavior, braced and unbraced beams, columns, connectors and shear diaphragms. Building codes, American Iron and Steel Institute (AISI) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: CE 4348 or CE 5306.

CE 5305. FIBER REINFORCED COMPOSITE DESIGN. 3 Hours.

Introduction to basic analysis, design and manufacture of composite materials for engineered structures. Fiber materials, tapes, cloths, resin systems, elastic constants, matrix formulation, theory of failure. The course will also cover an introduction to design with composites, preliminary design, optimization, processing variables, product design. Credit not granted for both CE 4366 and CE 5305. Prerequisite: CE 3341.

CE 5306. STRUCTURAL STEEL DESIGN. 3 Hours.

The basic design course for steel structures emphasizing Load Resistant Factor Design Method. Topics include tension members, compression members, flexural members, and simple connections. Building codes, American Institute of Steel Construction (AISC) specifications, material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4348 and CE 5306. Prerequisite: CE 3341.

CE 5307. STRUCTURAL TIMBER DESIGN. 3 Hours.

Covers material grade, properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and shear diaphragms. Building codes, National Design Specifications (NDS), material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4365 and CE 5307. Prerequisite: CE 3341.

CE 5308. STRUCTURAL MASONRY DESIGN. 3 Hours.

Covers masonry unit type and grades of mortar types, reinforcing and connectors. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building codes, Masonry Standard Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4360 and CE 5308. Prerequisite: CE 3341.

CE 5309. PRESTRESSED CONCRETE. 3 Hours.

Introduction to pre-tensioned and post-tensioned concrete structures, bonded and unbonded construction, hardware, stress calculations, section proportioning, flexural design, shear design, prestress losses, deflections, allowable stress, load-balancing, and ultimate strength design/analysis methods, including: partially prestressed systems shear design, analysis and design of composite beams, design of prestressed concrete bridges. Both American Concrete Institute (ACI 318-318) and American Association of State Highway and Transportation Officials Load and Resistance Factor Design (AASHTO LRFD) provisions will be discussed. Credit not granted for both CE 4363 and CE 5309. Prerequisite: CE 4347.

CE 5310. PLASTIC ANALYSIS AND DESIGN OF STRUCTURES. 3 Hours.

Behavior of structural members beyond elastic range; plastic analysis of steel and concrete members and framed structures; stepwise incremental load and mechanism methods; yield/failure mechanisms for various types of frames. Use of nonlinear structural analysis programs and design code provisions. Application to earthquake resistant design. Prerequisite: CE 4347 and CE 4348; or equivalent.

CE 5311. ADVANCED STEEL DESIGN I. 3 Hours.

Covers torsional design of beams, beams with web holes, composite design of beams, lateral-torsional buckling of beams, plate buckling, column design and behavior, frame stability, bracing requirements for compression members. Prerequisite: CE 4348 or CE 5306.

CE 5312. ADVANCED CONCRETE DESIGN I. 3 Hours.

Advanced topics on structural design of concrete structures. Topics include slender columns, shear walls, torsion, deep beams, brackets, retaining walls, strut and tie model for shear torsion, two-way slabs, and shear friction. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Credit not granted for both CE 4361 and CE 5312. Prerequisite: CE 4347.

CE 5313. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics and teaching of the foundation and underground excavation construction solely to graduate students specializing in construction engineering & management. Topics include interpretation of geotechnical reports, embankment construction, foundations on expansive soils, excavation supports, excavation dewatering, deep foundation construction, tunneling in soft ground as well as in soft/hard rock, and trenchless technology piping. Credit not granted for both CE 4335 and CE 5313. Prerequisite: CE 5379 and CE 5386.

CE 5314. ADVANCED STEEL DESIGN II. 3 Hours.

Covers structural design of beam columns and building connections. Rigid frame and multi-story building design issues. Building codes, American Institute of Steel Construction (AISC) specifications, and recommended practice documents. Prerequisite: CE 4348 or CE 5306.

CE 5315. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

Analysis of stresses and strains at a point, stress-strain relationships, stresses due to various loading conditions, theories of failure, energy methods, shear center, unsymmetrical bending, curved beams, torsion in closed and open cell cross-sections, principles of plastic analysis, and buckling analysis. Credit not granted for both CE 4324 and CE 5315. Prerequisite: CE 2313.

CE 5317. ENVIRONMENTAL ENGINEERING PROCESS AND ANALYSIS LAB. 3 Hours.

The course meets for 2 hours of lecture and 3 hours of lab each week. Lectures will cover advanced analytical procedures for the analyses of air, liquid, and other wastes, including optical, Chromatographic, electrical, and other instrumental methods of analysis. Lectures will also review the basics of physical/chemical processes. In the laboratory, students will demonstrate and analyze basic reactor types (CSTR, plug flow, and reactors in series) and treatment of contaminants, including gas transfer, adsorption, advanced oxidation processes, and membrane separation.

CE 5318. PHYSICAL-CHEMICAL PROCESSES I. 3 Hours.

Principles of unit process modeling using reactor and kinetic theory, theory and design of mixing, mass transfer, flocculation, sedimentation, filtration and gas transfer. Credit not granted for both CE 4351 and CE 5318. Prerequisite: CE 3131 and CE 3334; or consent of instructor.

CE 5319. PHYSICAL-CHEMICAL PROCESSES II. 3 Hours.

Principles of water chemistry applied to the theory and design of unit processes including coagulation, precipitation, corrosion, oxidation-reduction, and membrane processes. Credit not granted for both CE 4353 and CE 5319 Prerequisite: CE 3131 and CE 3334; or consent of instructor.

CE 5320. TEMPORARY STRUCTURES. 3 Hours.

Analysis and design of temporary structures. Topics include loads on temporary structures, shoring, formwork, falsework, scaffolding, bracing, soldier beam and lagging, sheet piling, equipment bridges, and support of existing structures. Prerequisite: CE 3341 and CE 3343.

CE 5321. ENGINEERING FOR ENVIRONMENTAL SCIENTISTS. 3 Hours.

Fundamental principles of engineering science applicable to the comprehension and design of engineered environmental systems. Includes water and air quality indices; kinetic and reactor theory; mass and energy balances; fluid system theory; and applications of physical, chemical and biological processes in the design of engineered environmental systems. May not be used to satisfy any of the requirements for a graduate degree in Civil Engineering. Prerequisite: PHYS 1441, CHEM 1442, and MATH 2425.

CE 5322. ADVANCED PHYSICAL-CHEMICAL PROCESSES. 3 Hours.

The course represents the fundamentals and applications of various advanced physical and chemical unit operations and processes for controlling drinking water quality. The course will cover 1) general overview on the standard, regulations, and goals of drinking water quality, 2) detailed discussion of the theory, design, and operation of advanced physical and chemical unit processes, including but not limited to, sorption, centrifugation, osmotic pressure, membrane separation, chemical oxidation and advanced oxidation, UV technology, and disinfection, and 3) post treatment issues. Prerequisites: CE 5318.

CE 5323. SUSTAINABLE ENGINEERING. 3 Hours.

Introduction to sustainability concepts and challenges through evaluation of case studies. The engineering design process and consideration of sustainability. Techniques for generating creative and innovative alternative solutions to sustainability problems. Training on Simapro software for life cycle assessment of environmental impacts. Evaluation of economic and social impacts of alternatives and decision-making.

CE 5324. INFRASTRUCTURE RELIABILITY & MONITORING. 3 Hours.

Durability and total cost of ownership for infrastructure; the physical, mechanical and chemical characteristics of deterioration and degradation for steel and other metals, Portland cement concrete, and organic materials; practical aspects of identification and remediation; a research literature review related to material durability.

CE 5325. BIOLOGICAL PROCESSES FOR WASTEWATER TREATMENT. 3 Hours.

Biological processes used in water quality control. Includes principles from microbiology and biochemistry applied to suspended and attached growth systems. Prerequisite: CE 5318.

CE 5326. WATER AND WASTEWATER TREATMENT FACILITIES DESIGN. 3 Hours.

Design of facilities commonly used in water and wastewater treatment plants including pumps, pipelines, channels, flow measurement and control devices, screens, grit removal, mixing, sludge removal, aeration equipment, and chemical feed and storage. Materials of construction, process control interface, and operation and maintenance factors are also discussed. Credit not granted for both CE 4355 and CE 5326. Prerequisite: CE 3131, CE 3142, and CE 3334.

CE 5327. ADVANCED PROJECT CONTROL. 3 Hours.

Fundamentals of construction estimating and scheduling, earned value, value engineering, risk allocations, jobsite management, safety and closeout.

CE 5328. FUNDAMENTALS OF AIR POLLUTION. 3 Hours.

An introduction to the air pollution field including: pollutant types, sources, effects; atmosphere and basic calculations; emission estimates; Clean Air Act; dispersion modeling; air pollution reduction strategies. Credit not granted for both CE 4350 and CE 5328. Prerequisite: concurrent enrollment in CE 3334 or CE 5321 or consent of instructor.

CE 5329. ENVIRONMENTAL RISK BASED CORRECTIVE ACTION. 3 Hours.

Process for the assessment and response to contamination; integrating risk and exposure practices to ensure protection of human health and environment. Includes characterization, EPA tier approach, general aspects of toxicology, dose exposure, pathways, receptors, migration and risk assessment. Prerequisite: consent of instructor.

CE 5330. CHARACTERISTICS OF TRAFFIC. 3 Hours.

The fundamental elements of traffic - the driver, the vehicle, and the roadway - are considered and then extended into studies of streams of traffic flow. Techniques of conducting traffic engineering studies, including methods of measuring speed, volume, and density, are covered along with methods for the determination of capacity on freeways and rural highways (uninterrupted flow facilities). Parking and accident studies are also included. Prerequisite: CE 3302; and CE 3301 or concurrent registration therein.

CE 5331. TRAFFIC ENGINEERING OPERATIONS. 3 Hours.

Methods of traffic regulation and control optimization. Traffic laws, motorist communication by means of traffic control devices, and the design and operation of both fixed time and actuated traffic signals at intersections. Analysis and design techniques for intersections using capacity and level of service concepts. Credit will not be granted for both CE 4313 and CE 5331. Prerequisite: CE 3302; and CE 3301 or concurrent registration therein.

CE 5332. HIGHWAY DESIGN. 3 Hours.

Geometric considerations necessary for the design of city streets, highways, and freeways such as the cross sections, vertical and horizontal alignment, sight distances and stopping distances. Includes the design of maneuver areas, channelization, ramps, intersections, and interchanges. Credit will not be granted for both CE 4312 and CE 5332. Prerequisite: CE 3302.

CE 5333. TRAFFIC CONTROL SYSTEMS. 3 Hours.

Control algorithms and optimization of splits, offsets, and cycle lengths for arterial progression and traffic signals in networks; computer simulation techniques; problem solving with computer simulation and optimization packages; freeway control using ramp meters and dynamic motorist communications. Prerequisite: CE 4313 or CE 5331 or Equivalent or Consent of Instructor.

CE 5334. INTRODUCTION TO RAILROAD ENGINEERING. 3 Hours.

Overview of railroad industry in the United States; structure of track, base, and foundation; drainage; railroad structures (bridges and retaining walls); geometric design; communications and signaling; maintenance. Credit not granted for CE 4314 and CE 5334. Prerequisite: CE 3302.

CE 5335. AIRPORT ENGINEERING. 3 Hours.

Airport master planning, for forecasting air travel demand, airside capacity, passenger terminal design, air traffic control, land access planning and design, landside operations, air cargo facility design. Prerequisite: CE 3302.

CE 5336. PAVEMENT DESIGN. 3 Hours.

Principles and theoretical concepts of rigid and flexible pavements for highways and airfields; effects of traffic loads, natural forces, and material quality; current design practices; and life cycle cost analysis. Prerequisite: CE 3302 and CE 3343.

CE 5337. URBAN TRANSPORTATION PLANNING. 3 Hours.

Theory and application of a comprehensive urban transportation planning methodology. Basic studies of population dynamics, urban growth, land use, forecasting trip generation and distribution, traffic assignment, mode split, evaluation, simulation models, characteristics of mass transit and other non-auto modes, and system design and evaluation. Credit will not be granted for both CE 4311 and CE 5337. Prerequisite: CE 3301 and CE 3302; or consent of instructor.

CE 5338. SYSTEM EVALUATION. 3 Hours.

Techniques necessary to perform economic and multi-criteria evaluations of civil engineering projects. These will be used to assess the strengths and weaknesses of different decision-making strategies and analyze contemporary topics and case studies in making civil engineering decisions. Prerequisite: IE 2308 and CE 3301 or IE 3301 or equivalents, or consent of instructor.

CE 5339. STATISTICS FOR CONSTRUCTION. 3 Hours.

Point estimation, interval estimation, sample size determination, tests of hypothesis, analysis of variance, linear regression, matrix methods for multiple linear regression, polynomial regression, transformations, non-linear regression. Prerequisite: CE 3301.

CE 5340. CONSTRUCTION PROJECT ACQUISITION. 3 Hours.

Fundamentals of acquiring the required goods and services necessary to fulfill the obligations of the construction contract. Service and subcontractor contracts, negotiating tactics and strategies, material pricing; and dispute resolution. The course includes negotiation practice based on typical construction acquisition situations to help prepare the student with experience of negotiating in the real world of construction and business. Prerequisite: consent of instructor.

CE 5341. PAVEMENT EVALUATION, REHABILITATION AND MANAGEMENT SYSTEMS. 3 Hours.

Pavement inventory; condition and structural evaluation techniques; serviceability concepts; deterioration modeling; maintenance vs. rehabilitation vs. reconstruction; economic considerations, selection of project alternatives and life cycle cost analysis. Prerequisite: CE 5336 or equivalent.

CE 5342. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CE 5342.

CE 5343. BUILDING INFORMATION MODELING. 3 Hours.

Introduction to current Building Information Modeling (BIM); Discussion of the role of BIM in the Construction Engineering and Management; Revit Architecture, Structure, and MEP; Creating sets, building elements, structural systems, and MEP systems; BIM and clash detection; BIM and Construction Cost Estimating and Scheduling.

CE 5344. CONSTRUCTION METHODS: FIELD OPERATIONS. 3 Hours.

Introduction to the methods, equipment, and management techniques used in the construction industry. Topics include equipment operating characteristics, job site safety, and field management. Credit not granted for CE 4332 and CE 5344.

CE 5345. INFRASTRUCTURE EVALUATION, MAINTENANCE, AND RENEWAL. 3 Hours.

This course is designed for engineers and managers involved in infrastructure development, sustainability, and replacement. Topics include asset management, inspection, evaluation, maintenance, and renewal alternatives for waste collection and water distribution systems, surface and subsurface drainage, pavements, bridges, culverts, buildings, and other structures. Prerequisite: Consent of instructor.

CE 5346. OPEN CHANNEL FLOW. 3 Hours.

Open channel hydraulic principles, flow classification, backwater curves, transitions, obstructions, bends, flood flow computations, and urban watershed applications. Credit not granted for both CE 4358 and CE 5346. Prerequisite: CE 3305 and CE 4328; or consent of instructor.

CE 5347. ADVANCED HYDROLOGY. 3 Hours.

Elements of hydrometeorology, infiltration, soil moisture, hydrographs, rainfall runoff relationships, and effects of these factors with regard to water resources, urban watersheds, flood control, and environmental issues. Prerequisite: CE 3342 and CE 4328 or equivalent.

CE 5348. GROUNDWATER HYDROLOGY. 3 Hours.

Hydrology and hydrogeology of groundwater to include aquifer and vadose properties and measurements, basic flow systems and solutions, well systems, elementary contaminate transport, water quality, recharge, subsidence, flow system analysis, flow nets, and leaky aquifers. Prerequisite: CE 3342 or consent of instructor.

CE 5349. ADVANCED GIS AND HYDROLOGIC AND HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply.

CE 5350. RISK MANAGEMENT. 3 Hours.

The risk management process including risk identification, monitoring, and control; integrated quantitative cost and schedule risk analysis.

CE 5351. ADVANCED STRUCTURAL ANALYSIS I. 3 Hours.

Advanced analysis of indeterminate beams, frames, trusses, arches, and cables. Credit will not be given for both CE 5351 and CE 4368. Prerequisite: CE 3341.

CE 5352. REMOTE SENSING-HYDROMETEOROLOGY. 3 Hours.

Atmospheric composition, radiative fluxes, thermodynamics, water vapor, stability, circulation, precipitation processes, fronts, thunderstorms and tropical storms; basics of remote sensing; observing precipitation using weather radar and satellite-borne sensors; prediction of precipitation by numerical weather models. The class will be a combination of lectures and in-class computer-based laboratory exercises. Prerequisite: CE 3342 and CE 4328.

CE 5353. ADVANCED HYDRAULICS. 3 Hours.

Flow resistance, St. Venant equations, solution of St. Venant by finite difference methods, dam break problem, water hammer intro to finite elements to open channel flow. Credit will not be granted for both CE 4330 and CE 5353. Prerequisite: CE 5346 and CE 5347; or consent of instructor.

CE 5354. WATER RESOURCES PLANNING. 3 Hours.

Historical and current water development concepts. Administrative and allocation concerns. General principles and procedures of water resource planning includes regional, multipurpose, economic and systems considerations. Prerequisites: CE 3301, CE 3342, and IE 2308; or consent of instructor.

CE 5355. CONSTRUCTION MATERIALS. 3 Hours.

Principles of construction related to construction regulations and standards, loads, fire safety, acoustics, joints and sealants. Systems of construction involving concrete, steel, wood, masonry, sealants, and soil, and including excavations, below grade construction, formwork, cladding, joints, windows, doors, roofing, and ceilings.

CE 5356. SURFACE WATER QUALITY MODELING. 3 Hours.

Contaminant transport and fate in surface water. Engineering methods assessing surface water and transport for water and sediment quality. Modeling dissolved oxygen, chemicals and waterborne substances. Prerequisite: CE 5346.

CE 5357. HYDROLOGIC TECHNIQUES. 3 Hours.

A study of current hydrologic techniques and methods for the analysis of hydrologic variables necessary in the design of projects such as bridges, culverts, reservoirs. Techniques involve extreme value statistics, model hydrographs, deterministic and stochastic methods for data analysis. Prerequisite: CE 5347 or consent of instructor.

CE 5358. SOLID WASTE ENGINEERING. 3 Hours.

This course provides an overview of the various aspects of integrated municipal solid waste management (with the exception of landfilling, covered in CE 5375). Topics covered include waste generation, characterization, and collection; source reduction; waste processing; design of facilities for materials recovery (recycling centers) and energy recovery (combustors and anaerobic digesters); life cycle analysis of solid waste management facilities; case study project. Credit not granted for both CE 4354 and CE 5358. Prerequisite: CE 3334 or CE 5321 or consent of instructor.

CE 5359. GROUNDWATER CONTAMINANT MODELING. 3 Hours.

Study of sources and fates of contamination in groundwater. Mathematical modeling of reactive and nonreactive pollutant movement. Aquifer restoration strategies. Prerequisite: CE 5348.

CE 5360. PROBABILITY, STATISTICS AND DECISIONS FOR CIVIL ENGINEERS. 3 Hours.

Topics include elements of probability theory, random variables and distributions, derived distributions, moments and expectation, common distribution models, introduction to statistics, estimation of model parameters, model verification, elementary Bayesian analysis and decision theory. No previous experience with probability is assumed. Prerequisite: CE 3301.

CE 5361. DESIGN AND CONSTRUCTION OF ASPHALT CONCRETE. 3 Hours.

An in-depth study of the properties of constituent materials for asphalt concrete mixtures. Design methods for Hot-Mixes Asphalt (HMA) and Stone Matrix Asphalt (SMA). Theory and practice of asphalt concrete mix for pavements, including specifications and construction methods for hot-mix asphalt and surface treatments. Maintenance and rehabilitation of flexible pavements. Relationships of material engineering properties to pavement design and performance. Credit not granted for both CE 4336 and CE 5361. Prerequisite: CE 3361 or equivalent.

CE 5362. RIGID PAVEMENTS. 3 Hours.

Portland cement concrete mix design and production. Paving operations. Saw and seal operations. Subgrade preparation. Base selection. Drainage selection, design and construction. Bonded and unbonded concrete overlays. Whitetopping and ultra-thin whitetopping. Concrete pavement restoration; quality assurance and quality control in concrete pavement construction. Credit not granted for both CE 4337 and CE 5362. Prerequisite: CE 3361 or equivalent.

CE 5363. CONSTITUTIVE MODELING OF SOILS. 3 Hours.

Fundamental aspects of elasto-plastic behavior of soils along axisymmetric stress paths, shear strength of soils in light of critical state soil mechanics, and constitutive models to predict soil response under saturated conditions, including Cam Clay and modified Cam Clay models. Prerequisite: CE 3343 or consent of instructor.

CE 5364. FOUNDATION ANALYSIS AND DESIGN. 3 Hours.

The design, construction, and performance of footings, rafts, and piles founded on or in sands, clays, silts, stratified soils, and weak rock. Includes the influence of various geologic terrain on selecting foundation type and constructability, in-situ investigations to determine material design parameters, bearing capacity, and settlement of foundations. Credit not granted for both CE 4321 and CE 5364. Prerequisite: CE 3343.

CE 5365. THEORETICAL SOIL MECHANICS. 3 Hours.

Theory of consolidation, magnitude, time rate, pore pressure dissipation with variable construction rate and layered soils. Secondary compression, preconsolidation, and preloading. Shear strength of soil. Critical state soil mechanics, dilation and strain-softening in drained shear, pore pressure response in undrained shear, including static liquefaction. Prerequisite: CE 3343 or consent of instructor.

CE 5366. SOIL DYNAMICS. 3 Hours.

Fundamental aspects of mechanical behavior and characterization of soils and earth structures subjected to dynamic loads, including wave propagation in soils, dynamic soil properties, liquefaction of soils, dynamic bearing capacity of shallow foundations, seismic design of retaining walls, and seismic slope stability. Prerequisites: CE 2221 and CE 3343; or consent of instructor.

CE 5367. DESIGN OF EARTH STRUCTURES. 3 Hours.

Study of the states of stress and analysis techniques associated with cuts, fills, and retaining structures. Includes slope stability, embankment reinforcement, conventional and reinforced earth retaining walls, excavation bracing, and sheet pile wharf structures. Credit not granted for both CE 4320 and CE 5367. Prerequisite: CE 3343 or consent of instructor.

CE 5368. UNSATURATED SOIL MECHANICS. 3 Hours.

Fundamental aspects of the mechanical behavior of unsaturated soils, including stress and volumetric state variables, matrix suction measurements and soil-water characteristic curves, shear-strain-strength and volume change responses, suction-controlled laboratory testing techniques and constitutive modeling. Prerequisite: CE 3343; or consent of instructor.

CE 5369. COMPUTATIONAL GEOTECHNICS. 3 Hours.

Introduction to analytical, finite differences, and finite element modeling, analyses of embankments, earth dams, slopes, excavation support systems including soldier pile and diaphragm walls, shallow and deep foundation systems, and other geotechnical structures using different geotechnical software. Prerequisite: CE 3343 or consent of instructor.

CE 5370. EXPERIMENTAL SOIL MECHANICS. 3 Hours.

Fundamentals of experimental studies of soil behavior, soil properties and their laboratory test methods which include consolidation, direct shear, static triaxial, cyclic triaxial, resonant column, bender elements and other advanced geotechnical laboratory tests, instrumentation and measurement techniques. Prerequisite: CE 3343 or consent of instructor.

CE 5371. SOIL BEHAVIOR. 3 Hours.

Fundamental aspects of soil behavior, bonding, crystal structure, surface characteristics, clay mineralogy, soil-water movement, fabric, effective stress concepts, conduction phenomena, consolidation, and shear strength. Prerequisite: CE 3343 or consent of instructor.

CE 5372. GEOSYNTHETICS. 3 Hours.

Geosynthetics properties and testing, design of geotextiles, geogrids, geonets, and geomembranes for applications in separation, pavement, embankment and retaining wall reinforcement, soil stabilization, filtration, drainage and liquid barrier, construction guidelines and case histories. Credit not granted for both CE 4322 and CE 5372. Prerequisite: CE 3343 or consent of instructor.

CE 5373. ENVIRONMENTAL GEOTECHNOLOGY. 3 Hours.

Physical and chemical principles of clays, clay mineralogy, coupled flow, hydraulic conductivity, in situ and laboratory tests, chemical transport, adsorption of chemicals, risk assessment and soil remediation technologies, bioremediation, phytoremediation, electrokinetics and soil washing, waste containment. Prerequisite: CE 5371 or consent of instructor.

CE 5374. GROUND IMPROVEMENT. 3 Hours.

Introduction and types of ground improvement for different problem soils including soft and expansive soils, shallow and deep soil densification, sand drains and wick drains, chemical modification, chemical binders and mechanisms of ground improvement, different types of grouting, deep mixing, stone columns, soil nailing, ground anchors, geosynthetics, MSE walls, reinforced slopes. Prerequisite: CE 3343 or consent of instructor.

CE 5375. GEOTECHNICAL ASPECTS OF LANDFILLS. 3 Hours.

Introduction and types of landfills, landfill site selection, siting and configuration, compacted and geosynthetic clay liners, final cover design, landfill settlement and slope stability, post closure uses of landfills, leachate and gas generation, collection and removal system, bioreactor landfills and future trends. Credit not granted for both CE 4323 and CE 5375. Prerequisite: CE 3343 or consent of instructor.

CE 5376. GIS IN GEOTECHNICS. 3 Hours.

Introduction to (GIS, Geographical Information Systems, ArcInfo/ArcView) based applications in geotechnical engineering, including bore-log database management and profiling, spatial analyses and assessment of liquefaction, ground motion amplification, landslide, and groundwater contamination hazard potentials. Prerequisite: CE 3343 or consent of instructor.

CE 5377. CONSTRUCTION FINANCE. 3 Hours.

Financial aspects and job costing of a construction project. Includes project management principles, budgets, cost codes, cost-to-complete, and financial reports specific to the management of a construction company and project control.

CE 5378. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for CE 4304 and CE 5378. Prerequisite: Consent of instructor.

CE 5380. MANAGEMENT OF INFRASTRUCTURE ASSETS. 3 Hours.

Overview of an infrastructure management system. Infrastructure asset development and management. Optimization of infrastructure asset procurement and preservation through good data input and the use of economic models, benefit cost studies, and good maintenance and rehabilitation practices to protect assets investments.

CE 5381. PUBLIC PRIVATE PARTNERSHIP FOR INFRASTRUCTURE PROJECTS. 3 Hours.

Public-private partnership (P3) arrangements as an innovative approach to deliver public infrastructure projects. Topics include P3 benefits, limitations, contracting and implementation strategies. Prerequisite: CE 3311 or IE 2308; or consent of instructor.

CE 5382. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Introduction to International Code Council's 2012 International Building Code and USGBC's LEED® New Construction Guidelines v.3 for constructing sustainable/green buildings. Review of building occupancy categories, construction types, allowable height and area, life safety requirements, rated building assemblies, and egress. Site selection, energy and water efficiency, material reuse and indoor air quality. Credit not granted for CE 4307 and CE 5382.

CE 5383. EXPERIMENTAL STRESS ANALYSIS. 3 Hours.

Introduction to experimental stress-analysis techniques. Theory and application of mechanical strain gages, electrical strain gages, introduction to photoelastic and thermal techniques, and brittle coatings. Prerequisite: CE 2313.

CE 5384. CONCRETE BRIDGE DESIGN AND EVALUATION. 3 Hours.

Analysis, design and evaluation of concrete highway bridges using AASHTO specifications. Analysis and design topics include bridge type selection, preliminary design, AASHTO LRFD bridge design philosophy, design loads, deck design, shear design, barrier design and substructure design. Evaluation topics include bridge inspection, non-destructive evaluation (NDE), load testing and load rating, using the AASHTO procedures. Prerequisite: CE 4363 or CE 5309.

CE 5385. STRUCTURAL DYNAMICS. 3 Hours.

Equation of motion for single degree of freedom systems including: free vibration; harmonic and periodic excitations; arbitrary, step and pulse excitations. Dynamic response of multi degree of freedom systems including: free vibration; computation of vibration properties of structures; damping in structures; modal analysis; and response history analysis. Dynamic analysis of systems with distributed mass. Prerequisite: CE 5303 or concurrent registration.

CE 5387. CONSTRUCTION PRODUCTIVITY. 3 Hours.

Evaluation of construction project management's effectiveness. An investigation of the advanced techniques required for improvement of construction projects including time, cost, quality management, preplanning, field evaluation techniques, time-lapse photograph, safety, human factors, and communications. Prerequisite: CE 5327.

CE 5388. PIPELINE CONSTRUCTION AND TRENCHLESS TECHNOLOGY. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Credit not granted for both CE 4305 and CE 5388. Prerequisite: graduate standing and consent of instructor.

CE 5389. PIPELINE SYSTEMS ASSET MANAGEMENT. 3 Hours.

Pipeline systems asset management, inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations, renewal technologies, and case studies. Credit not granted for both CE 4306 and CE 5389. Prerequisite: graduate standing and consent of instructor.

CE 5390. UNSATURATED SOIL MECHANICS II. 3 Hours.

Advanced principles of unsaturated soil behavior in light of critical state based soil mechanics. Topics: Cam-Clay model for saturated soils, Cam-Clay model for unsaturated soils, and calibration/programming of Barcelona Basic Model for unsaturated soils. Prerequisite: CE 5368 or consent of instructor.

CE 5391. ADVANCED STUDIES IN CIVIL ENGINEERING. 3 Hours.

Individual studies of advanced topics under the supervision of a professor or professors. Graded F, P, R. Prerequisite: consent of instructor.

CE 5392. SPECIAL TOPICS IN AIR POLLUTION. 3 Hours.

Sources, transport, fate, characteristics, and control of air contaminants. May be repeated for credit when topics vary. Topics include: Topic 1 - Air Quality Modeling. Mathematical models for predicting air pollutant transport and transformation in the atmosphere, to evaluate health impacts and potential control strategies. The course covers 4 types of air quality models: box models, photochemical grid models (for ozone and particulate matter), Gaussian dispersion models (major emphasis), and receptor models. Use of Gaussian dispersion modeling software. Topic 2 - Air Pollution Control System Design. Design of air pollution control systems for stationary sources, including particle control technologies (cyclones, electrostatic precipitators, fabric filters and wet scrubbers) and gaseous control technologies (incinerators, adsorption systems, absorption systems, biofilters, nitrogen oxide controls, mercury controls, and carbon dioxide controls). Topic 3 - Air Pollution Chemistry and Meteorology. Designed to give students an understanding of how pollutants react and travel in the atmosphere. Chemistry of ground-level ozone formation, ozone layer depletion, acid deposition, fine particle formation, and climate change; meteorological variables impacting pollutant transport in the atmosphere, such as atmospheric stability, turbulence and wind speed. Prerequisite: Graduate standing and consent of instructor.

CE 5393. ENVIRONMENTAL ORGANIC CHEMISTRY. 3 Hours.

Introduction to chemical structures, reactions, and transformations. Disposition of compounds of environmental significance utilizing sorption, bioaccumulation, acid-base reactions, hydrolysis reactions, biodegradation, and biotransformation. Prerequisite: CE 3334 or consent of instructor.

CE 5394. EARTHQUAKE DESIGN OF REINFORCED CONCRETE BUILDINGS. 3 Hours.

Design of earthquake resistant reinforced concrete (RC) building structures. ACI 318, ASCE 7, earthquake loads effects on buildings and related structural damage, properties of concrete and steel beyond the elastic range, development and anchorage, confined concrete, inelastic behavior of RC members under large load reversals, design of RC beams, columns, beam-column joints, special moment frames, coupling beams, special structural walls, and other structural systems. Prerequisite: CE 4347.

CE 5395. MASTER'S PROJECT. 3 Hours.

Non-thesis master's degree candidates with approval to include a project in their program. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 5396. SITE REMEDIATION ENGINEERING. 3 Hours.

This course provides practical understanding of the engineering principles and practices associated with the characterization and remediation of contaminated sites. Methods for site characterization and risk assessment will be highlighted while the emphasis will be on remedial action screening processes and technology principles and conceptual design. In-situ and ex-situ treatment processes will be covered, including unit operations, coupled processes, and complete systems within the context of community implementation. Case studies with focus on developing communities will be used and computerized tools for process selection and design will be presented. Prerequisite: CE 3334; or consent of instructor.

CE 5398. THESIS. 3 Hours.

Research and preparation pertaining to the master's thesis. Graded F, R.

CE 5695. MASTER'S PROJECT. 6 Hours.

Non-thesis master's degree candidates with approval to include a project in their program. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 5698. THESIS. 6 Hours.

Research and preparation pertaining to the master's thesis. Graded F, P, R.

CE 6197. RESEARCH IN CIVIL ENGINEERING. 1 Hour.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6297. RESEARCH IN CIVIL ENGINEERING. 2 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6300. ADVANCED TOPICS IN CIVIL ENGINEERING. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: consent of instructor.

CE 6306. PUBLIC TRANSIT PLANNING & OPERATIONS. 3 Hours.

Theory and application of technologies used for transit demand analysis, routing, scheduling, evaluation, crew assignment, maintenance strategies, and management. Land-use impact on public transit policy and operation is also introduced. Prerequisite: CE 4311 or CE 5337 or equivalent.

CE 6308. ANALYTICAL MODELS IN TRANSPORTATION. 3 Hours.

Development and analysis of mathematical models in transportation. Topics include travel demand, trip generation, distribution, mode choice, assignment, plan evaluation, spatial distribution, traffic control and flow models; principles of behavioral, econometric, deterministic, probabilistic, and chaotic simulation models, and their applications. Prerequisite: CE 4311 or CE 5337.

CE 6309. TRAFFIC FLOW THEORY. 3 Hours.

Speed, density relationships of vehicular traffic flow; statistical aspects of traffic events and queuing processes; deterministic models and simulation models of traffic flow behavior; applications of flow theory to traffic problem solutions. Prerequisite: CE 5330 or equivalent.

CE 6311. ADVANCED FOUNDATION DESIGN. 3 Hours.

Subsurface investigations; advanced design of mat foundations, retaining walls, reinforced retaining walls, anchor tiebacks, driven piles, and piers; destructive and nondestructive tests on deep foundations; group piles, laterally loaded piles, and design of foundations in expansive soils. Prerequisite: CE 4321 or CE 5364.

CE 6312. IN-SITU TESTING. 3 Hours.

Site characterization, in-situ testing procedures, and soil property interpretation methods for standard penetration tests, cone penetration tests utilizing friction cone, piezocone, and seismic cone, dilatometer, vane shear, pressure meter, and bore hole shear tests, non-destructive tests for pavement subgrade characterization. Prerequisite: CE 3143 or CE 5370 or consent of instructor.

CE 6313. DESIGN OF EARTH DAMS. 3 Hours.

Introduction to dams and levees, failure and damage analysis, erosion, seepage, filter, drainage design, foundation preparation for problematic subsoil conditions, seepage induced slope stability issues, desiccation crack and erosion control, numerical modeling and case studies, seismic issues. Prerequisite: CE 5367 or consent of instructor.

CE 6314. STORMWATER MODELING. 3 Hours.

Hydrologic modeling methods and issues, urban watershed modeling, methods of system analysis; analysis of hydrologic components as linear and nonlinear systems, watershed response, kinematic wave; and model parameters optimization. Prerequisite: CE 5346 and CE 5347; or consent of instructor.

CE 6315. ADVANCED GEOTECHNICAL MODELING. 3 Hours.

This course covers two numerical simulation methods: discrete element method (DEM) and finite element method (FEM). The four basic elements in DEM: initialization, search, contact models, velocity and displacement calculations will be introduced. This course will use FORTRAN as the coding language. A basic Fortran code will be provided. Students will learn how to make modifications to the basic code for their own applications. A term project will be required that consists of a numerical experiment. Fundamentals of FEM will be introduced including: basic elements, formulation methods, coordinate transformation, and boundary conditions. CAM clay model will be introduced and implemented in ABAQUS as a class exercise. Usage of ABAQUS will be introduced. Applications of FEM including pile soil interaction and simple beam simulation. Prerequisite: Grade of C or better in CE 5363; Grade of C or better in CE 5369; Programming language (FORTRAN, C, or MATLAB); and numerical analyses; or consent of instructor.

CE 6316. SEDIMENT TRANSPORT. 3 Hours.

Sourcing the sediment influx, the settling velocity, Shields critical shear stress, design with critical shear, bedload transport equations, suspended load transport, total transport equation, regime theory as index of stability. Prerequisite: CE 4358 or CE 5346; and CE 5347.

CE 6350. ADVANCED CONCRETE DESIGN II. 3 Hours.

Detailing of connections for ductility demands, modified compression field theory, strut and tie modeling of systems and areas, and design of shear walls and hybrid construction. Behavior of reinforced concrete structures, with emphasis on ductility and detailing. Prerequisite: CE 5312.

CE 6354. REPAIR AND REHABILITATION OF STRUCTURES. 3 Hours.

Causes of distress, evaluation methods for condition, strength, serviceability; repair materials, repair techniques, and quality control methods for repair of concrete. Criteria for rehabilitation; retrofit techniques for change in function, loading, and seismic forces. Prerequisite: CE 5311 and CE 5312.

CE 6355. EARTHQUAKE ENGINEERING. 3 Hours.

Earthquake characteristics; design of structures to resist earthquakes. Characterization of earthquakes for design. Development of design criteria for elastic and inelastic structural response. Seismic performance of various structural systems. Prediction of nonlinear seismic behavior. Basis for code design procedures. Preliminary design of steel and reinforced concrete structures. Evaluation of earthquake vulnerability of existing structures and rehabilitation of seismic deficiencies. Prerequisite: CE 5385.

CE 6356. ENERGY METHODS. 3 Hours.

Principles of mechanics; elastic beams and frames; variational method: curved cantilever beams; Rayleigh Ritz method; special form of Euler equation; differential equation for beam; variation of double integral; first variation of triple integral. Deformable bodies using indicial notation; buckling using energy method; Lagrange and Hamilton Principles; theory and analysis of plates; theory and buckling; and theory of vibration. Prerequisite: CE 5315.

CE 6357. STRUCTURAL STABILITY. 3 Hours.

Buckling of columns; approximate method of analysis for buckling problems; beam columns; structural system stability (buckling of frames); lateral torsional buckling; buckling of plates; and buckling of axially compressed cylindrical shells. Prerequisite: CE 5303 or concurrent registration therein.

CE 6358. ADVANCED ENGINEERING ANALYSIS. 3 Hours.

Introduction to matrices; vector spaces; tensors, Eigenvalue problems. Solution to discrete systems: steady state problems and propagation problems. Solution of continuous systems: differential formulation; variational method; and weighted residual methods. Solution of linear and nonlinear static equilibrium equations. Prerequisite: CE 5315 and MATH 3319.

CE 6360. THEORY OF ELASTICITY. 3 Hours.

Introductory mathematical concepts: vector calculus; tensor algebra. Theory of deformation; strain displacement relations in orthogonal curvilinear coordinate systems. Theory of stress; differential equation of equilibrium in curvilinear spatial coordinates; three dimensional equations of elasticity; nonlinear constitutive relationship; plane theory of elasticity; and plane elasticity in polar coordinates. Prerequisite: CE 5315.

CE 6391. ADVANCED PROJECTS IN CIVIL ENGINEERING. 3 Hours.

Projects related to advanced topics in graduate area. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 6397. RESEARCH IN CIVIL ENGINEERING. 3 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6399. DISSERTATION. 3 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 6697. RESEARCH IN CIVIL ENGINEERING. 6 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6699. DISSERTATION. 6 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 6997. RESEARCH IN CIVIL ENGINEERING. 9 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6999. DISSERTATION. 9 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, P, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Bachelor of Science in Construction Management

Undergraduate Programs

The following sections apply to each student majoring in any undergraduate program housed in the Civil Engineering Department: Architectural Engineering, Civil Engineering, and Construction Management. In these sections, "program" refers to any of these programs and "student" refers to any student (UCOL, Intended, or Professional Program) majoring in any one of these programs.

Refer to the College of Engineering section of this catalog for additional information concerning the following topics: Admission to the College of Engineering, Advising, Admission into the Professional Program, College of Engineering Academic Regulations, Honors Degrees in Engineering, Professional Engineering Licensure, and Cooperative Education.

Admission Requirements

Admission as an Architectural Engineering major, a Civil Engineering major, or a Construction Management major is subject to the relevant requirements and policies of the University of Texas at Arlington and of the UTA College of Engineering. The Civil Engineering Department does not impose additional requirements.

Transfer Credit

When a student transfers, a loss of credit can occur that may require change in academic plans. A course, that appears to be similar, may be different in either content or level of difficulty and, as a result, cannot be used for degree credit. Another course may have no equivalent in a particular degree plan. More than one transferred course may satisfy a degree requirement when only one is required. The UTA Civil Engineering Department encourages students interested in our programs to make early contact with our advisors so that we can help avoid these problems.

A student must earn a grade of C or better for a course to be transferred. Any course that is offered under the Texas Common Course Numbering system is accepted as equivalent to the corresponding UTA course. It is the responsibility of the student to establish the equivalence of any other course or courses to a course required in a program. The student should be prepared to provide a syllabus or similar documents to establish equivalence. To be acceptable as equivalent, at a minimum, a transferred course must have no less credit value than the corresponding course and contain substantially equivalent course content. To be accepted in transfer, junior and senior level courses must be taken at a college or university with the same accreditation as UTA in the area offering the course. For example, a Civil Engineering course must come from an ABET accredited Civil Engineering program.

When a student's record or performance indicates weakness in certain areas of study, they may be required to retake courses or to take additional courses.

Before enrolling in a course at another institution to transfer for credit toward a program degree, a student should consult with a program advisor to verify that the course can be used in the student's degree plan and to obtain the necessary written permission.

Advising

Academic advisement is required for every undergraduate student before class enrollment each semester.

A new student with fewer than 24 hours of transferrable credit, including any student entering directly from high school, is advised in the University Advising Center of University College. After one or more semesters and sufficient progress in the degree program, this student is released by the University Advising Center to the program advisors.

Prior to enrollment, a new student with 24 or more hours of transferrable credit must make an appointment with the transfer advisor of their program. However, if all of the student's transfer credit was earned at a Texas community college, an appointment may be scheduled with any advisor for their program. The advising appointment should be scheduled as soon as possible after admission, but certainly prior to registration. A transfer student should not make an advising appointment with a transfer advisor after the initial evaluation of their transfer credit is complete.

During each long semester, a specified period is set aside for the academic advisement of continuing students. Each continuing student is responsible for meeting with their program advisor during this advising period. Continuing students will receive instructions prior to each advising period related to preparing for and making an advising appointment. Academic advising will be available at other times but a student who does not meet with their program advisor during the regular advising period may have fewer alternatives when selecting courses.

Academic Rules, Regulations, and Policies

In addition to the rules, regulations, and policies established below and in the individual program sections, each student is subject to the rules, regulations, and policies of the University of Texas at Arlington and of the UTA College of Engineering. Each student should become familiar with these. The rules, regulations, and policies of the University of Texas at Arlington and of the UTA College of Engineering are set forth in other sections of this catalog. It is the responsibility of each student to follow the applicable published rules. Failure to follow these rules may be grounds for dismissal from the program.

CE Department Course Requisites

- A student must have the written approval of their program advisor to register for any course that will satisfy a requirement of their degree program.
- A student must have specific written permission of their program advisor to register at a different institution for any course that will satisfy a requirement of their degree program.
- A student may not attempt a CE Department course without satisfying all current requisite requirements. A prerequisite course requirement is satisfied by earning a grade of C or better. A co-requisite course requirement is satisfied by earning a grade of C or better or by concurrent enrollment in the course at UTA.
- A student may not drop a course which is co-requisite to a CE Department course without also dropping the CE Department course.
- No professional program courses may be attempted until the student is admitted into the professional program or obtains the written permission of the Departmental Chair.

Repeating Courses

A student may not attempt any course more than three times and apply that course toward a program degree. Enrollment in a course for a period of time sufficient for assignment of a grade, including a grade of W, is considered an attempt.

Admission to the Professional Program

Requirements for admission to the professional program in each program are in accordance with those of the College of Engineering with the following added stipulations:

- Application to the professional program is to be made to the CE Department during the semester that the advancement requirements are being completed.
- Each student must complete all pre-professional courses stipulated under "Requirements for a Bachelor of Science Degree in" the program with a minimum grade of C in each course and a minimum GPA of 2.25 in: a) all courses, b) in all math, science, and engineering courses, and c) in all program specific courses.
- Upon receipt of the application, a student's record is individually reviewed including grades, academic and personal integrity, record of drops and course withdrawals, the order in which courses have been taken, the number of times a student has attempted a course for credit, and any other aspect of the student's record that may be deemed pertinent to admission.

The student must be admitted to the professional program and have an approved degree plan on file in order to graduate. The degree plan is generated upon entry to the professional program. Graduating seniors should apply to graduate during the next-to-last semester.

Grounds for Dismissal from the CE Program

A student whom the UTA Office of Student Conduct has found to have violated the UTA Code of Student Conduct a second time is subject to dismissal from the CE program.

Minor Field of Study

The Civil Engineering Department does not support the option of pursuing a minor in Architectural Engineering, in Civil Engineering, or in Construction Management by other engineering or non-engineering majors.

Educational and Professional Career Paths

The construction industry is one of the largest industries in the world, based on either employment or expenditure. A responsible position in construction management requires the ability to apply principles from business, mathematics, science, and engineering to construction projects in a wide variety of nature, type, and scope. Construction managers plan, construct, maintain, and manage facilities essential to modern, civilized human life. Projects requiring construction management expertise include buildings, bridges, tunnels, transportation systems, and facilities utilized in various specialized industrial processes.

Construction management graduates are prepared for advanced graduate degrees and a wide range of career paths in areas including consulting, governmental agencies, and industry. In addition to the traditional careers in construction management, graduates may take advantage of their strong, broad based education to pursue careers in professions such as law, business, or teaching.

Construction Management BS Degree at UT Arlington

At the undergraduate level, the department offers a Bachelor of Science in Construction Management degree designed to provide the necessary foundation in business, science, mathematics, and engineering required for the management of construction projects of all sizes. The program will also instill an understanding of the importance of ethics, safety, professionalism, and socioeconomic concerns in resolving technical problems through synthesis, planning, and design.

The Civil Engineering Department will seek accreditation by the Applied and Natural Science Accreditation Commission of ABET (www.abet.org (<http://www.abet.org>)) and the American Council for Construction Education (ACCE) (www.acce-hq.org (<http://www.acce-hq.org/>)). The Construction Management program is housed in the Civil Engineering Department.

Educational Objectives of the Undergraduate Program

Most alumni of the CM program will attain the following Program Educational Objectives (PEOs) within a few years after graduation:

- To be able to successfully manage the construction process from pre-construction through final completion.
- To be able to apply leadership, team building, and communication skills to effectively solve problems and positively impact the overall construction process.
- To commit to continued professional growth through advanced degrees and/or certifications and be able to take initiative to grow in their positions and assume leadership roles within their chosen profession.

Student Outcomes of the Undergraduate Program

In order to produce graduates who will achieve the Program Educational Objectives a few years after graduation, it is expected that the undergraduate students will attain the following Student Outcomes by the time of graduation:

- an ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline
- an ability to formulate or design a system, process, procedure or program to meet desired needs
- an ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions
- an ability to communicate effectively with a range of audiences
- an ability to understand ethical and professional responsibility and the impact of technical and/or scientific solutions in a global, economic, environmental, and societal contexts
- an ability to function effectively on teams that establish goals, plan task, meet deadline, and analyze risk and uncertainty

Requirements for a Bachelor of Science Degree in Construction Management

Courses Fulfilling the University General Core Requirements (minimum 42 hours required)

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Communication (minimum 6 hours required)

ENGL 1301	RHETORIC AND COMPOSITION I
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING ¹
or ENGL 1302	RHETORIC AND COMPOSITION II

Creative Arts (minimum 3 hours required)

Any course which satisfies the University Core Curriculum requirement for Creative Arts is accepted.

Government/Political Science (minimum 6 hours required)

POLS 2311	GOVERNMENT OF THE UNITED STATES
POLS 2312	STATE AND LOCAL GOVERNMENT

Language, Philosophy & Culture (minimum 3 hours required)

Any course which satisfies the University Core Curriculum requirement for Language, Philosophy & Culture is accepted.

Mathematics (minimum 6 hours required)

MATH 1303	TRIGONOMETRY
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS

Life & Physical Sciences (minimum 6 hours required)

PHYS 1441	GENERAL COLLEGE PHYSICS I
PHYS 1442	GENERAL COLLEGE PHYSICS II

Social & Behavioral Sciences (minimum 3 hours required)

Select one of the following:

ECON 2305	PRINCIPLES OF MACROECONOMICS
ECON 2306	PRINCIPLES OF MICROECONOMICS
ECON 2337	ECONOMICS OF SOCIAL ISSUES
FINA 2330	MONEY, FINANCE AND THE MODERN CONSUMER
MANA 2302	COMMUNICATIONS IN ORGANIZATIONS
PSYC 1315	INTRODUCTION TO PSYCHOLOGY
SOCI 1311	INTRODUCTION TO SOCIOLOGY

US History (minimum 6 hours required)

Any courses which satisfies the University Core Curriculum requirement for US History is accepted.

Foundational Component Area Option (minimum 3 hours required)

Any additional course which satisfies the University Core Curriculum requirement in any area is accepted.

Pre-Professional Program Courses**25**

Of the core courses, ENGL 1301, COMS 1301, MATH 1303, MATH 1308, PHYS 1441, PHYS 1442 are part of the CM Pre-Professional Program.

ACCT 2301	PRINCIPLES OF ACCOUNTING I
CM 1311	CONSTRUCTION DRAFTING
CM 1331	CONSTRUCTION SURVEYING
CM 2311	INTRODUCTION TO CONSTRUCTION MANAGEMENT
CM 2313	CONSTRUCTION MATERIALS AND METHODS
CM 2315	INTRODUCTION TO MECHANICS FOR CONSTRUCTION
CM 2331	CONSTRUCTION DOCUMENTS
UNIV 1131	STUDENT SUCCESS
or ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS

Select one of the following:

MATH 1302	COLLEGE ALGEBRA
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS

CM Professional Program Courses**51**

MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR
CM 3313	CONSTRUCTION ESTIMATING I
CM 3315	CONSTRUCTION LAW AND ETHICS
CM 3331	MECHANICAL AND ELECTRICAL SYSTEMS
CM 3335	SOILS AND FOUNDATION IN CONSTRUCTION
CM 3337	CONSTRUCTION ADMINISTRATION AND ECONOMICS
CM 3339	CONSTRUCTION SAFETY
CM 3341	CONSTRUCTION DESIGN
CM 4315	CONSTRUCTION ESTIMATING II
CM 4317	CONSTRUCTION SCHEDULING
CM 4331	CONSTRUCTION MANAGEMENT CAPSTONE II
CM 4351	BUILDING INFORMATION MODELING FOR CONSTRUCTION MANAGEMENT
CM 4357	SUSTAINABLE BUILDING PRACTICE

Select four of the following:

CM 4304	CONSTRUCTION CONTRACTS
CM 4332	CONSTRUCTION FIELD OPERATIONS
CM 4335	GEOTECHNICAL ASPECTS OF CONSTRUCTION
CM 4337	LAND AND SITE DEVELOPMENT
CM 4353	RESIDENTIAL AND COMMERCIAL CONSTRUCTION
CM 4359	INDUSTRIAL INTERNSHIP I
CM 4360	INDUSTRIAL INTERNSHIP II

Total Hours

120

¹ Completion of COMS 1301 FUNDAMENTALS OF PUBLIC SPEAKING or ENGL 1302 RHETORIC AND COMPOSITION II satisfies the University's communication requirement.

² Completion of CM 1311 CONSTRUCTION DRAFTING satisfies the University's computer proficiency requirement.

More hours may be required to strengthen student's program or demonstrate proficiency. See Prior Preparation and Course Requirements.

Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical languages courses in addition to the previously listed requirements.

Suggested Course Sequence

A suggested course sequence for the Pre-Professional and Professional Program courses is available on the CE Department's web site.

Prior Preparation and Course Requirements

The undergraduate baccalaureate degree in construction management is a four-year program and requirements for the degree are based upon prior high school preparation through either an honors or college track program. Students who have not had the appropriate prior preparation should contact the departmental advising office for a curriculum guide that will assist them in structuring a study plan that will include leveling courses. Students requiring leveling courses may require a period of time greater than four years to complete their undergraduate degree.

COURSES

CM 1311. CONSTRUCTION DRAFTING. 3 Hours.

Introduction to computer aided drafting, using AutoCAD.

CM 1331. CONSTRUCTION SURVEYING. 3 Hours.

Introduction to surveying including distance measurement, corrections, leveling, measurement of angles and directions, traverse adjustment, volumes, cross section and area computations, and error theory. Methods and technologies such as Excel, MathCAD, global positioning system and geographic information systems used to manage data in surveying. Emphasis on the use of total stations. Prerequisite: Grade of C or better in CM 1311.

CM 2311. INTRODUCTION TO CONSTRUCTION MANAGEMENT. 3 Hours.

Characteristics of the construction industry; types of construction companies, contracts, people involved in a project, their responsibilities and interrelationships; ethical conduct; evolution of a project; interpreting working drawings; construction bonds; contract documents.

CM 2313. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

Materials, methods and sequences of the construction process; emphasis on design, specification, purchase and use of concrete, steel, masonry and wood. An understanding of the uses of construction materials. Prerequisite: Grade of C or better in CM 2311.

CM 2315. INTRODUCTION TO MECHANICS FOR CONSTRUCTION. 3 Hours.

Structural behavior in buildings; forces, moments, support reactions; free-body diagrams, equilibrium; internal forces in columns and beams; deflection; buckling. Prerequisite: Grade of C or better in MATH 1303 and PHYS 1441.

CM 2331. CONSTRUCTION DOCUMENTS. 3 Hours.

Introduction to construction documents and applicable software for use in communicating building design intentions to field personnel, including an understanding of how to interpret, explain, quantify and use construction documents to bid, construct and manage construction projects. Prerequisite: Grade of C or better in CM 2311.

CM 2391. PROBLEMS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Selected problems in construction management on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CM 3313. CONSTRUCTION ESTIMATING I. 3 Hours.

Systems approach to determining required quantities of construction materials; quantification of various types of foundation systems, structural systems and building envelope systems; excerpts of contract documents from a variety of different building projects and materials; plan reading. Prerequisite: Grade of C or better in CM 2311 and CM 2331; Permission of the CE Chair or admission to the CM Professional Program.

CM 3315. CONSTRUCTION LAW AND ETHICS. 3 Hours.

Introduction to basic contract and tort issues and their application in the construction industry; delineation of the various types of contracts and remedies available to parties involved in a construction project; additional related topics including bidding, delays, mechanics liens, site conditions, warranties and the Uniform Commercial Code as it relates to the construction industry. Prerequisite: Grade of C or better in CM 2311 and CM 2313; Permission of the CE Chair or admission to the CM Professional Program.

CM 3331. MECHANICAL AND ELECTRICAL SYSTEMS. 3 Hours.

Mechanical and electrical systems with a major emphasis on estimating and installation, design and control of the electrical, heating, ventilation and cooling system, site planning and acoustical treatments. Prerequisite: Grade of C or better in PHYS 1442; Permission of the CE Chair or admission to the CM Professional Program.

CM 3333. CONSTRUCTION DESIGN I. 3 Hours.

The principles flexure and shear, deflections, buckling are used to consider design/build construction including building systems, building codes, criteria and selection, economic feasibility, value engineering, customer control, and value-added construction services as well as an introduction to Building Information Modeling BIM. Prerequisite: Grade of C or better in CM 2315; Permission of the CE Chair or admission to the CM Professional Program.

CM 3335. SOILS AND FOUNDATION IN CONSTRUCTION. 3 Hours.

Introduction to soil types found on construction projects; properties and classification of soil, embankment control, dewatering, excavation supports, foundations, piers, and pilings. Prerequisite: Grade of C or better in CM 2315; Permission of the CE Chair or admission to the CM Professional Program.

CM 3337. CONSTRUCTION ADMINISTRATION AND ECONOMICS. 3 Hours.

Project planning, cost controls, and construction related financial documents including: schedule of values, labor and operations cost reports, income statements, balance sheets and construction budgets; emphasis on the development of techniques required to ethically and effectively monitor the financial aspects of a construction project. Prerequisite: Grade of C or better in CM 2331 and MATH 1303; Permission of the CE Chair or admission to the CM Professional Program.

CM 3339. CONSTRUCTION SAFETY. 3 Hours.

Examines the application of OSHA 29CFR 1926 for the construction industry along with applicable state and federal construction safety laws pertaining to construction, alterations, or repair work at a construction site. Prerequisite: Grade of C or better in CM 2331; Permission of the CE Chair or admission to the CM Professional Program.

CM 3341. CONSTRUCTION DESIGN. 3 Hours.

Application of statics and strength of materials for design and construction of concrete, masonry, steel, and timber building structures. Prerequisite: Grade of C or better in CM 2313 and CM 2315.

CM 4111. CONSTRUCTION MANAGEMENT CAPSTONE I. 1 Hour.

This course is the first in the Construction Management capstone series and provides project definition, project planning, scheduling, and results in a presentation and plan for implementing during Capstone II. Prerequisite: Grade of C or better in CM 3333; Permission of the CE Chair or admission to the CM Professional Program.

CM 4300. ADVANCED TOPICS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Advanced topics of current interest in any one of the various fields of construction management. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Admission to the professional program and consent of the department chair.

CM 4301. ADVANCED TOPICS IN CONSTRUCTION MANAGEMENT WITH LAB. 3 Hours.

Advanced topics of current interest in any one of the various fields of construction management. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Admission to the professional program and permission of the chair of the department.

CM 4304. CONSTRUCTION CONTRACTS. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Prerequisite: Grade of C or better in CM 3315 and CM 3337; Admission to the CM Professional Program.

CM 4313. CONSTRUCTION DESIGN II. 3 Hours.

Application of statics and strength of materials for construction of steel buildings with computer analysis and design. Prerequisite: Grade of C or better in CM 3333 and Admission to the CM Professional Program.

CM 4315. CONSTRUCTION ESTIMATING II. 3 Hours.

Quantification and pricing of direct field costs and general condition costs from construction documents; the preparation of complete lump sum bid package ready for project execution; utilization of complete set of contract documents required; plan reading. Prerequisite: Grade of C or better in ACCT 2301 and CM 3313 and Admission to the CM Professional Program.

CM 4317. CONSTRUCTION SCHEDULING. 3 Hours.

An introduction to construction project management scheduling covering concepts of project selection and scheduling, utilizing the estimate to predict the schedule, scheduling subcontracting, cost controls, project documentation, construction bonds, insurance, payments and the elements of close out; development of professional communication skills through student prepared multi-media presentations. Prerequisite: Grade of C or better in CM 3313 and Admission to the CM Professional Program.

CM 4331. CONSTRUCTION MANAGEMENT CAPSTONE II. 3 Hours.

Utilize information from all previous courses to give an understanding of the construction management profession culminating in a semester project and presentation. A response to an RFP announcement or bid will be prepared for each team project. Prerequisite: Grade of C or better in CM 4315 and CM 4317; Completion of all CM 3000 level courses; Admission to the CM Professional Program.

CM 4332. CONSTRUCTION FIELD OPERATIONS. 3 Hours.

Introduction to the construction industry and the methods, equipment, and management techniques used. Topics include equipment operating characteristics, underground construction, job site safety, and field management. Prerequisite: Grade of C or better in CM 2313 and CM 3335; Admission to the CM Professional Program.

CM 4335. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics; interpretation of geotechnical reports; site preparation; ground improvement; excavation including supports and dewatering; foundations including consideration of deep foundations and expansive soils; tunneling in soils and rock. Prerequisite: Grade of C or better in CM 3335 and admission to the CM Professional Program.

CM 4337. LAND AND SITE DEVELOPMENT. 3 Hours.

Introduction to site planning and its process. This course covers important characteristics of Site Planning involved in a construction project including land features, uses, buildings, regulations, local community cultures, and site analysis and planning. Students will work on developing a site plan for the end of semester project. Prerequisite: Grade of C or better in CM 1331 and CM 3335; Admission to the CM Professional Program.

CM 4351. BUILDING INFORMATION MODELING FOR CONSTRUCTION MANAGEMENT. 3 Hours.

Introduction to techniques used in development and management of Building Information Models. Emphasis on constructability and management. Prerequisite: Grade of C or better in CM 3341 and admission to the CM Professional Program.

CM 4353. RESIDENTIAL AND COMMERCIAL CONSTRUCTION. 3 Hours.

A senior course for students preparing to enter the project management of residential and commercial construction projects, including: aspects of design, bidding/estimating, presentation, value engineering, contracts/negotiation, subcontractor relations, cost controls, management during construction, close out, and post-construction requirements. Prerequisite: Admission to the CM Professional Program.

CM 4357. SUSTAINABLE BUILDING PRACTICE. 3 Hours.

Ethics and application of environmental sustainability practice in building construction. Introduction to U.S. Green Building Council LEED program standards, methods, and procedures as applied to construction documents interpretation and construction. Prerequisite: Admission to the CM Professional Program.

CM 4359. INDUSTRIAL INTERNSHIP I. 3 Hours.

Program provides for a learning experience in a construction management environment appropriate to the undergraduate level of work with a minimum of 150 hours of work. A written report of the experience and a presentation are required. Prerequisite: Permission of instructor and admission to the CM Professional Program.

CM 4360. INDUSTRIAL INTERNSHIP II. 3 Hours.

Student to experience industrial internship under supervision of an industrial mentor and internship instructor. Prerequisite: CM 4359; Admission to the CM Professional Program.

CM 4391. PROBLEMS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Selected problems in construction management on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department and admission to the CM Professional Program.

CM 5300. TOPICS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Topics of current interest in the field of construction management. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: Consent of instructor.

CM 5301. TOPICS IN CONSTRUCTION MANAGEMENT WITH LAB. 3 Hours.

Topics of current interest in the field of construction management. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: Consent of instructor.

CM 5313. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics and teaching of the foundation and underground excavation construction solely to graduate students specializing in construction engineering & management. Topics include interpretation of geotechnical reports, embankment construction, foundations on expansive soils, excavation supports, excavation dewatering, deep foundation construction, tunneling in soft ground as well as in soft/hard rock, and trenchless technology piping. Prerequisite: CM 5379 and CM 5386.

CM 5339. STATISTICS FOR CONSTRUCTION. 3 Hours.

Point estimation, interval estimation, sample size determination, tests of hypothesis, analysis of variance, linear regression, matrix methods for multiple linear regression, polynomial regression, transformations, non-linear regression. Prerequisite: Grade of C or better in CE 3301.

CM 5340. CONSTRUCTION PROJECT ACQUISITION. 3 Hours.

Fundamentals of acquiring the required goods and services necessary to fulfill the obligations of the construction contract. Service and subcontractor contracts, negotiating tactics and strategies, material pricing; and dispute resolution. The course includes negotiation practice based on typical construction acquisition situations to help prepare the student with experience of negotiating in the real world of construction and business. Prerequisite: Consent of instructor.

CM 5342. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CM 5342.

CM 5343. BUILDING INFORMATION MODELING. 3 Hours.

Introduction to current Building Information Modeling (BIM); Discussion of the role of BIM in Construction Engineering and Management; Revit Architecture, Structure, and MEP; Creating sets, building elements, structural systems, and MEP systems; BIM and clash detection; BIM and Construction Cost Estimating and Scheduling.

CM 5344. CONSTRUCTION METHODS: FIELD OPERATIONS. 3 Hours.

Introduction to the methods, equipment, and management techniques used in the construction industry. Topics include equipment operating characteristics, job site safety, and field management. Credit not granted for CE 4332 and CM 5344.

CM 5345. INFRASTRUCTURE EVALUATION, MAINTENANCE, AND RENEWAL. 3 Hours.

This course is designed for engineers and managers involved in infrastructure development, sustainability, and replacement. Topics include asset management, inspection, evaluation, maintenance, and renewal alternatives for waste collection and water distribution systems, surface and subsurface drainage, pavements, bridges, culverts, buildings, and other structures. Prerequisite: Consent of instructor.

CM 5350. RISK MANAGEMENT. 3 Hours.

The risk management process including risk identification, monitoring, and control; integrated quantitative cost and schedule risk analysis.

CM 5355. CONSTRUCTION MATERIALS. 3 Hours.

Principles of construction related to construction regulations and standards, loads, fire safety, acoustics, joints and sealants. Systems of construction involving concrete, steel, wood, masonry, sealants, and soil, and including excavations, below grade construction, formwork, cladding, joints, windows, doors, roofing, and ceilings.

CM 5377. CONSTRUCTION FINANCE. 3 Hours.

Financial aspects and job costing of a construction project. Includes project management principles, budgets, cost codes, cost-to-complete, and financial reports specific to the management of a construction company and project control.

CM 5378. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for CE 4304 and CM 5378. Prerequisite: Consent of instructor.

CM 5379. CONSTRUCTION COST ESTIMATING. 3 Hours.

Types of estimates, development of unit costs, quantity takeoff, cost estimating using manual methods and computerized cost estimating, budgets, and costs.

CM 5381. PUBLIC PRIVATE PARTNERSHIP FOR INFRASTRUCTURE PROJECTS. 3 Hours.

Public-private partnership (P3) arrangements as an innovative approach to deliver public infrastructure projects. Topics include P3 benefits, limitations, contracting and implementation strategies. Prerequisite: Grade of C or better in CE 3310 or IE 2308, or consent of instructor.

CM 5382. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Introduction to International Code Council's 2012 International Building Code and USGBC's LEED® New Construction Guidelines v.3 for constructing sustainable/green buildings. Review of building occupancy categories, construction types, allowable height and area, life safety requirements, rated building assemblies, and egress. Site selection, energy and water efficiency, material reuse and indoor air quality. Credit not granted for CE 4307 and CM 5382.

CM 5386. CONSTRUCTION PLANNING & SCHEDULING. 3 Hours.

Construction productivity, planning, & scheduling of operations, flow charts, linear programming, critical path method (CPM), program evaluation review techniques (PERT), precedence networks. Computer methods.

CM 5387. CONSTRUCTION PRODUCTIVITY. 3 Hours.

Evaluation of construction project management's effectiveness. An investigation of the advanced techniques required for improvement of construction projects including time, cost, quality management, preplanning, field evaluation techniques, time-lapse photograph, safety, human factors, and communications. Prerequisite: CM 5379.

CM 5388. PIPELINE CONSTRUCTION AND TRENCHLESS TECHNOLOGY. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Credit not granted for CE 4305 and CE 5388. Prerequisite: Consent of instructor.

CM 5389. PIPELINE SYSTEMS ASSET MANAGEMENT. 3 Hours.

Pipeline systems asset management, inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations, renewal technologies, and case studies. Credit not granted for CE 4306 and CE 5389. Prerequisite: Consent of instructor.

Computer Science and Engineering

The Department of Computer Science and Engineering is one of seven departments in the College of Engineering, the fourth-largest engineering college in Texas. Its mission is to serve the needs of the region, the state, and the nation by providing quality educational and innovative, relevant research programs in computer science and engineering. The department strives to offer first-rate undergraduate, graduate, and continuing education opportunities; conduct research and development technologies in selected areas, and facilitate technology transfer for the betterment of the quality of life. Its internationally recognized faculty members are engaged in breakthrough research across the leading areas of computer science and engineering.

Undergraduate Opportunities (p. 546)

Bachelor of Science degrees (p. 546)

- Bachelor of Science in Computer Engineering
- Bachelor of Science in Computer Science
- Bachelor of Science in Software Engineering

Computer Science minor (p. 552)

Certificates (p. 552)

- Undergraduate Certificate in Cyber Security
- Undergraduate Certificate in Unmanned Vehicle Systems
- Undergraduate Certificate in Embedded Systems

Graduate Opportunities (p. 530)

Master's degrees (p. 530)

- Master of Science in Computer Engineering (thesis and non-thesis)
- Master of Science in Computer Science (thesis and non-thesis)
- Master of Software Engineering (non-thesis)

Doctorate degrees (p. 532)

- Ph.D. in Computer Engineering
- Ph.D. in Computer Science
- B.S. to Ph.D. in Computer Engineering
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Graduate Certificates (p. 533)

- Graduate Certificate in Artificial Intelligence
- Graduate Certificate in Big Data Management and Data Sciences
- Graduate Certificate in Cybersecurity and Privacy
- Graduate Certificate in Deep Learning
- Graduate Certificate in Embedded Systems
- Graduate Certificate in FPGA and System on Chip Design
- Graduate Certificate in Real-time System Design
- Graduate Certificate in Unmanned Vehicle Systems

COURSES

CSE 1000. FRESHMAN UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 1105. INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING. 1 Hour.

Introduction to engineering concepts, the computer science and engineering disciplines, skills for written communication, and departmental orientation.

CSE 1106. INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING. 1 Hour.

A practical approach to hands-on computer hardware and software systems in a laboratory environment. Students will be exposed to basic engineering concepts such as simple circuits, digital logic, embedded controllers, computer networking, software design, and Linux operating systems. Prerequisite: C or better in CSE 1310.

CSE 1205. INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING. 2 Hours.

A practical approach to hands-on computer hardware and software systems in a laboratory environment. Students will be exposed to basic engineering concepts such as simple circuits, digital logic, embedded controllers, computer networking, software design, and Linux operating systems. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: CSE 1310.

CSE 1301. COMPUTER LITERACY. 3 Hours. (TCCN = COSC 1301)

For those persons having an interest in finding out what a computer is (and is not), the types of problems suited for computers, and how to utilize a computer to solve problems. The organization and characteristics of computers; application of commercial software such as word processors, spreadsheets, database packages, and communications packages.

CSE 1309. INTRODUCTION TO PROGRAMMING FOR NON-ENGINEERING MAJORS. 3 Hours.

An introduction to the algorithmic process and to programming using basic control and data structures. This course is taught using the Python programming language. Prerequisite: Corequisite MATH 1302.

CSE 1310. INTRODUCTION TO COMPUTERS & PROGRAMMING. 3 Hours. (TCCN = COSC 1320)

An introduction to the computer, to the algorithmic process, and to programming using basic control and data structures, using a procedural language. Prerequisite: C or better in MATH 1302 or C or better in (or concurrent enrollment in) a subsequent mathematics course (Math 1421, Math 1426, Math 2425, Math 2326, Math 3330, HONR-SC 1426 or HONR-SC 2425) and C or better in UNIV 1131 (or concurrent enrollment) or ENGR 1101 (or concurrent enrollment).

CSE 1311. INTRODUCTION TO PROGRAMMING FOR ENGINEERS. 3 Hours.

An introduction to the computer, to the algorithmic process, and to programming using basic control and data structures. This class is currently using the C language. Prerequisite: C or better in (or concurrent enrollment in) one of the following; (Math 1421, Math 1426, Math 2425, Math 2326, Math 3330, HONR-SC 1426, or HONR-SC 2425).

CSE 1320. INTERMEDIATE PROGRAMMING. 3 Hours.

Programming concepts beyond basic control and data structures. Emphasis is given to data structures including linked-lists and trees as well as modular design consistent with software engineering principles. Prerequisite: C or better in CSE 1310 and C or better in (or concurrent enrollment in) (Math 1421, Math 1426, Math 2425, Math 2326, Math 3330, HONR-SC 1426, or HONR-SC 2425) and C or better in UNIV 1131 (or concurrent enrollment) or ENGR 1101 (or concurrent enrollment).

CSE 1325. OBJECT-ORIENTED PROGRAMMING. 3 Hours.

Object-oriented concepts, class diagrams, collection classes, generics, polymorphism, and reusability. Projects involve extensive programming and include graphical user interfaces and multithreading. Prerequisite: CSE 1320.

CSE 1392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of advisor.

CSE 2000. SOPHOMORE UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 2100. PRACTICAL COMPUTER HARDWARE/SOFTWARE SYSTEMS. 1 Hour.

A practical approach to hands-on computer hardware and software systems in a laboratory environment. Students will be exposed to basic design concepts using off-the-shelf hardware components and to tools that enable the design of complex software systems. Prerequisite: CSE 1320.

CSE 2312. COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE PROGRAMMING. 3 Hours.

Computer organization from the viewpoint of software, including instruction set architectures, memory addressing, integer and floating-point representation and arithmetic, instruction pipelining, cache, memory virtualization, and I/O. The relationship of higher-level programming languages to assembly language and instruction set architecture is also explored. Prerequisite: a C or better in CSE 1320 and a C or better in CSE 1205 or CSE 1105.

CSE 2315. DISCRETE STRUCTURES. 3 Hours.

Propositional and predicate logic, mathematical proof techniques, sets, combinatorics, functions and relations, graphs, and graph algorithms. Prerequisite: C or better in CSE 1310 and C or better in MATH 1426 (or C or better in or concurrent enrollment in MATH 2425).

CSE 2392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of advisor.

CSE 2440. CIRCUIT ANALYSIS. 4 Hours.

Basic principles of electrical circuits using resistors, capacitors and inductors. Filter analysis and synthesis using complex algebra. Introduction to operational amplifiers. Time domain and frequency domain analysis and taxonomy of signals. Concurrent laboratory experiments complement lecture topics. Prerequisite: Grade C or better in MATH 2425 and PHYS 1444.

CSE 2441. DIGITAL LOGIC DESIGN. 4 Hours.

Analysis, design and testing of combinational and sequential logic circuits. Topics include Boolean algebra, logic circuit minimization techniques, synchronous sequential circuit design, algorithmic state machine design, design of arithmetic/logic and control units, and Verilog programming of FPGA devices. Prerequisite: CSE 1320 and CSE 2315.

CSE 3000. JUNIOR UNDERGRADUATE RESEARCH JUNIOR UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 3302. PROGRAMMING LANGUAGES. 3 Hours.

Introduction, analysis, and evaluation of the important concepts found in a variety of programming languages. Formalisms useful in specifying language syntax and semantics; programming language paradigms such as algorithmic, functional, logic, and object-oriented. Prerequisite: C or better in each of the following: CSE 1325, CSE 2312 and CSE 3318.

CSE 3310. FUNDAMENTALS OF SOFTWARE ENGINEERING. 3 Hours.

Software engineering principles, processes, and techniques; software development approaches focusing on functional analysis and functional design methods. Configuration management, implementation strategies, and testing. Team project. Prerequisite: C or better in each of the following: CSE 1320, CSE 1325 and CSE 2315.

CSE 3311. OBJECT-ORIENTED SOFTWARE ENGINEERING. 3 Hours.

Study of an agile unified methodology and its application to object-oriented software development. Topics include requirements acquisition, use case derivation, modeling and design of interaction behavior and state behavior, introduction to design patterns, derivation of design class diagrams, implementation considerations and deployment. Team project. Prerequisite: C or better in each of the following: CSE 3310 and CSE 3318.

CSE 3313. INTRODUCTION TO SIGNAL PROCESSING. 3 Hours.

Examines models for presentation and processing of digital signals. Sampling theorem, correlation and convolution, time and frequency analysis of linear systems, Fourier transform, Z-transform, design of digital filters structures for discrete time systems. Prerequisite: C or better in each of the following: CSE 3318 and either CSE 3380 or MATH 3330.

CSE 3314. PROFESSIONAL PRACTICES. 3 Hours.

Ethics. Contemporary social aspects and responsibilities of computing in a global, societal context. Lifelong learning goals and resources. Entrepreneurship and intellectual property. Project involving written and oral communication. Prerequisite: C or better in CSE 3318 and COMS 2302.

CSE 3315. THEORETICAL CONCEPTS IN COMPUTER SCIENCE AND ENGINEERING. 3 Hours.

Selected theoretical concepts including regular and context free languages, finite state and pushdown automata, Turing machines, computability, and NP-completeness. Prerequisite: C or better in CSE 2315.

CSE 3318. ALGORITHMS & DATA STRUCTURES. 3 Hours.

Design and analysis of algorithms with an emphasis on data structures. Approaches to analyzing lower bounds on problems and upper bounds on algorithms. Classical algorithm design techniques including algorithms for sorting, searching, and other operations on data structures such as hash tables, trees, graphs, strings, and advanced data structures, dynamic programming and greedy approaches. Prerequisite: CSE 1320 and CSE 2315.

CSE 3320. OPERATING SYSTEMS. 3 Hours.

Functions and components of an operating system, including process synchronization, job scheduling, memory management, file systems protection, and deadlocks. Related system software, such as loaders, linkers, assemblers, and windowing systems. Prerequisite: C or better in CSE 2312.

CSE 3323. ELECTRONICS. 3 Hours.

Design, analysis and testing of electronic circuits. Topics include operational amplifiers, diodes, bipolar-junction transistors (BJTs), and field-effect transistors (FETs) and their applications. Concurrent laboratory experiments complement lecture topics. Prerequisite: C or better in CSE 2440.

CSE 3330. DATABASE SYSTEMS AND FILE STRUCTURES. 3 Hours.

Database system architecture; file structures for databases, including indexing hashing, and B+-trees; the relational model and algebra; the SQL database language; Entity-Relationship data modeling; functional dependencies and basic normalization. Prerequisite: C or better in each of the following: CSE 1325 and CSE 3318.

CSE 3380. LINEAR ALGEBRA FOR CSE. 3 Hours.

Solving systems of equations, matrix algebra, determinants, vector spaces, orthogonality and least squares, with applications to computer science. Prerequisite: C or better in CSE 2315.

CSE 3392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of advisor.

CSE 3442. EMBEDDED SYSTEMS I. 4 Hours.

Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications. Prerequisite: C or better in each of the following: CSE 2312, CSE 2440 and CSE 2441.

CSE 4000. SENIOR UNDERGRADUATE RESEARCH SENIOR UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 4191. INDIVIDUAL PROJECTS. 1 Hour.

Special problems in computer science and engineering on an individual basis. Topics may change from semester to semester. May be repeated for credit. Departmental approval must be obtained in advance for degree credit. Prerequisite: consent of instructor and department chairperson.

CSE 4303. COMPUTER GRAPHICS. 3 Hours.

Theory and practice for the visual representation of data by computers including display devices, output primitives, planes and curved surfaces, two- and three-dimensional transformations, parallel and perspective viewing, removal of hidden lines and surfaces, illumination models, ray tracing, radiosity, color models, and computer animation. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, and either CSE 3380 or MATH 3330.

CSE 4305. COMPILERS FOR ALGORITHMIC LANGUAGES. 3 Hours.

Review of programming language structures, translation, and storage allocation. Theory and practice of compilers and issues in compiler construction including parsing, intermediate code generation, local optimization problems such as register allocation, data-flow analysis, and global optimization. Prerequisite: Admitted into an Engineering Professional Program. C or better in the following: CSE 3302 and CSE 3315.

CSE 4308. ARTIFICIAL INTELLIGENCE. 3 Hours.

An introduction to the field of artificial intelligence studying basic techniques such as heuristic search, deduction, learning, problem solving, knowledge representation, uncertainty reasoning and symbolic programming languages such as LISP. Application areas may include intelligent agents, data mining, natural language, machine vision, planning and expert systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318 and (IE 3301 or MATH 3313).

CSE 4309. FUNDAMENTALS OF MACHINE LEARNING. 3 Hours.

This course offers an introduction to machine learning. Topics include naive Bayes classifiers, linear regression, linear classifiers, neural networks and backpropagation, kernel methods, decision trees, feature selection, clustering, and reinforcement learning. A strong programming background is assumed, as well as familiarity with linear algebra (vector and matrix operations), and knowledge of basic probability theory and statistics. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, IE 3301 or MATH 3313, and CSE 3380 or MATH 3330.

CSE 4310. FUNDAMENTALS OF COMPUTER VISION. 3 Hours.

This course introduces students to basic concepts and techniques in computer vision. The topics covered include morphological operations, connected component analysis, image filters, edge detection, feature extraction, object detection, object recognition, tracking, gesture recognition, image formation and camera models, calibration, and stereo vision. A strong programming background is assumed, as well as familiarity with linear algebra (vector and matrix operations), and knowledge of basic probability theory and statistics. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, IE 3301 or MATH 3313, and CSE 3380 or MATH 3330.

CSE 4314. PROFESSIONAL PRACTICES. 3 Hours.

Ethics. Contemporary social aspects and responsibilities of computing in a global, societal context. Lifelong learning goals and resources. Entrepreneurship and intellectual property. Project involving written and oral communication. Prerequisite: Admitted into an Engineering Professional Program. C or better in COMS 2302.

CSE 4316. COMPUTER SYSTEM DESIGN PROJECT I. 3 Hours.

Analysis and design of an industry-type project that involves hardware and software components to meet desired needs within realistic constraints and standards. The project is to be completed in CSE 4317 the following semester. Multidisciplinary teams of CSE 4316 students are required to develop, review, and present problem definition, project planning, requirements formulation, and design specification. Prerequisites: Admitted into a CSE Professional Program. For academic plan CS__CS or SE__SE, C or better in CSE 3310 and CSE 3320, and C or better in CSE 4314 (or concurrently). For academic plan CSE_CP, C or better in CSE 3320 and CSE 3442, and C or better in CSE 4314 (or concurrently).

CSE 4317. COMPUTER SYSTEM DESIGN PROJECT II. 3 Hours.

Implementation, integration, quality assurance through peer review and testing, and deployment of the project designed in CSE 4316; oral presentation, documentation and project demonstration. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 4316 and continuation with the same team.

CSE 4321. SOFTWARE TESTING & MAINTENANCE. 3 Hours.

Study of software quality assurance, software testing, and software maintenance processes, methods and techniques including formal review techniques, software verification, validation, and testing, types of software maintenance, maintenance activities, and regression testing. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3310.

CSE 4322. SOFTWARE PROJECT MANAGEMENT. 3 Hours.

Introduction to software project management. Issues include effort estimation and costing, project planning and scheduling, option analysis, software quality assurance, and formal technical reviews. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3310.

CSE 4323. QUANTITATIVE COMPUTER ARCHITECTURE. 3 Hours.

Pipelined processors, parallel processors including shared and distributed memory, multicore, Very Long Instruction Word (VLIW) and graphics processors, memory and cache design, computer peripherals, and computer clusters. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4331. DATABASE IMPLEMENTATION AND THEORY. 3 Hours.

Review of the relational model and algebra; relational calculus; relational database design theory; advanced data modeling concepts; object-oriented and object-relational databases; database system implementation techniques, including concurrency control, recovery, atomic commitment, and query processing and optimization, database security; introduction to advanced concepts, such as active, deductive, spatial, temporal, multimedia and distributed databases. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3330.

CSE 4334. DATA MINING. 3 Hours.

Automatic discovery of patterns and knowledge from large data repositories, including databases, data warehouses, Web, document collections, and transactions. Basic topics of data mining including data preprocessing, data warehousing and online analytical processing (OLAP), data cube, frequent pattern and association rule mining, correlation analysis, classification and prediction and clustering, as well as advanced topics covering the techniques and applications of data mining on Web and text documents. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: IE 3301 (or MATH 3313). Co-requisite: CSE 3330.

CSE 4340. FUNDAMENTALS OF WIRELESS NETWORKS. 3 Hours.

Fundamentals of wireless networks, radio spectrum, coding and modulation, multiple access techniques, antennas, noise and interference, channels, demodulation and decoding, error rates and capacity, link budgets, medium access control, rate adaption, and wireless LAN/PAN, ad-hoc, and sensor networks. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 4344 or CSE 4352 or consent of instructor.

CSE 4342. EMBEDDED SYSTEMS II. 3 Hours.

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3323, CSE 3442, and CSE 3313.

CSE 4344. COMPUTER NETWORK ORGANIZATION. 3 Hours.

Design and analysis of computer networks. Emphasis on the OSI architecture but discusses other schemes (e.g., ARPAnet). Data link control, local networks, protocols/architectures, network access protocols, transport protocols, internetworking, and ISDN. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4345. COMPUTATIONAL METHODS. 3 Hours.

Introduction to numerical methods for solving problems in computer science and computer engineering. Topics include computer arithmetic, linear and nonlinear equations, eigenvalue problems, least squares, optimization, interpolation, and simulation. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following IE 3301 or MATH 3313, CSE 3318, and either CSE 3380 or MATH 3330.

CSE 4351. PARALLEL PROCESSING. 3 Hours.

Theory and practice of parallel processing, including characterization of parallel processors, models for memory, algorithms, and interprocess synchronization. Issues in parallelizing serial computations, efficiency and speedup analysis. Programming exercises using one or more concurrent programming languages, on one of more parallel computers. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4352. IOT AND NETWORKING. 3 Hours.

Study of Ethernet stacks and layers, full implementation of an Ethernet stack and a basic low-latency, small footprint IoT protocol on bare metal embedded devices and embedded Linux systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4354. REAL-TIME OPERATING SYSTEMS. 3 Hours.

Design and implementation of a real-time operating system with cooperative and preemption content switching, priority scheduling, semaphores, message queues, and inter-process communications on bare metal microcontrollers. Prerequisite: Admitted into an Engineering Professional Program. C or better in both CSE 3320 and CSE 3442.

CSE 4355. ELECTROMECHANICAL SYSTEMS AND SENSORS. 3 Hours.

Applications of electronics and microcontrollers to the control of electromechanical systems. Topics include driving brushless motors (including stepper motors), brushed permanent magnet motors, and other mechanical actuators; the use of the sensors including IMU, LIDAR, RADAR, GPS, capacitive/inductive sensing, laser distance, thermocouples, strain, pressure, optical encoders, and Hall devices; and control applications. Prerequisite: Admitted into an Engineering Professional Program. C or better in both CSE 3323 and CSE 3442.

CSE 4356. SYSTEM ON CHIP (SOC) DESIGN. 3 Hours.

Design of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4357. ADVANCED DIGITAL LOGIC DESIGN. 3 Hours.

Hierarchical organization, design, simulation, implementation, and testing of digital systems. Industrial standard computer-aided design tools including hardware description languages (HDLs), field-programmable gate arrays (FPGAs), and other prototyping hardware and software will be employed. Design of arithmetic and other algorithmic processes will be covered. A term project will be required. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4358. MICROPROCESSOR SYSTEMS. 3 Hours.

Asynchronous and synchronous memory interfacing and timing, design and implementation of DMA controllers and SDRAM controllers. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4360. AUTONOMOUS ROBOT DESIGN AND PROGRAMMING. 3 Hours.

An introduction to robotics and the design and programming of autonomous robot systems. Topics include basic kinematics, dynamics, and control, as well as sensors, knowledge representation, and programming techniques. Course work includes individual and group projects involving the building and programming of simulated and real robots. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, CSE 3320 and CSE 3380 (or MATH 3330).

CSE 4361. SOFTWARE DESIGN PATTERNS. 3 Hours.

In-depth study of software design patterns including description of patterns, design principles and techniques used by patterns as well as application of patterns to solving practical design problems. Team project. Prerequisites: Admitted into an Engineering Professional Program. C or better in CSE 3311.

CSE 4372. RISC PROCESSOR DESIGN. 3 Hours.

Design of a RISC processor, based on RISC V and custom instruction set architectures with implementation on an FPGA target for test and verification. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4373. GENERAL PURPOSE GPU PROGRAMMING. 3 Hours.

Study of general purpose computation on a GPU. Topics include GPU architectures, stream processing, and programming languages such as OpenCL and CUDA that realize data-parallel, high-throughput compute kernels on GPU architectures. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4376. DIGITAL COMMUNICATION SYSTEMS. 3 Hours.

Study of digital communication systems including source and channel coding, digital modulation techniques, inter-symbol interference, and multi-channel combining and multiple-access methods. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3313.

CSE 4377. WIRELESS COMMUNICATION SYSTEMS. 3 Hours.

Study of wireless systems including modulation, amplification, linearization techniques, filtering, antennas, propagation, reception, and demodulation. Topics include link budget and interference analysis of real systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3313.

CSE 4378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

CSE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in CSE 4378 and admission to the UVS certificate program.

CSE 4380. INFORMATION SECURITY. 3 Hours.

Hands-on introduction to the basics of security. Includes system security, buffer overflows, a high-level overview of cryptography, firewalls and intrusion detection/prevention, malware, penetration testing, forensics, and system administration. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4381. INFORMATION SECURITY II. 3 Hours.

Deeper study of the fundamentals of security, including symmetric key cryptography, public key cryptography, cryptographic protocols, malware design, network attacks and defenses, data security, privacy, and wireless security. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320 and C or better in CSE 4344 (or concurrently).

CSE 4382. SECURE PROGRAMMING. 3 Hours.

This course is an introduction to methods of secure software design and development. Students will learn about the major security problems found in software today. Using this knowledge, they will work in teams to find these bugs in software, fix the bugs, and design software so that it has fewer security problems. Static analysis tools will be a core part of the class, but students will also be exposed to black box testing tools. Topics will include input validation, buffer overflow prevention, error handling, web application issues, and XML. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4391. INDIVIDUAL PROJECTS. 3 Hours.

Special problems in computer science and engineering on an individual basis. Topics may change from semester to semester. May be repeated for credit. Departmental approval must be obtained in advance for degree credit. Prerequisite: consent of instructor and department chairperson.

CSE 4392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of instructor.

CSE 5191. INDIVIDUAL STUDY IN COMPUTER SCIENCE. 1 Hour.

Topics dealing with special problems in Computer Science on an individual instruction basis. May be repeated for credit.

CSE 5192. INDIVIDUAL STUDY IN COMPUTER SCIENCE. 1 Hour.

Topics dealing with special problems in Computer Science on an individual instruction basis. May be repeated for credit.

CSE 5194. ORIENTATION SEMINAR. 1 Hour.

Presentation of computer science research by CSE faculty, students, and invited speakers. Preparation of program of work.

CSE 5300. FOUNDATION OF COMPUTING. 3 Hours.

Basics of programming, data structures, and algorithms. Introduction to databases and operating systems. Basics of discrete structures and computability. Course is used for the Master's in Data Science degree program and certificate programs for non-CSE majors. It cannot be taken for credit towards any CSE degree.

CSE 5301. DATA ANALYSIS & MODELING TECHNIQUES. 3 Hours.

Concepts and techniques for performing experiments and analyzing their results. Topics cover fundamental statistics, probability and data-representation concepts, inference through hypothesis testing, information theory, queuing models, and selected topics such as capacity planning and bottleneck analysis, clustering and classification, and hidden Markov models with computer science applications as examples.

CSE 5306. DISTRIBUTED SYSTEMS. 3 Hours.

Issues and challenges in distributed systems, including: communication, distributed processes, naming and name services, synchronization, consistency and replication, transactions, fault tolerance and recovery, security, distributed objects, and distributed file systems.

CSE 5307. PROGRAMMING LANGUAGE CONCEPTS. 3 Hours.

Study and evaluation of concepts in programming language for modern computer systems. Programming projects are selected from string-based, symbolic, algorithmic, and object-oriented languages.

CSE 5311. DESIGN AND ANALYSIS OF ALGORITHMS. 3 Hours.

Techniques for analyzing upper bounds for algorithms and lower bounds for problems. Problem areas include: sorting, data structures, graphs, dynamic programming, combinatorial algorithms, introduction to parallel models.

CSE 5314. COMPUTATIONAL COMPLEXITY. 3 Hours.

Sequential and parallel complexity classes (e.g., NP-complete and P-complete) and representative problems in languages, logic and graphs. Reduction techniques. Approximate solutions. Complexity hierarchies.

CSE 5315. NUMERICAL METHODS. 3 Hours.

Selected topics from the theory and practice of using automatic digital computers for approximating arithmetic operations, approximating functions, solving systems of linear and non-linear equations, and solving ordinary and partial differential equations.

CSE 5316. MODELING, ANALYSIS, AND SIMULATION OF COMPUTER SYSTEMS. 3 Hours.

Mathematical formalism and techniques used for computer system modeling and analysis. Reviews probability, transform theory, coding theory, and Petri nets. Topics may include knowledge based modeling, validation procedures, various simulation techniques for stochastic process and real-time distributed systems.

CSE 5317. DESIGN AND CONSTRUCTION OF COMPILERS. 3 Hours.

Review of programming language structures, translation, and storage allocation. Introduction to context-free grammars and their description. Design and construction of compilers including lexical analysis, parsing and code generation techniques. Error analysis and simple code optimizations will be introduced. Prerequisite: MATH 1426, or equivalent, or permission of advisor.

CSE 5318. APPLIED GRAPH THEORY AND COMBINATORICS. 3 Hours.

Connected and disconnected graphs; trees; graph planarity; Hamiltonian circuits and Euler tours; coloring; flow and graph optimization algorithms, fundamentals of combinatorics; generating functions and recurrence relations; inclusion-exclusion principle; applications in telecommunications; mobile computing, parallel processing and multiprocessor architectures.

CSE 5319. SPECIAL TOPICS IN THEORY & ALGORITHMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5320. SPECIAL TOPICS IN SOFTWARE ENGINEERING. 3 Hours.

May be repeated for credit when topics vary.

CSE 5321. SOFTWARE TESTING. 3 Hours.

Study of software quality assurance, software testing process, methods, techniques and tools. Topics include formal review techniques, black box testing, white box testing, integration testing, acceptance testing, regression testing, performance testing, stress testing, and testing of object-oriented software.

CSE 5322. SOFTWARE DESIGN PATTERNS. 3 Hours.

Study and application of object-oriented software design patterns to software development and maintenance in the object-oriented paradigm. Prerequisite: CSE 5324 or concurrent enrollment.

CSE 5323. SOFTWARE ENGINEERING PROCESSES. 3 Hours.

Introduces software lifecycle models, process disciplines, project management concepts, and applies them by mastering the Personal Software Process (PSP).

CSE 5324. SOFTWARE ENGINEERING: ANALYSIS, DESIGN, AND TESTING. 3 Hours.

Motivations, principles, and goals of software engineering; technical aspects of software projects, including: review of structured analysis and structured design, emphasis on object-oriented methods of requirements analysis and specification, design, and implementation; software testing concepts; team project.

CSE 5325. SOFTWARE ENGINEERING: MANAGEMENT, MAINTENANCE, AND QUALITY ASSURANCE. 3 Hours.

Issues and principles for software management; managerial and support aspects of software projects, including: processes, estimation techniques, planning and scheduling, risk analysis, metrics, and quality assurance. Other topics include: configuration management, verification and validation, and maintenance; team project.

CSE 5326. REAL-TIME SOFTWARE DESIGN. 3 Hours.

Specification, design, and analysis of real-time systems including real-time logics and decidability of real-time conditions; real-time scheduling approaches, system requirement specification; procedural and object-oriented methods; specialized analysis techniques for distributed and for control applications; team project. Prerequisite: CSE 5324 or concurrent enrollment.

CSE 5327. TELECOMMUNICATIONS SOFTWARE DEVELOPMENT. 3 Hours.

General understanding and classification of telecommunications systems and applications. Issues relating to the analysis, design, implementation, and testing of telecommunications software. Prerequisite: CSE 5324 and CSE 5344.

CSE 5328. SOFTWARE ENGINEERING TEAM PROJECT I. 3 Hours.

Apply the knowledge and skills gained in other software engineering courses to synthesize a solution to a significant and realistic software development team project. Participate in activities including: proposal writing, problem analysis, software requirements specification, project planning, software design, implementation, software quality assurance, software testing, integration, and demonstration. Required for and open only to Master of Software Engineering degree candidates. Prerequisite: one of CSE 5321, CSE 5322, CSE 5325.

CSE 5329. SOFTWARE ENGINEERING TEAM PROJECT II. 3 Hours.

Apply the knowledge and skills gained in other software engineering courses to synthesize a solution to a significant and realistic software development team project. Participate in activities including: proposal writing, problem analysis, software requirements specification, project planning, software design, implementation, software quality assurance, software testing, integration, and demonstration. Required for and open only to Master of Software Engineering degree candidates. Prerequisite: one of CSE 5321, CSE 5322, CSE 5325.

CSE 5330. DATABASE SYSTEMS. 3 Hours.

Database system architecture; management and analysis of files, indexing, hashing, and B+-trees; the relational model and algebra; the SQL database language; database programming techniques, database design using Entry-Relationship, extended E-R, and UML modeling; basics of normalization. Introduction to database security, query processing and transaction management. Prerequisite: CSE 2320.

CSE 5331. DBMS MODELS AND IMPLEMENTATION TECHNIQUES. 3 Hours.

DBMS system implementation techniques, including query optimization, transaction processing, concurrency control, buffer management and recovery. Object-oriented, object-relational and XML databases. Introduction to advanced database models, such as active, distributed, temporal, spatial and data warehousing.

CSE 5332. DATA SCIENCE. 3 Hours.

This inspirational course follows a data-science-for-all perspective that views data acumen as part of literacy. It aims to instill in students the data acumen, i.e., the basic skills to wrestle with data, to draw insights from data, to make sound decisions responsibly using data, and to effectively communicate about data-driven findings and decisions. Topics include 1) data management: data curation, preparation, model, and querying; 2) data description and visualization: exploratory data analysis, graphics, user interface and user experience design; 3) machine learning and knowledge discovery: supervised learning, unsupervised learning, pattern and knowledge extraction, deep learning, model evaluation and interpretation. Prerequisite: MATH 1301, or MATH 1302, or MATH 1308, or MATH 1426, or equivalent and permission of advisor.

CSE 5333. CLOUD COMPUTING. 3 Hours.

A survey of state of the art cloud computing paradigms: design, implementation, and programming distributed, scalable storage and computational systems. IaaS, PaaS, and SaaS (Infrastructure, Platform and Software as a Service), Hadoop, EC2, S3, and Azure are discussed.

CSE 5334. DATA MINING. 3 Hours.

Preparing data for mining, using preprocessing, data warehouses and OLAP; data mining primitives, languages and system architecture; data mining techniques including association rule mining, classification/prediction and cluster analysis.

CSE 5335. WEB DATA MANAGEMENT. 3 Hours.

This course provides an in depth study of models, languages and techniques for large-scale Web data management in distributed and heterogeneous environments. Topics include: Web programming with an emphasis on Web data management, Web Services, semi-structured data, XML standards, modern Web search engines, web information systems, Web query languages, distributed computing, metadata management with RDF, and Semantic Web.

CSE 5339. SPECIAL TOPICS IN DATABASE SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5342. EMBEDDED SYSTEMS II. 3 Hours.

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisite: CSE 3323 and CSE 3442 or consent of instructor.

CSE 5344. COMPUTER NETWORKS. 3 Hours.

Study of computer network architectures, protocols, and interfaces. The OSI reference model and the Internet architecture will be discussed. Networking techniques such as multiple access, packet/cell switching, and internetworking will be studied. Discussion will also include end-to-end protocols, congestion control, high-speed networking, and network management. Emphasis will be on Internet and ATM. Prerequisite: CSE 3320 or consent of instructor.

CSE 5345. FUNDAMENTALS OF WIRELESS NETWORKS. 3 Hours.

Fundamentals of wireless networks, radio spectrum, coding and modulation, multiple access techniques, antennas, noise and interference, channels, demodulation and decoding, error rates and capacity, link budgets, medium access control, rate adaption, and wireless LAN/PAN, ad-hoc, and sensor networks. Prerequisite: At least one of these courses: CSE 4344, CSE 4352, CSE 5352, or CSE 5344 or consent of instructor.

CSE 5346. NETWORKS II. 3 Hours.

This course provides an in depth study and comparison of the two primary networking paradigms, Internet/broadcast and switched, using two technologies, IPv6 and ATM, as representative examples. The course is implementation-oriented, focusing on issues such as routing, broadcast, multicast, mobility, network configuration, and quality of service. Prerequisite: CSE 5344.

CSE 5347. FUNDAMENTALS OF BLOCKCHAIN & CRYPTOCURRENCY TECHNOLOGIES. 3 Hours.

This course covers the technical concepts underlying blockchains and decentralized cryptocurrency systems, such as Bitcoin and Ethereum, including decentralized ledgers (blockchains), decentralized consensus, smart contracts and zero-knowledge proof systems.

CSE 5348. MULTIMEDIA SYSTEMS. 3 Hours.

Representations and techniques for processing, communicating, and compression of text, audio, graphics, and video in real time. Project integrating these topics. Prerequisite: CSE 3320.

CSE 5349. SPECIAL TOPICS IN NETWORKING. 3 Hours.

May be repeated for credit when topics vary.

CSE 5350. COMPUTER ARCHITECTURE II. 3 Hours.

A study of advanced uniprocessor and basic multiprocessor systems. Topics may include memory management systems, pipelined processors, array and vector processors, and introduction to architecture of multiprocessor systems. Prerequisite: CSE 3322 or consent of instructor.

CSE 5351. PARALLEL PROCESSING. 3 Hours.

Covers the theory and practice of parallel processing. Theoretical topics include: abstract models and algorithms for shared memory computation (PRAM); algorithms for various topologies such as meshes and hypercubes; efficiency and speedup analysis. Problem areas include data structures, numerical methods, graphs, combinatorics. Practical topics include synchronization, routing, scheduling, parallelizing serial computations, programming languages. Includes programming exercises using one or more concurrent programming languages, on one or more parallel computers. Prerequisite: CSE 3320 or consent of instructor.

CSE 5352. IoT AND NETWORKING. 3 Hours.

Study of protocol stacks and layers, implementation of an Ethernet protocol stack, and design of a basic low-latency, small footprint IoT protocol on bare metal embedded devices and embedded Linux systems. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5353. DISTRIBUTED COMPUTING. 3 Hours.

Programming languages, support components, coordination models, and fundamental algorithms for distributed and clustered systems. Prerequisite: CSE 5306.

CSE 5354. REAL-TIME OPERATING SYSTEMS. 3 Hours.

Implementation of a real-time operating system with cooperative and preemption context switching, priority scheduling, semaphores, message queues, and inter-process communications on bare metal microcontrollers. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5355. ELECTROMECHANICAL SYSTEMS AND SENSORS. 3 Hours.

Applications of electronics and microcontrollers to the control of electromechanical systems. Topics include driving brushless motors (including stepper motors), brushed permanent magnet motors, and other mechanical actuators; the use of the sensors including IMU, LIDAR, RADAR, GPS, capacitive/inductive sensing, laser distance, thermocouples, strain, pressure, optical encoders, and Hall devices; and control applications. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5356. SYSTEM ON CHIP (SoC) DESIGN. 3 Hours.

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5357. ADVANCED DIGITAL LOGIC DESIGN. 3 Hours.

Hierarchical organization, design, simulation, implementation, and testing of digital systems. Industrial standard computer-aided design tools including hardware description languages (HDLs), field-programmable gate arrays (FPGAs), and other prototyping hardware and software will be employed. Design of arithmetic and other algorithmic processes will be covered. A term project will be required. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5358. MICROPROCESSOR SYSTEMS. 3 Hours.

Design of asynchronous and synchronous memory interfaces, study of advanced bus architectures, analysis of bus timing, and implementation of DMA controllers and SDRAM controllers. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5359. SPECIAL TOPICS IN SYSTEMS & ARCHITECTURE. 3 Hours.

May be repeated for credit when topics vary.

CSE 5360. ARTIFICIAL INTELLIGENCE I. 3 Hours.

Introduction to the methods, concepts and applications of artificial intelligence, including knowledge representation, search, theorem proving, planning, natural language processing, and study of AI programming languages. Prerequisite: CSE 2320 and CSE 3315, or consent of instructor.

CSE 5361. ARTIFICIAL INTELLIGENCE II. 3 Hours.

Continuation of artificial intelligence methods and techniques, including uncertainty reasoning, machine learning, perception, and advanced topics in knowledge representation, search and planning. Emphasis on design and implementation of AI solutions. Prerequisite: CSE 5360 or consent of instructor.

CSE 5362. SOCIAL NETWORKS AND SEARCH ENGINES. 3 Hours.

Social networks, Search Engines, Recommendation systems, Question & Answering systems are web-enabled Information Technology main stream. This course covers the foundations of these technology including text/query processing, web content analysis, basic graph theory, random walk, PageRank, power law distribution, random graphs, small world, growth models, and network diffusion. Prerequisite: CSE 5311.

CSE 5364. ROBOTICS. 3 Hours.

An introduction to robotics and the design and programming of autonomous robot systems. Topics include basic kinematics, dynamics, and control, as well as sensors, knowledge representation, and programming techniques. Coursework includes individual and group projects involving the building and programming of simulated and real robots. Prerequisite: CSE 2320 and CSE 3442.

CSE 5365. COMPUTER GRAPHICS. 3 Hours.

Input/output devices and programming techniques suitable for the visual representation of data and images. Prerequisite: CSE 1320, analytic geometry and linear algebra, or consent of instructor.

CSE 5366. DIGITAL SIGNAL PROCESSING. 3 Hours.

Introduction to principles and applications of digital signal processing. Topics include: analysis of signals and systems, Fourier and Z transforms, digital filter design techniques (FIR and IIR), autoregressive (AR) and autoregressive moving average (ARMA) modeling. Applications to science and engineering include: financial predictions and processing of digital music. Laboratory work includes some programming and use of high quality library routines and packages such as Mathematica, Matlab. Prerequisite: CSE 1320 and consent of Graduate Advisor.

CSE 5367. PATTERN RECOGNITION. 3 Hours.

Principles and various approaches of pattern recognition processes, including Bayesian classification, parametric/non-parametric classifier design, feature extraction for signal representation, and techniques for classification and clustering. Current issues in pattern recognition research will also be examine. Prerequisite: CSE 2320 , MATH 3313.

CSE 5368. NEURAL NETWORKS. 3 Hours.

Theoretical principles of neurocomputing. Learning algorithms, information capacity, and mapping properties of feedforward and recurrent networks. Different neural network models will be implemented and their practical applications discussed. Prerequisite: CSE 5301 or consent of instructor.

CSE 5369. SPECIAL TOPICS IN INTELLIGENT SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5370. BIOINFORMATICS. 3 Hours.

Basic biology of genome and common laboratory techniques Overview of discrete probability theory, random variables and processes. Issues in genome mapping, sequencing and analysis: sequence alignments and alignment algorithms; genomic databases and information access; structure and features of DNA sequences. Techniques in contemporary biotechnology, including proteomics and gene expression analysis using microarray chips. Prerequisite: CSE 5311 or consent of instructor.

CSE 5372. RISC PROCESSOR DESIGN. 3 Hours.

Design of a RISC processor, based on RISC V and custom instruction set architectures with implementation on an FPGA target for test and verification. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5373. GENERAL PURPOSE GPU PROGRAMMING. 3 Hours.

Study of general purpose computation on a GPU. Topics include GPU architectures, stream processing, and programming languages such as OpenCL and CUDA that realize data-parallel, high-throughput compute kernels on GPU architectures. Prerequisite: CSE 3320 or consent of instructor.

CSE 5376. DIGITAL COMMUNICATIONS. 3 Hours.

Study of digital communication systems including source and channel coding, digital modulation techniques, inter-symbol interference, and multi-channel combining and multiple-access methods. Prerequisite: CSE 3313 or consent of instructor.

CSE 5377. WIRELESS COMMUNICATIONS. 3 Hours.

Study of wireless systems including modulation, amplification, linearization techniques, filtering, antennas, propagation, reception, and demodulation. Topics include link budget and interference analysis of real systems. Prerequisite: CSE 3313 or consent of instructor.

CSE 5379. SPECIAL TOPICS IN BIOINFORMATICS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5380. INFORMATION SECURITY 1. 3 Hours.

Hands-on introduction to the basics of security. Includes system security, buffer overflows, a high-level overview of cryptography, firewalls and IDS/IPS, malware, penetration testing, forensics, and system administration. Prerequisite: CSE 3320 or consent of instructor.

CSE 5381. INFORMATION SECURITY 2. 3 Hours.

Deeper study of the fundamentals of security, including symmetric key cryptography, public key cryptography, cryptographic protocols, malware design, network attacks and defenses, data security, privacy, and wireless security. Prerequisite: CSE 5380 and CSE 4344 or consent of instructor.

CSE 5382. SECURE PROGRAMMING. 3 Hours.

This course is an introduction to methods of secure software design and development for upper-level undergraduate students and graduate students. Students will learn about the major security problems found in software today. Using this knowledge, they will work in teams to find these bugs in software, fix the bugs, and design software so that it has fewer security problems. Static analysis tools will be a core part of the class, but students will also be exposed to black box testing tools. Topics will include input validation, buffer overflow prevention, error handling, web application issues, and XML.

CSE 5383. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty.

CSE 5384. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in CSE 4378 or CSE 5383 and admission to the UVS certificate program (admission to UVS certificate can be waived by consent of instructor).

CSE 5388. SPECIAL TOPICS IN INFORMATION SECURITY. 3 Hours.

May be repeated for credit when topics vary.

CSE 5389. SPECIAL TOPICS IN MULTIMEDIA, GRAPHICS, & IMAGE PROCESSING. 3 Hours.

May be repeated for credit when topics vary.

CSE 5391. INDIVIDUAL STUDY IN COMPUTER SCIENCE. 3 Hours.

Topics dealing with special problems in Computer Science on an individual instruction basis. May be repeated for credit.

CSE 5392. TOPICS IN COMPUTER SCIENCE. 3 Hours.

May be repeated for credit when the topics vary.

CSE 5393. DIRECTED STUDY IN COMPUTER SCIENCE. 3 Hours.

DIRECTED STUDY IN COMPUTER SCIENCE.

CSE 5394. MASTER'S PROJECT I. 3 Hours.**CSE 5395. MASTER'S PROJECT II. 3 Hours.****CSE 5398. MASTER'S THESIS I. 3 Hours.**

Preliminary research effort for the master's thesis, including problem definition and literature search, along with identification of resources, milestones, examining committee members, and external publication venue. Graded F, R.

CSE 5400. FUNDAMENTALS OF COMPUTER ENGINEERING. 4 Hours.

Design of digital logic circuits. Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications.

CSE 5698. MASTER'S THESIS II. 6 Hours.

Completion of tasks in support of the thesis defined in Master's Thesis I, including oral defense of the written documents. Prerequisite: CSE 5398. Graded F, R, P.

CSE 6197. RESEARCH IN COMPUTER SCIENCE. 1 Hour.

Individually supervised research projects.

CSE 6297. RESEARCH IN COMPUTER SCIENCE. 2 Hours.

Individually supervised research projects.

CSE 6306. ADVANCED TOPICS IN OPERATING SYSTEMS. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5306 or consent of instructor.

CSE 6311. ADVANCED COMPUTATIONAL MODELS AND ALGORITHMS. 3 Hours.

This course aims at exploring advanced computation models, theory and advanced algorithm design and analysis techniques that have broad applicability in solving real-life problems in cross-disciplinary areas such as the Internet computing, Web search engines, data mining, bioinformatics, wireless mobile and sensor networks, dynamic resource management, distributed computing, and social networking. Topics include: Theory of NP-completeness; Equivalence of Machine Models; Lower Complexity Bounds; Randomized and Probabilistic Algorithms; Game-theoretic and Information-theoretic Models; Approximation and Optimization Techniques. Prerequisite: CSE 5311 or consent of instructor.

CSE 6314. ADVANCED TOPICS IN THEORETICAL COMPUTER SCIENCE. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5314 or consent of instructor.

CSE 6319. SPECIAL TOPICS IN ADVANCED THEORY AND ALGORITHMS. 3 Hours.

May be repeated when topics vary.

CSE 6321. ADVANCED AUTOMATION TESTING. 3 Hours.

A detailed investigation of full automation testing of front and back end automation testing techniques and tools. Advanced issues in automation test are studied and applied. Knowledge and skills gained in other software engineering courses are applied to synthesize a full automation testing solution to a significant and realistic software development team project. Prerequisite: CSE 5321 or consent of instructor.

CSE 6323. AGILE SOFTWARE DEVELOPMENT. 3 Hours.

Study of foundations, techniques and tools for agile methodologies in software engineering including agile manifesto and principles such as pair programming, test-first and refactoring. Latest papers in agile methodologies are reviewed and practiced. Prerequisite: CSE 5324 or consent of instructor.

CSE 6324. ADVANCED TOPICS IN SOFTWARE ENGINEERING. 3 Hours.

May be repeated for credit when topics change.

CSE 6329. SPECIAL TOPICS IN ADVANCED SOFTWARE ENGINEERING. 3 Hours.

May be repeated for credit when topics vary. Prerequisite: CSE Graduate Standing.

CSE 6331. ADVANCED TOPICS IN DATABASE SYSTEMS. 3 Hours.

May be repeated for credit when topics change.

CSE 6332. CLOUD COMPUTING & BIG DATA. 3 Hours.

The focus of this course is on data management techniques and tools for storing and analyzing very large volumes of data. Topics include: cloud computing; virtualization; distributed file systems; large data processing using Map-Reduce; data modeling, storage, indexing, and query processing for big data; key-value storage systems, columnar databases, NoSQL systems; big data technologies and tools; large-scale stream processing systems; data analytics frameworks; big data applications, including graph processing, recommendation systems, and machine learning.

CSE 6339. SPECIAL TOPICS IN ADVANCED DATABASE SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 6344. ADVANCED TOPICS IN COMMUNICATION NETWORKS. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5346 or consent of instructor.

CSE 6345. PERVASIVE COMPUTING & COMMUNICATIONS. 3 Hours.

Issues and challenges in pervasive computing environments: interoperability and heterogeneity; location-awareness and mobility; transparency and proactivity; trust, authentication and security, information acquisition and dissemination in mobile and pervasive systems. Context-aware computing. Ad-hoc, sensor and mobile P2P systems in pervasive computing. Case studies. Prerequisite: Introductory courses in Networks, Algorithms and Operating Systems: e.g., CSE 5344, CSE 5311, and CSE 5306, or consent of instructor.

CSE 6347. ADVANCED WIRELESS NETWORKS & MOBILE COMPUTING. 3 Hours.

Wireless architectures and protocols (e.g., GSM, CDMA); channel assignment and resource allocation; mobility and location management; mobile data management; wireless data networking and multimedia; call admission control and QoS provisioning; cross layer optimization, performance modeling. Prerequisite: CSE 5345 and CSE 5330.

CSE 6348. ADVANCES IN SENSOR NETWORKS. 3 Hours.

Covers application and architecture of wireless sensor networks. Topics include platforms, routing, coverage, MAC, transport layer, data storage, query, and in-network processing. Prerequisite: CSE 5345 or equivalent course.

CSE 6349. SPECIAL TOPICS IN ADVANCED NETWORKING. 3 Hours.

May be repeated for credit when topics vary.

CSE 6350. ADVANCED TOPICS IN COMPUTER ARCHITECTURE. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5350 and consent of instructor.

CSE 6351. ADVANCED TOPICS IN COMPUTER ENGINEERING. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5342 or consent of instructor.

CSE 6352. FAULT-TOLERANT COMPUTING. 3 Hours.

Topics in reliable and fault-tolerant computing. May be repeated for credit when topics change. Prerequisite: CSE 5350 and consent of instructor.

CSE 6353. COMPUTER ENGINEERING SYSTEM DESIGN. 3 Hours.

Advanced course in design of computer engineering systems in a team environment working to produce a larger system. Emphasis is on building a complete system, including requirements analysis, building and integrating components (hardware and software), and testing. Prerequisite: at least three of the following courses: CSE 5342, CSE 5352, CSE 5354, CSE 5355, CSE 5356, or CSE 5357 or consent of instructor.

CSE 6359. ADVANCED TOPICS IN SYSTEMS & ARCHITECTURE. 3 Hours.

May be repeated for credit when topics vary.

CSE 6362. ADVANCED TOPICS IN ARTIFICIAL INTELLIGENCE. 3 Hours.

May be repeated for credit when the topic changes. Prerequisite: CSE 5361 and consent of instructor.

CSE 6363. MACHINE LEARNING. 3 Hours.

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. Prerequisite: CSE 5301 or consent of instructor.

CSE 6364. MACHINE LEARNING. 3 Hours.

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. This course is for PhD students only. Prerequisite: CSE 5301 or consent of instructor.

CSE 6366. DIGITAL IMAGE PROCESSING. 3 Hours.

Digitization and coding of images, characterization and representation of digital images in spatial and frequency domains, picture restoration and enhancement, filtering of two-dimensional signals, image reconstruction. Prerequisite: CSE 5366 or consent of instructor.

CSE 6367. COMPUTER VISION. 3 Hours.

Advanced techniques for interpretation, analysis, and classification of digital images. Topics include methods for segmentation, feature extraction, recognition, stereo vision, 3-D modeling, and analysis of time-varying imagery. Also taught as EE 6358. Prerequisite: CSE 5301 or CSE 5360 or EE 5356 or EE 5357, and consent of instructor.

CSE 6368. COMPUTER VISION. 3 Hours.

Advanced techniques for interpretation, analysis, and classification of digital images. Topics include methods for segmentation, feature extraction, recognition, stereo vision, 3-D modeling, and analysis of time-varying imagery. Also taught as EE 6358. This course is for PhD students only. Prerequisite: CSE 5301 or CSE 5360 or EE 5356 or EE 5357, and consent of instructor.

CSE 6369. SPECIAL TOPICS ADVANCED INTELLIGENT SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 6379. SPECIAL TOPICS IN ADVANCED BIOINFORMATICS. 3 Hours.

May be repeated for credit when topics vary.

CSE 6388. SPECIAL TOPICS IN ADVANCED INFORMATION SECURITY. 3 Hours.

May be repeated for credit when topics vary.

CSE 6389. SPECIAL TOPICS IN ADVANCED MULTIMEDIA, GRAPHICS, & IMAGE PROCESSING. 3 Hours.

May be repeated for credit when topics vary.

CSE 6392. SPECIAL TOPICS IN ADVANCED COMPUTER SCIENCE. 3 Hours.

May be repeated for credit when the topics vary.

CSE 6397. RESEARCH IN COMPUTER SCIENCE. 3 Hours.

Individually supervised research projects.

CSE 6399. DISSERTATION. 3 Hours.

Preparation of dissertation in computer science or computer science and engineering. Graded F, R.

CSE 6697. RESEARCH IN COMPUTER SCIENCE. 6 Hours.

Individually supervised research projects.

CSE 6699. DISSERTATION. 6 Hours.

Preparation of dissertation in computer science or computer science and engineering. Graded F, R,P,W.

CSE 6997. RESEARCH IN COMPUTER SCIENCE. 9 Hours.

Individually supervised research projects.

CSE 6999. DISSERTATION. 9 Hours.

Preparation of dissertation in computer science or computer science and engineering. Graded P, F, R.

CSE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Computer Science and Engineering - Graduate Programs

Objective

The purpose of the graduate programs in Computer Science (CS) and Computer Engineering (CpE) is to facilitate the student's continued professional and scholarly development. The Master of Science (M.S.) programs are designed to extend the student's knowledge and emphasize a particular area of concentration. The Master of Software Engineering (SwE.) program is designed to provide the student with the opportunity for professional development in the software engineering field. Students who have completed a bachelor's degree in CS, CpE or closely related fields wishing to pursue a doctoral degree may apply for admission in the B.S. to Ph.D. track. The admission requirements to this highly competitive track are the same as those for "advanced admission" (see B.S. to Ph.D. Accelerated Programs). The Doctor of Philosophy (Ph.D.) programs are designed to prepare the student to conduct research and development in an area of concentration.

Areas of study include

1. **Systems and Architecture:** parallel processing, cloud computing, distributed systems, scheduling and load balancing, computer architecture, tools for parallel programming, performance evaluation, fault-tolerant computing, real-time systems, RISC processor design, microprocessor systems
2. **Embedded Systems:** microcontrollers, system-on-chip, and FPGA devices, real-time operating systems, data and wireless communications, IoT, real-time control, sensor fusion, edge computing
3. **Intelligent Systems and Robotics:** machine learning, robotics, pattern recognition, multi-agent environments, assistive technologies, human-centered computing, decision support, health informatics, bioinformatics
4. **Software Engineering:** software life cycles, agile methodologies, formal specifications, object-oriented software engineering, design methodologies, software testing, software evolution, software re-engineering, software processes
5. **Database and Data Analysis:** spatio-temporal data, data mining, big data analysis, database models and languages, indexing and hashing techniques, conceptual modeling, data security, query optimization, user interfaces, ontologies, Web search and ranking, social networks
6. **Networking and Security:** sensor networks, wireless networks, information security, secure programming, mobile and distributed computing, multimedia systems, pervasive computing, networking architectures

For a complete list of graduate programs and disciplines please refer to the department website (<https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/graduate-certificates/>).

Admission

The CSE graduate admission committee bases its decision for M.S. graduate admission on the following criteria (in no specific order):

- An undergraduate degree, preferably in an area related to computer science, computer engineering, or software engineering.
- An overall GPA of 3.0 or higher in undergraduate coursework.
- A 3.2 grade point average (on a 4.0 scale) on the last two years of undergraduate coursework. In particular, performance on Computer Science/Computer Engineering/Software Engineering related courses are emphasized.
- Relevance of the student's degree (background) to the CSE curriculum.
- Rigor of the student's Bachelor's degree. A three-year degree is not considered rigorous. Note: International applicants with a "3+2" Master's degree will be evaluated as equivalent to a 4-year Bachelor's degree.
- Reputation of the University/College from which the student has received his/her previous degrees.
- A sum of verbal plus quantitative scores of at least 305 on the GRE. Additionally:
 - GRE quantitative score of at least 160
 - GRE verbal score of at least 145
 - The department does not require the advanced computer science test. A passing score on the Engineering in-Training (EIT) exam is also given consideration for admission decisions.
- Students may be accepted with a GRE score of 300, but may be required to complete additional coursework for their MS degree (see degree requirements found later in this document). In this case:
 - GRE quantitative score of at least 155
 - GRE verbal score of at least 145
- Students may also be accepted with up to three deficiency courses, but may be required to do additional coursework for their MS degree (see degree requirements found later in this document).
- International Applicants will need to take the Test of English as a Foreign Language (TOEFL) and score at least 83 with no area score of less than 20, or take the International English Language Testing System (IELTS) and score at least 6.5 in all areas.

Note: Applications with significant mathematics deficiencies may be deferred/denied pending completion of the required courses.

Note: We neither require nor review letters of recommendation or a statements of purpose from MS applicants.

Note: Students with (or completing in the near future) a BS awarded by the CSE department at UTA or a comparable degree from another accredited U.S. university who have a GPA of at least 3.2 should contact the graduate advisor regarding a GRE waiver. UTA CSE students with a GPA of at least 3.5 should contact the graduate advisor regarding nomination for Advanced Admission (i.e. admission without application and fee). Baseline criteria for GRE waiver and Advanced Admission are established by the Graduate Dean and can be found in the current version of the UTA Graduate Catalog.

The above criteria are used as follows in relevance to the three possible admission decisions, i.e., *Unconditional Status*; *Probationary Status*; and *Denied*.

- *Unconditional Status*: Applies to an applicant who meets the first six criteria above to a degree satisfactory to the graduate admissions committee.
- *Probationary Status*: Applies to an applicant who meets at least five of the six criteria to a degree satisfactory to the graduate admissions committee and whose record shows promise for success in the program or to an applicant who does not fulfill all the deficiency course requirements.
- *Denied*: Applies to an applicant who does not meet five of the first six criteria to a degree satisfactory to the graduate admissions committee.

Waiver of Graduate Record Examination

Upon recommendation of the Graduate Advisor, outstanding UT Arlington graduates may qualify for waiver of the requirements for the Graduate Record Examination (GRE). To qualify, the applicant must meet the following minimum requirements:

- The student must have graduated from a commensurate bachelor's degree program at UT Arlington no more than three academic years prior to admission to the graduate program (as measured from the start of the semester for which admission is sought). A commensurate bachelor's degree program is one that is a normal feeder program for the master's degree program to which the student seeks admission. Undergraduate students in their final year of study are also eligible; in such cases, admission with the GRE waiver is contingent upon successful completion of the bachelor's degree.
 - as calculated for admission to the Graduate School ;
 - overall;
 - in the major field; and
 - in all upper-division work.
- The student's UT Arlington grade-point average must equal or exceed 3.0 in the following calculations:

Applicants qualifying for waiver of GRE who do not qualify for advanced admission, must comply with all other requirements for admission, i.e., submitting the application for admission, paying fees, providing official transcripts from other institutions, and meeting any requirements established by the admitting graduate program. The GRE waiver must be recommended by the Graduate Advisor at the time of admission. The waiver of GRE program applies to applicants for master's degree programs only. Some programs may require higher grade-point averages to qualify and some will not waive the GRE under any circumstances.

Additionally, some programs may waive the GRE requirement for non-UT Arlington graduates who seek admission as a master's student and meet qualifications listed in those programs' specific admission requirements. Such waivers are not offered by all graduate programs.

Degree Requirements

Master of Science in Computer Science - Thesis

The Master of Science in Computer Science degree program is designed to develop the scholarship and research skills of the student. It requires 30 credit hours of which six are thesis credits.

Master of Science in Computer Engineering - Thesis

The Master of Science in Computer Engineering, which is intended for students with a baccalaureate degree in engineering, is designed to develop the scholarship and research skills of the student. It requires 30 credit hours of which six are thesis credits.

Master of Science in Computer Science - Non-Thesis

The Master of Science in Computer Science non-thesis option provides professional development in computer science. This option is intended to serve the needs of students who, through their work, have experience doing projects but who do not wish to do a thesis. It requires 36 credit hours.

Master of Science in Computer Engineering - Non-Thesis

The Master of Science in Computer Engineering non-thesis option provides professional development to students with an engineering baccalaureate degree. This option is intended to serve the needs of students who, through their work, have experience doing projects but who do not wish to do a thesis. It requires 36 credit hours.

Master of Science in Computer Science - Thesis-Substitute

The Master of Science in Computer Science thesis-substitute option provides professional development in computer science. This option is available to highly qualified applicants who have already attained a significant background in computer science during their undergraduate studies. It requires 30 credit hours.

Master of Science in Computer Engineering - Thesis-Substitute

The Master of Science in Computer Engineering thesis-substitute option is intended for students with an engineering baccalaureate degree. This option is available to highly qualified applicants who have already attained a significant background in computer engineering during their undergraduate studies. It requires 30 credit hours.

Master of Software Engineering - Non-Thesis

The Master of Software Engineering provides professional development in software engineering. The program requires 36 credit hours. It includes a 2-course sequence devoted to implementation of a software project.

Master of Software Engineering - Thesis-Substitute

The Master of Software Engineering provides professional development in software engineering. This option is available to highly qualified applicants who have already attained a significant background in software engineering during their undergraduate studies. The program requires 30 credit hours. It includes a 2-course sequence devoted to implementation of a software project.

Admission

The CSE graduate admission committee bases its decision for Ph.D. graduate admission on the following criteria (in no specific order):

- An overall GPA of 3.0 or higher in undergraduate coursework.
- A GPA of 3.2 or higher on CS/CpE/SwE related coursework in the last two years of undergraduate degree.
- For students holding an M.S. degree, similar criteria apply.
- Relevance of the student's degree(s) (background) to the CS/CpE/SwE curriculum.
- Rigor of the student's bachelor's degree and M.S. degree if applicable..
- Reputation of the university/college that the student has received his/her previous degrees from.
- GRE General Test: Admitted students typically earn the following scores on the GRE
 - GRE quantitative score of at least 160 for PhD
 - GRE verbal score of at least 150 for PhD
 - A sum of verbal and quantitative GRE scores of at least 310 for Ph.D. applicants.
- For Ph.D. applicants, three letters of recommendation are needed, as well as a statement of purpose. These should be addressed to Head of Ph.D. Admissions and emailed to: khalili@uta.edu
- For Ph.D. applicants, the following are optional. Meeting these criteria will improve both a student's chances of securing admission and receiving financial support.
 - Publication in scholarly conferences/journals.
 - A percentile of 80 score or higher on the Computer Science subject GRE.

The above criteria are used as follows in relevance to the three possible admission decisions, i.e., *Unconditional Status*; *Probationary Status*; and *Denied*.

- *Unconditional Status*: Applies to an applicant who meets the first six criteria above to a degree satisfactory to the graduate admissions committee.
- *Probationary Status*: Applies to an applicant who meets at least five of the six criteria to a degree satisfactory to the graduate admissions committee and whose record shows promise for success in the program or to an applicant who does not fulfill all the deficiency course requirements.
- *Denied*: Applies to an applicant who does not meet five of the first six criteria to a degree satisfactory to the graduate admissions committee.

Requirements for BS to PhD Accelerated Program

- An undergraduate degree in CS or CpE or closely related field.
- An overall GPA of 3.0 or higher in undergraduate coursework.
- A 3.2 grade point average (on a 4.0 scale) on the last two years of undergraduate course-work. In particular, performance on CS/CpE related courses are emphasized.
- Rigor of the student's Bachelors degree. A three-year degree is not considered rigorous enough.
- Reputation of the University/College that the student has received his/her previous degrees from.
 - GRE quantitative score - 160 or higher
 - GRE verbal score - 150 or higher
 - A sum of verbal and quantitative scores of 310 or more on the GRE¹ :
 - (International Applicants)
A Test of English as a Foreign Language (TOEFL) score - 90 or higher (iBT)

Continuation

To fulfill its responsibility to graduate highly qualified professionals, the Department has established certain requirements that must be met by students continuing in the graduate programs. In addition to the requirements of the Graduate School listed elsewhere in the catalog, the Computer Science and Engineering Department has established additional requirements detailed in its Guide to Graduate Programs.

Assistantships

Students admitted without any probation may qualify for financial support of the following forms:

- Graduate Teaching Assistant (GTA)
- Graduate Research Assistant (GRA)
- Priority is given to PhD students.

Degree Requirements

B.S. to Ph.D. Track

The B.S. to Ph.D. track in Computer Science or Computer Engineering requires 30 credit hours with 21 hours of diagnostic requirements and nine hours of advanced research-oriented coursework. This is in addition to the Ph.D. requirements.

Ph.D. (Computer Science)

The Ph.D. in Computer Science continues the development of the student's research capability for students who already have an MS degree. Coursework selection in each student's program is designed to support the dissertation area selected by the student.

Ph.D. (Computer Engineering)

The Ph.D. in Computer Engineering is available to students with a prior degree in engineering. It contains essentially the same requirements as the Ph.D. (Computer Science) degree except that it permits interdisciplinary research between Computer Science and one or more of the various engineering disciplines.

For all programs, a minimum of two semesters of full-time study is required during the dissertation phase. There is no foreign language requirement.

Graduate Certificate in Artificial Intelligence

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it:

- An ability to understand different AI techniques that have been used for solving real world problems
- An ability to understand the differences and uses of different AI techniques in order to choose from them for solving a problem at hand
- An ability to apply this knowledge to subject areas, such as robotics, image processing, speech recognition, health informatics and bioinformatics, and social networks data

The Certificate is managed by:

- Manfred Huber
- Vassilis Athitsos
- Bahram Khalili, Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

CSE certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, will be required to complete the CSE 5300 Foundation of Computing course and earn a passing grade in addition to the four required graduate courses.

COURSE REQUIREMENTS

The course requirements for the Deep Learning certificate are:

CSE 5300	FOUNDATION OF COMPUTING (Required only if insufficient CSE background)	3
CSE 5360	ARTIFICIAL INTELLIGENCE I	3
CSE 5364	ROBOTICS	3
CSE 6363	MACHINE LEARNING	3
CSE 6367	COMPUTER VISION	3

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. The certificate program consists of 4-5 existing courses. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Manfred Huber
- Vassilis Athitsos
- Bahram Khalili

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu \(https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/\)](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5300 - Foundation of Computing

This is a hands-on introductory course that provides a broad overview of programming languages, data structures, memory management, operating systems, theory of computing, discrete structures, and algorithms. This course will provide the necessary foundation for students requiring a refresher or non-CSE candidates.

CSE 5360 - Artificial Intelligence I

Introduction to the methods, concepts and applications of artificial intelligence, including knowledge representation, search, theorem proving, planning, natural language processing, and study of AI programming languages. Prerequisites CSE 2320 and CSE 3315, or CSE 5300, or consent of instructor.

CSE 5364 - Robotics

An introduction to robotics and the design and programming of autonomous robot systems. Topics include basic kinematics, dynamics, and control, as well as sensors, knowledge representation, and programming techniques. Coursework includes individual and group projects involving the building and programming of simulated and real robots. Prerequisites CSE 2320 and CSE 3442, or CSE 5300, or consent of instructor.

CSE 6363 - Machine Learning

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. Prerequisites CSE 5301, or CSE 5300, or consent of instructor.

CSE 6367 - Computer Vision

Advanced techniques for interpretation, analysis, and classification of digital images. Topics include methods for segmentation, feature extraction, recognition, stereo vision, 3-D modeling, and analysis of time-varying imagery. Prerequisites CSE 5301, or 5360, or EE 5356, or EE 5357, or CSE 5300, or consent of instructor.

Graduate Certificate in Big Data Management and Data Sciences

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it:

- an ability to understand fundamental concepts of big data management and data sciences, such as data storage and management, and data analysis and mining.
- knowledge of current topics in large scale data analysis, such as relational and non-relational data management, big data analytics, data mining, machine learning, cloud computing, software tools for big data, Web data, and social and information networks.
- an ability to apply this knowledge to subject areas such as business analytics, computational science, health informatics and bioinformatics, and social networks data.

This certificate is managed by:

- Leonidas Fegaras
- Ramez Elmasri
- Bahram Khalili, Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

CSE certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, will be required to complete the CSE 5300 Foundation of Computing course and earn a passing grade in addition to the four required graduate courses.

COURSE REQUIREMENTS

The course requirements for the Big Data Management and Data Science Certificate are:

CSE 5300	FOUNDATION OF COMPUTING (Required only if insufficient CSE background)
CSE 5301	DATA ANALYSIS & MODELING TECHNIQUES
CSE 5334	DATA MINING
CSE 6331	ADVANCED TOPICS IN DATABASE SYSTEMS
CSE 6363	MACHINE LEARNING

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. The certificate program consists of 4-5 existing courses. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Leonidas Fegaras
- Ramez Elmasri
- Gautam Das
- Sharma Chakravarthy
- Chengkai Li
- David Levine

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) (<https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/>) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5300 - Foundation of Computing

This is a hands-on introductory course that provides a broad overview of programming languages, data structures, memory management, operating systems, theory of computing, discrete structures, and algorithms. This course will provide the necessary foundation for students requiring a refresher or non-CSE candidates.

CSE 5301 - Data Analysis & Modeling Techniques

Concepts and techniques for performing experiments and analyzing their results. Topics cover fundamental statistics, probability and data-representation concepts, inference through hypothesis testing, information theory, queuing models, and selected topics such as capacity planning and bottleneck analysis, clustering and classification, and hidden Markov models with computer science applications as examples.

CSE 5334 - Data Mining

Preparing data for mining, using preprocessing, data warehouses and OLAP; data mining primitives, languages and system architecture, data mining techniques including association rule mining, classification/prediction and cluster analysis.

CSE 6331 - Advanced Topics in Database Systems (Mining, Stream/Complex, Cloud)

The objective of this course is to introduce the student who is interested (and have a background) in databases to some of the advanced topics that are currently being used/applied in industry, and researched by academics. It will cover the following topics as related to databases and information technology: Stream and Complex Event Processing (SP & CEP): pervasive applications, monitoring, principles of stream data processing and its synergy with complex event processing; Mining (graph, SQL-based, and Map/Reduce-based): Need, techniques for knowledge discovery, approaches, algorithms, and Tools, and application areas; association rules; Cloud computing: map/reduce paradigm, solving data and computation intensive problems (e.g., graph mining, page rank) using the new paradigm.

CSE 6363 - Machine Learning

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. Prerequisite: CSE 5361, or CSE 5300, or consent of instructor..

Graduate Certificate in Cybersecurity and Privacy

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it:

- an ability to write safe code to prevent common vulnerabilities and design methods to protect systems from attack
- in depth knowledge of fundamental basics of cybersecurity and data privacy, as well as the hot topics such as blockchain and cryptocurrency

This certificate is managed by:

- Jiang Ming
- Ming Li
- Shirin Nilizadeh
- Bahram Khalili, Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

CSE certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, will be required to complete the CSE 5300 Foundation of Computing course and earn a passing grade in addition to the four required graduate courses.

COURSE REQUIREMENTS

The course requirements for the Cybersecurity and Privacy Certificate will be:

CSE 5300	FOUNDATION OF COMPUTING (Required only if insufficient CSE background)	3
CSE 5380	INFORMATION SECURITY 1	3
CSE 5381	INFORMATION SECURITY 2	3
CSE 5382	SECURE PROGRAMMING	3
CSE 6388	SPECIAL TOPICS IN ADVANCED INFORMATION SECURITY	3

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. The certificate program consists of 4-5 existing courses. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Jiang Ming
- Ming Li
- Shirin Nilizadeh
- Bahram Khalili

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu \(https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/\)](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5300 - Foundation of Computing

This is a hands-on introductory course that provides a broad overview of programming languages, data structures, memory management, operating systems, theory of computing, discrete structures and algorithms. This course will provide the necessary foundation for students requiring a refresher or non-CSE candidates.

CSE 5380 - Information Security I

Hands-on introduction to the basics of security. Includes system security, buffer overflows, a high-level overview of cryptography, firewalls and IDS/IPS, malware, penetration testing, forensics, and system administration. Prerequisite: CSE 3320, or CSE 5300, or consent of instructor.

CSE 5381 - Information Security II

Deeper study of the fundamentals of security, including symmetric key cryptography, public key cryptography, cryptographic protocols, malware design, network attacks and defenses, data security, privacy, and wireless security. Prerequisite: CSE 5380 and CSE 4344, or CSE 5300, or consent of instructor.

CSE 5382 - Secure Programming

This course is an introduction to methods of secure software design and development for upper-level undergraduate students and graduate students. Students will learn about the major security problems found in software today. Using this knowledge, they will work in teams to find these bugs in software, fix the bugs, and design software so that it has fewer security problems. Static analysis tools will be a core part of the class, but students will also be exposed to black box testing tools. Topics will include input validation, buffer overflow prevention, error handling, web application issues, and XML.

CSE 6388 – Advanced Special Topics in Information Security

This course provides hands-on research training in software security analysis, with a special focus on binary code analysis (e.g., disassembly and data structure reverse engineering), software diversity, symbolic execution, malware unpacking, hardware-assisted malware detection, return-oriented programming: exploitation without code injection, and IoT firmware security.

Graduate Certificate in Deep Learning

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it:

- An ability to understand fundamental concepts of deep learning, such as matrix computation, classification, regression, unsupervised learning, semi-supervised learning and supervised learning
- In depth knowledge of Convolution Neural Networks, Recurrent Neural Networks, Long Short-term Memory, Batch Normalization, Dropout, Stochastic Gradient Descent, Attention Networks, and Transformer
- An ability to apply this knowledge to subject areas, such as image processing, text mining, speech recognition, health informatics and bioinformatics, and social networks data

This certificate is managed by:

- Junzhou Huang
- Vassilis Athitsos
- Bahram Khalili, Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS

or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

CSE certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, will be required to complete the CSE 5300 Foundation of Computing course and earn a passing grade in addition to the four required graduate courses.

COURSE REQUIREMENTS

The course requirements for the Deep Learning certificate are:

CSE 5300	FOUNDATION OF COMPUTING (Required only if insufficient CSE background)	3
CSE 5301	DATA ANALYSIS & MODELING TECHNIQUES	3
CSE 5360	ARTIFICIAL INTELLIGENCE I	3
CSE 5368	NEURAL NETWORKS	3
CSE 6363	MACHINE LEARNING	3

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. The certificate program consists of 4-5 existing courses. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Junzhou Huang
- Vassilis Athitsos
- Bahram Khalili
- Dajiang Zhu
- Farhad Kamangar
- Chengkai Li
- Jia Rao
- Won Hwa Kim
- Yingyin Zhu
- Nadra Guzini
- Alex Dillhoff

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu \(https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/\)](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5300 - Foundation of Computing

This is a hands-on introductory course that provides a broad overview of programming languages, data structures, memory management, operating systems, theory of computing, discrete structures and algorithms. This course will provide the necessary foundation for students requiring a refresher or non-CSE candidates.

CSE 5301 - Data Modeling

Concepts and techniques for performing experiments and analyzing their results. Topics cover fundamental statistics, probability and data-representation concepts, inference through hypothesis testing, information theory, queuing models, and selected topics such as capacity planning and bottleneck analysis, clustering and classification, and hidden Markov models with computer science applications as examples.

CSE 5360 - Artificial Intelligence I

Introduction to the methods, concepts and applications of artificial intelligence, including knowledge representation, search, theorem proving, planning, natural language processing, and study of AI programming languages. Prerequisites CSE 2320 and CSE 3315, or CSE 5300, or consent of instructor.

CSE 5368 - Neural Networks

Theoretical principles of Neurocomputing. Learning algorithms, information capacity, and mapping properties of feedforward and recurrent networks. Different neural network models will be implemented and their practical applications discussed. Prerequisites 5301, or CSE 5300, or consent of instructor.

CSE 6363 - Machine Learning

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. Prerequisites CSE 5301, or CSE 5300, or consent of instructor.

Graduate Certificate in Embedded Systems

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it the knowledge and skills required to:

- Design and test embedded systems
- Use microcontrollers, system-on-chip, and FPGA devices
- Understand multi-threaded programming on bare-metal, custom real-time operating systems, and embedded Linux systems
- Implement IP stacks for computer networking
- Develop network and wireless protocols for Internet of Things devices
- Design real-time operating systems
- Implement RISC processors in FPGA devices
- Design advanced digital logic systems
- Design control systems with electromechanical actuators and sensors

This certificate is managed by:

- Jason Losh, Program Coordinator
- Bahram Khalili, CSE Graduate Advisor
- Ioannis D. Schizas, EE Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

Acceptance is based on but not limited to the applicant having a degree in Computer Engineering, Electrical Engineering, or requisite background knowledge through active employment in Computer Engineering- or Electrical Engineering-related fields.

These certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, may be required to complete CSE 5400 Fundamentals of Computer Engineering or EE 5314 – Embedded Microcontroller Systems if the applicant's bachelor's degree did not include a course in Embedded Systems using the same architecture and device currently used in the Computer Engineering undergraduate program.

COURSE REQUIREMENTS

The course requirements for the Embedded Systems certificate are:

CSE 5400 or EE 5314	FUNDAMENTALS OF COMPUTER ENGINEERING (Required only if insufficient academic background) EMBEDDED MICROCONTROLLER SYSTEMS	4
CSE 5342	EMBEDDED SYSTEMS II (Continuation of content from CSE 3442 and CSE 5400)	3
And any of the following courses:		
CSE 5352 or EE 6314	IoT AND NETWORKING (only one of these courses can be taken for credit) ADVANCED EMBEDDED MICROCONTROLLER SYSTEMS	3
CSE 5354	REAL-TIME OPERATING SYSTEMS	3
CSE 5355	ELECTROMECHANICAL SYSTEMS AND SENSORS	3
CSE 5356	SYSTEM ON CHIP (SoC) DESIGN (only one of these courses can be taken for credit)	3

or EE 5315	SYSTEM ON CHIP (SOC) DESIGN	
CSE 5357	ADVANCED DIGITAL LOGIC DESIGN	3
CSE 5372	RISC PROCESSOR DESIGN	3
CSE 6351	ADVANCED TOPICS IN COMPUTER ENGINEERING *	3

* An Advanced Topics in Computer Engineering course (CSE 6351) co-listed with any of the above courses is also acceptable for credit, provided there is not duplication in course content.

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE or EE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Jason Losh
- Bill Carroll

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu \(https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/\)](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5400 – Fundamentals of Computer Engineering

Design of digital logic circuits. Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications.

EE 5314 – Embedded Microcontroller Systems

Hardware/software development techniques for microcontroller systems with an emphasis on hardware-software interactions, programming internal peripherals, interfacing with external sensors and devices, and real-time control applications.

CSE 5342 – Embedded Systems II

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5352 – IoT and Networking

Study of protocol stacks and layers, implementation of an Ethernet protocol stack, and design of a basic low-latency, small footprint IoT protocol on bare metal embedded devices and embedded Linux systems. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5354 – Real-time Operating Systems

Implementation of a real-time operating system with cooperative and preemption context switching, priority scheduling, semaphores, message queues, and inter-process communications on bare metal microcontrollers. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5355 – Electromechanical Systems and Sensors

Applications of electronics and microcontrollers to the control of electromechanical systems. Topics include driving brushless motors (including stepper motors), brushed permanent magnet motors, and other mechanical actuators; the use of the sensors including IMU, LIDAR, RADAR, GPS, capacitive/inductive sensing, laser distance, thermocouples, strain, pressure, optical encoders, and Hall devices; and control applications. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5356 – System on Chip (SoC) Design

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5357 – Advanced Digital Logic Design

Hierarchical organization, design, simulation, implementation, and testing of digital systems. Industrial standard computer-aided design tools including hardware description languages (HDLs), field-programmable gate arrays (FPGAs), and other prototyping hardware and software will be employed.

Design of arithmetic and other algorithmic processes will be covered. A term project will be required. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5372 – RISC Processor Design

Design of a RISC processor, based on RISC V and custom instruction set architectures with implementation on an FPGA target for test and verification. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

EE 5315 – System on Chip (SoC) Design

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite EE 5314.

EE 6314 – Advanced Embedded Microcontroller Systems

Study of advanced microcontroller system designs with an emphasis on multi-tasking, real-time control of devices. Topics include: design of real-time control systems, design of bootloaders, USB peripherals, and Ethernet applications. Prerequisite EE 5314.

CSE 6351 – Advanced Topics in Computer Engineering

May be repeated for credit when topics change. Prerequisite CSE 5342 or consent of instructor.

Graduate Certificate in Field-Programming Gate Array (FPGA) and System on Chip (SoC) Design

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it the knowledge and skills required to:

- Design and test advanced digital logic systems
- Use industry-standard HDL tools
- Use bridges to interconnect FPGA fabric and processor subsystems
- Write Linux device drivers
- Implement soft RISC processors in FPGA devices

This certificate is managed by:

- Jason Losh, Program Coordinator
- Bahram Khalili, Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

Acceptance is based on but not limited to the applicant having a degree in Computer Engineering, Electrical Engineering, or requisite background knowledge through active employment in Computer Engineering- or Electrical Engineering-related fields.

CSE certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, may be required to complete CSE 5400 Fundamentals of Computer if the applicant's bachelor's degree did not include a course in Embedded Systems using the same architecture and device currently used in the Computer Engineering undergraduate program.

COURSE REQUIREMENTS

The course requirements for the FPGA and SoC Design certificate are:

CSE 5400	FUNDAMENTALS OF COMPUTER ENGINEERING (Required only if insufficient academic background)	4
CSE 5356	SYSTEM ON CHIP (SoC) DESIGN	3
CSE 5357	ADVANCED DIGITAL LOGIC DESIGN	3
CSE 5372	RISC PROCESSOR DESIGN	3
CSE 6351	ADVANCED TOPICS IN COMPUTER ENGINEERING *	3

- * An Advanced Topics in Computer Engineering course (CSE 6351) co-listed with any of the above courses is also acceptable for credit, provided there is not duplication in course content.

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Jason Losh
- Bill Carroll

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) (<https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/>) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5400 – Fundamentals of Computer Engineering

Design of digital logic circuits. Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications.

CSE 5356 – System on Chip (SoC) Design

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5357 – Advanced Digital Logic Design

Hierarchical organization, design, simulation, implementation, and testing of digital systems. Industrial standard computer-aided design tools including hardware description languages (HDLs), field-programmable gate arrays (FPGAs), and other prototyping hardware and software will be employed. Design of arithmetic and other algorithmic processes will be covered. A term project will be required. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5372 – RISC Processor Design

Design of a RISC processor, based on RISC V and custom instruction set architectures with implementation on an FPGA target for test and verification. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 6351 – Advanced Topics in Computer Engineering

May be repeated for credit when topics change. Prerequisite CSE 5342 or consent of instructor.

Graduate Certificate in Real-Time Systems

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it the knowledge and skills required to:

- Design and test advanced digital logic systems
- Use industry-standard HDL tools
- Use bridges to interconnect FPGA fabric and processor subsystems
- Write Linux device drivers
- Implement soft RISC processors in FPGA devices

This certificate is managed by:

- Jason Losh, Program Coordinator
- Bahram Khalili, Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS

or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

Acceptance is based on but not limited to the applicant having a degree in Computer Engineering, Electrical Engineering, or requisite background knowledge through active employment in Computer Engineering- or Electrical Engineering-related fields.

CSE certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, may be required to complete CSE 5400 Fundamentals of Computer Engineering or EE 5314 – Embedded Microcontroller Systems if the applicant's bachelor's degree did not include a course in Embedded Systems using the same architecture and device currently used in the Computer Engineering undergraduate program.

COURSE REQUIREMENTS

The course requirements for the Real-Time Systems certificate are:

CSE 5400	FUNDAMENTALS OF COMPUTER ENGINEERING (Required only if insufficient academic background)	4
CSE 5342	EMBEDDED SYSTEMS II	3
CSE 5354	REAL-TIME OPERATING SYSTEMS	3
CSE 5355	ELECTROMECHANICAL SYSTEMS AND SENSORS	3
CSE 5356	SYSTEM ON CHIP (SoC) DESIGN	3
CSE 6351	ADVANCED TOPICS IN COMPUTER ENGINEERING *	3

* An Advanced Topics in Computer Engineering course (CSE 6351) co-listed with any of the above courses is also acceptable for credit, provided there is not duplication in course content.

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Jason Losh
- Bill Carroll

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu \(https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/\)](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5400 – Fundamentals of Computer Engineering

Design of digital logic circuits. Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications.

CSE 5356 – System on Chip (SoC) Design

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5342 – Embedded Systems II

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5354 – Real-time Operating Systems

Implementation of a real-time operating system with cooperative and preemption context switching, priority scheduling, semaphores, message queues, and inter-process communications on bare metal microcontrollers. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5355 – Electromechanical Systems and Sensors

Applications of electronics and microcontrollers to the control of electromechanical systems. Topics include driving brushless motors (including stepper motors), brushed permanent magnet motors, and other mechanical actuators; the use of the sensors including IMU, LIDAR, RADAR, GPS, capacitive/ inductive sensing, laser distance, thermocouples, strain, pressure, optical encoders, and Hall devices; and control applications. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 5356 – System on Chip (SoC) Design

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisites CSE 3442, CSE 5400, or consent of instructor.

CSE 6351 – Advanced Topics in Computer Engineering

May be repeated for credit when topics change. Prerequisite CSE 5342 or consent of instructor.

Graduate Certificate in Unmanned Vehicle Systems

PROGRAM OBJECTIVE

This credit-bearing, degree-leading certificate is intended to give those who successfully complete it:

- the knowledge and skills required for the design, development, and operation of UVS including UAS (Unmanned Aerial Systems), UGS (Unmanned Ground Systems) and UMS (Unmanned Maritime Systems)
- an ability to understand the common aspects of UVS including sensors, actuators, communications, powering, and more importantly decision# making capabilities (autonomy), while also covering development of domain#specific mobile platforms such as airplane, rotorcraft, and Ackerman steering car and boat
- an ability to provide the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants

The certificate is managed by:

- Manfred Huber
- Vassilis Athitsos
- Farhad Kamangar
- Bahram Khalili, Graduate Advisor

ADMISSION REQUIREMENTS

Current UTA students should contact CSEGradAdvising@uta.edu to sign up for the certificate program. Individuals not currently enrolled at UTA can apply for the certificate via ApplyTexas (https://www.applytexas.org/adappc/gen/c_start.WBX). Should a certificate student wish to continue on to an MS or PhD degree program in the CSE department, most certificate courses may be used toward that advanced degree. Note that for admission to the MS degree program, all UTA and CSE graduate degree admission requirements, including GRE and GPA, would need to be met.

CSE certificate students are required to have an undergraduate preparation equivalent to a baccalaureate degree in Computer Science or Computer Engineering or in a technical field relevant to the CSE curriculum. Students without a proper academic background, as determined by the graduate advisor at the time of the admission review, will be required to complete the CSE 5300 Foundation of Computing course and earn a passing grade in addition to the four required graduate courses.

COURSE REQUIREMENTS

The course requirements for the Unmanned Vehicle Systems Certificate will be:

CSE 5300	FOUNDATION OF COMPUTING (Required only if insufficient CSE background)	3
CSE 5360	ARTIFICIAL INTELLIGENCE I	3
CSE 5364	ROBOTICS	3
CSE 5383	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS	3
CSE 5384	UNMANNED VEHICLE SYSTEM DEVELOPMENT	3

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. The certificate program consists of 4-5 existing courses. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE Department.

FACULTY

The UTA Faculty contributing to this certificate program are:

- Manfred Huber
- Vassilis Athitsos
- Farhad Kamangar
- Bahram Khalili

Other faculty members of CSE and other departments of the College of Engineering will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) (<https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/>) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 5300 - Foundation of Computing

This is a hands-on introductory course that provides a broad overview of programming languages, data structures, memory management, operating systems, theory of computing, discrete structures and algorithms. This course will provide the necessary foundation for students requiring a refresher or non-CSE candidates.

CSE 5360 - Artificial Intelligence I

Introduction to the methods, concepts and applications of artificial intelligence, including knowledge representation, search, theorem proving, planning, natural language processing, and study of AI programming languages. Prerequisites CSE 2320 and CSE 3315, or CSE 5300, or consent of instructor.

CSE 5364 - Robotics

An introduction to robotics and the design and programming of autonomous robot systems. Topics include basic kinematics, dynamics, and control, as well as sensors, knowledge representation, and programming techniques. Coursework includes individual and group projects involving the building and programming of simulated and real robots. Prerequisites CSE 2320 and CSE 3442, or CSE 5300, or consent of instructor.

CSE 5383 - Introduction to Unmanned Vehicle Systems

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty.

CSE 5384 - Unmanned Vehicle System Development

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through teamwork. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in CSE 4378, CSE 5383 or CSE 5300, or consent of instructor.

Computer Science and Engineering - Undergraduate Programs

The Department of Computer Science and Engineering offers three programs of study leading to the bachelor's degree: the Bachelor of Science in Computer Science, the Bachelor of Science in Computer Engineering, and the Bachelor of Science in Software Engineering.

In all three programs of study, design experiences are included throughout the first three years of the curriculum and culminate in a major team-oriented project in the senior year that approximates an industrial work experience. All programs strive to provide students with opportunities to interface with the profession through avenues such as cooperative education programs, professional society activities, plant trips, special projects, and industry speakers programs.

Bachelor of Science in Computer Science (BSCS)

Program educational objectives of the Computer Science Program are what the program expects its graduates to attain within three to five years after graduation. Graduates of the UTA Computer Science Program will:

1. Be technically competent and commence a computing career or advanced studies.
2. Advance in the profession, especially in responsibility for the design of computer-based systems.
3. Demonstrate leadership for a changing profession and world.

The BSCS program has been accredited since 2002 by the Computing Accreditation Commission of ABET, <http://www.abet.org>.

Bachelor of Science in Computer Engineering (BSCpE)

Program educational objectives of the Computer Engineering Program are what the program expects its graduates to attain within three to five years after graduation. Graduates of the UTA Computer Engineering Program will:

1. Pursue productive careers in industry and organizations that focus on engineering of computing systems; or excel as graduate students and become effective researchers.
2. Participate effectively in interdisciplinary engineering projects, adapt to changing technologies, and communicate effectively to become leaders in their profession.
3. Engage in life-long learning, recognize social needs and constraints, and demonstrate high appreciation of legal, ethical, economic, environmental and social responsibilities.

The BSCpE program has been accredited since 1983 by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Bachelor of Science Degree in Software Engineering (BSSE)

Program educational objectives of the Software Engineering Program are what the program expects its graduates to attain within three to five years after graduation. Graduates of the UTA Software Engineering Program will:

1. Pursue the software profession with abilities to implement, test, and maintain software systems; or pursue graduate studies in software engineering or a related area.
2. Advance in the software profession with abilities to identify needs and software requirements in an application domain, and design systems to meet the desired needs within realistic constraints.
3. Demonstrate excellence and leadership in the software profession or a related area.

The BSSE program has been accredited since 2002 by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Student Learning Outcomes

From the educational objectives of the BSCS program (described above), the department designed the programs to meet the following Program Outcomes, to ensure that its graduates are able to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

From the educational objectives of the BSCpE and BSSE programs (described above), the department designed these programs to meet the following Program Outcomes, to ensure that its graduates have:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Admission Requirements

Requirements for admission as a CS, CpE or SE pre-major or major are governed by the requirements stated under the College of Engineering section of this catalog. CS, CpE or SE pre-majors become majors upon completion of required pre-professional English, science, mathematics, and CSE courses, with a 2.25 or better grade point average.

All entering students majoring in computer science, computer engineering, or software engineering are permitted to enroll in general education and pre-professional courses for which they are qualified. Students completing these pre-professional courses must meet the academic requirements specified by the College of Engineering prior to applying for admission to the professional program. The Computer Science and Engineering Department requires a 2.25 overall grade point average on a 4.0 scale in each of three categories: (1) overall, (2) required science, mathematics, and engineering courses, and (3) required CSE courses. Students not in the professional program must have permission from the department chairperson to receive credit for courses listed in the professional program category. Application for admission to the professional program is made to the Department of Computer Science and Engineering.

Prior Preparation

The BSCS, BSCpE, and BSSE are four-year programs and requirements for the degrees are based upon prior high school preparation through either an honors or college track. More specifically, entering students are expected to have a background in mathematics through precalculus, high school chemistry, and programming in a high-level language such as C, C++, Java or Python.

Students who have not had the appropriate preparation should contact the departmental advising office for assistance in structuring a degree plan that will include leveling courses. Students requiring leveling courses may require a longer period of time to complete their undergraduate program.

Readiness Examinations

Students will be required to pass readiness examinations before enrolling in the courses listed below unless the course prerequisite was taken at UT Arlington and passed with a C or better grade. Students not passing the readiness examination must take the prerequisite course. A readiness examination may be taken only once per course and only before enrolling in any CSE courses. Additional information is available in the departmental office.

CSE 1320	INTERMEDIATE PROGRAMMING	3
CSE 1325	OBJECT-ORIENTED PROGRAMMING	3

Student Advising

CS, CpE, and SE pre-majors and majors are required to be advised by a departmental advisor each semester. Consult the departmental bulletin boards or Web site for advising hours. New and transfer students must also be advised prior to the beginning of the semester in which they first enroll.

Transfer Students and Transfer Credit

After admission and prior to registration, transfer students should contact the Department of Computer Science and Engineering for advising. At the time of advising, a transfer student must present to the undergraduate advisor an official transcript (or copy) from each school previously attended. Only the equivalent courses in a program accredited by ABET or equivalent freshman, sophomore, or general education courses accepted by the department chairperson can be counted toward a degree in computer science and engineering.

A student, once admitted to The University of Texas at Arlington and enrolled in the CS, CpE or SE program, cannot enroll in courses at another college or university and transfer those courses for credit toward a CS, CpE or SE degree without having obtained prior written permission from the chairperson of the Department of Computer Science and Engineering.

Cooperative Education Program

Cooperative education or Co-op programs are arrangements where students alternate periods of full-time employment with periods of full-time study, usually during the last two years of a degree program. The employment is directly related to the student's major and pays an attractive salary. Thus, Co-

op students gain valuable career related experience before graduating, while earning a meaningful income. Cooperative education opportunities are plentiful for CS, CpE, and SE students.

Honors Programs

The Computer Science and Engineering Department encourages qualified CS, CpE, and SE majors to participate in the Honors College described elsewhere in this catalog. Projects may be pursued in any one of the areas of concentration within the Department of Computer Science and Engineering.

Graduate Degree Paths

Computing is a rapidly changing discipline requiring lifelong learning by its professionals. Completing a graduate degree enhances an individual's ability to assimilate and apply their knowledge and skills to meet on the job challenges and the needs of society. Pursuing a graduate degree on a full-time basis immediately after completing the baccalaureate is an attractive option for many students. Students are encouraged to discuss possibilities with a Graduate Advisor upon advancement to a Bachelor of Science professional program.

Fast Track Program for Master's Degree in Computer Engineering, Computer Science or Software Engineering

The Fast Track Program enables outstanding UT Arlington senior undergraduate students in Computer Engineering to satisfy degree requirements leading to a master's degree in Computer Engineering while completing their undergraduate studies. Similarly, the Fast Track Program enables Computer Science students to satisfy degree requirements leading to a master's degree in Computer Science, and Software Engineering students to satisfy degree requirements leading to a master's degree in Software Engineering.

When senior-level students are within 15 hours of completing their undergraduate degree requirements, they may take a minimum of six and a maximum of nine hours of graduate level coursework designated by the program to satisfy both undergraduate and graduate degree requirements. In the limiting case, a student completing the maximum allowable hours (9) while in undergraduate status would have to take only 21 additional hours to meet minimum requirements for a master's degree program (M.S.).

Interested UT Arlington undergraduate students should apply to the appropriate graduate program when they are within 30 hours of completing their bachelor's degrees. They must have completed at least 30 hours at UT Arlington, achieving a GPA of at least 3.25 in those courses, and have an overall GPA of 3.25 or better in all college courses. Additionally, they must have completed a set of specified undergraduate foundation courses with a minimum GPA of 3.3 in those courses. Contact the Undergraduate Advisor or Graduate Advisor in Computer Science and Engineering for more information about the program.

Direct Acceptance to Doctoral Programs from Bachelor's Degree Program

Excellent undergraduate students may qualify for acceptance to doctoral studies without the intermediate completion of a masters degree. Students should discuss the expected level of commitment and possibilities for long-term support with a Graduate Advisor.

Oral Communication and Computer Competency Requirement

CS, CpE, and SE students will satisfy the oral competency requirement by completing COMS 2302 PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING. They will satisfy the computer use competency requirement by completing CSE 1205.

Course Offerings

All 1000- and 2000-level CSE courses are typically offered each semester and in the 11-week summer session. All 3000-level courses and required 4000-level courses are typically offered at least twice per year. Other 4000-level courses are typically offered only once per year unless there is a high demand. Refer to the CSE department bulletin boards or Web site for more specific and current information. The CSE department reserves the right to move students among equivalent sections of the same course.

Requirements for a Bachelor of Science Degree in Computer Science

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

General Education Courses

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COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING
POLS 2311	GOVERNMENT OF THE UNITED STATES
POLS 2312	STATE AND LOCAL GOVERNMENT
History Electives (6 hours) ²	
Social & Behavioral Sciences (IE 2308 or ECON 2305)	
Approved Language, Philosophy and Culture elective ²	
Approved Creative Arts elective ²	

Program Requirements

Pre-Professional Courses ¹		
UNIV 1131	STUDENT SUCCESS	1
or ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
MATH 1426	CALCULUS I (fulfills common core)	4
MATH 2425	CALCULUS II	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
CSE 1106	INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING	1
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	3
CSE 1320	INTERMEDIATE PROGRAMMING	3
CSE 1325	OBJECT-ORIENTED PROGRAMMING	3
CSE 2312	COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE PROGRAMMING	3
CSE 2315	DISCRETE STRUCTURES	3
CSE 3318	ALGORITHMS & DATA STRUCTURES	3
Professional Courses ³		
IE 3301	ENGINEERING PROBABILITY	3
or MATH 3313	INTRODUCTION TO PROBABILITY	
CSE 3302	PROGRAMMING LANGUAGES	3
CSE 3310	FUNDAMENTALS OF SOFTWARE ENGINEERING	3
CSE 3314	PROFESSIONAL PRACTICES	3
CSE 3315	THEORETICAL CONCEPTS IN COMPUTER SCIENCE AND ENGINEERING	3
CSE 3320	OPERATING SYSTEMS	3
CSE 3330	DATABASE SYSTEMS AND FILE STRUCTURES	3
CSE 3380	LINEAR ALGEBRA FOR CSE	3
or MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	
CSE 4308	ARTIFICIAL INTELLIGENCE	3
CSE 4316	COMPUTER SYSTEM DESIGN PROJECT I	3
CSE 4317	COMPUTER SYSTEM DESIGN PROJECT II	3
CSE 4344	COMPUTER NETWORK ORGANIZATION	3
Select one of the following:		3
CSE 4303	COMPUTER GRAPHICS	
CSE 4305	COMPILERS FOR ALGORITHMIC LANGUAGES	
CSE 4360	AUTONOMOUS ROBOT DESIGN AND PROGRAMMING	
Select one of the following:		3
CSE 4380	INFORMATION SECURITY	
CSE 4381	INFORMATION SECURITY II	
CSE 4382	SECURE PROGRAMMING	
Approved Mathematics elective ²		3
Approved Technical electives ²		15
Total Hours		123

¹ All pre-professional courses must be completed with a C or better before enrolling in professional courses

² A list of acceptable electives is available from the departmental office or Web site.

³ All prerequisites for professional courses must be completed with a C or better

Note: Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical language courses in addition to the previously listed requirements.

Refer to the College of Engineering section (p. 425) of this catalog for information concerning the following topics: Preparation in High School for Admission to the College of Engineering, Admission to the College of Engineering, Admission to the Professional Program, Counseling, College of Engineering Academic Regulations, Transfer Policies, College of Engineering Probation, Repeating Course Policy and Academic Honesty.

Recommended Core Curriculum

Computer Science and Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Computer Science" along with ENGL 1301, MATH 1426, MATH 2425, PHYS 1443 and PHYS 1444, which are within the Pre-Professional Program. The university core curriculum allows each degree plan to designate a component area to satisfy three hours of the core requirement. For the Computer Science degree plan, the designated component area is Mathematics and MATH 2326 is selected to satisfy the requirement.

Requirements for a Bachelor of Science Degree in Computer Engineering

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

General Education Courses

24

COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
History Electives (6 hours) ²		
Social & Behavioral Sciences (IE 2308 or ECON 2305)		
Approved Language, Philosophy and Culture elective ²		
Approved Creative Arts elective ²		

Program Requirements

Pre-Professional Courses ¹

UNIV 1131	STUDENT SUCCESS	1
or ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
CSE 1106	INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING	1
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	3
CSE 1320	INTERMEDIATE PROGRAMMING	3
CSE 1325	OBJECT-ORIENTED PROGRAMMING	3
CSE 2312	COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE PROGRAMMING	3
CSE 2315	DISCRETE STRUCTURES	3
CSE 2440	CIRCUIT ANALYSIS	4
CSE 2441	DIGITAL LOGIC DESIGN	4
CSE 3318	ALGORITHMS & DATA STRUCTURES	3

Professional Courses ³

IE 3301	ENGINEERING PROBABILITY	3
or MATH 3313	INTRODUCTION TO PROBABILITY	
CSE 3313	INTRODUCTION TO SIGNAL PROCESSING	3
CSE 3314	PROFESSIONAL PRACTICES	3
CSE 3320	OPERATING SYSTEMS	3
CSE 3323	ELECTRONICS	3
CSE 3380	LINEAR ALGEBRA FOR CSE	3
or MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	
CSE 3442	EMBEDDED SYSTEMS I	4
CSE 4316	COMPUTER SYSTEM DESIGN PROJECT I	3
CSE 4317	COMPUTER SYSTEM DESIGN PROJECT II	3
CSE 4323	QUANTITATIVE COMPUTER ARCHITECTURE	3
CSE 4342	EMBEDDED SYSTEMS II	3
Approved Mathematics elective ²		3
Approved Science elective ²		4

Approved Technical elective ²	12
Total Hours	124

¹ All pre-professional courses must be completed with a C or better before enrolling in professional courses

² A list of acceptable electives is available from the departmental office or Web site.

³ All prerequisites for professional courses must be completed with a C or better

Note: Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical language courses in addition to the previously listed requirements.

Refer to the College of Engineering section (p. 425) of this catalog for information concerning the following topics: Preparation in High School for Admission to the College of Engineering, Admission to the College of Engineering, Admission to the Professional Program, Counseling, College of Engineering Academic Regulations, Transfer Policies, College of Engineering Probation, Repeating Course Policy and Academic Honesty.

Recommended Core Curriculum

Computer Science and Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Computer Engineering" along with ENGL 1301, MATH 1426, MATH 2425, PHYS 1443 and PHYS 1444, which are within the Pre-Professional Program. The university core curriculum allows each degree plan to designate a component area to satisfy three hours of the core requirement. For the Computer Engineering degree plan, the designated component area is Mathematics and MATH 2326 is selected to satisfy the requirement.

Requirements for a Bachelor of Science Degree in Software Engineering

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

General Education Courses 24

COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
History Electives (6 hours) ²		
Social & Behavioral Sciences (IE 2308 or ECON 2305)		
Approved Language, Philosophy and Culture elective ²		
Approved Creative Arts elective ²		

Program Requirements

Pre-Professional Courses ¹		
UNIV 1131	STUDENT SUCCESS	1
or ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
CSE 1106	INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING	1
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	3
CSE 1320	INTERMEDIATE PROGRAMMING	3
CSE 1325	OBJECT-ORIENTED PROGRAMMING	3
CSE 2312	COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE PROGRAMMING	3
CSE 2315	DISCRETE STRUCTURES	3
CSE 3318	ALGORITHMS & DATA STRUCTURES	3
Professional Courses ³		
IE 3301	ENGINEERING PROBABILITY	3
or MATH 3313	INTRODUCTION TO PROBABILITY	
CSE 3302	PROGRAMMING LANGUAGES	3
CSE 3310	FUNDAMENTALS OF SOFTWARE ENGINEERING	3
CSE 3311	OBJECT-ORIENTED SOFTWARE ENGINEERING	3
CSE 3314	PROFESSIONAL PRACTICES	3

CSE 3315	THEORETICAL CONCEPTS IN COMPUTER SCIENCE AND ENGINEERING	3
CSE 3320	OPERATING SYSTEMS	3
CSE 3330	DATABASE SYSTEMS AND FILE STRUCTURES	3
CSE 3380	LINEAR ALGEBRA FOR CSE	3
or MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	
CSE 4316	COMPUTER SYSTEM DESIGN PROJECT I	3
CSE 4317	COMPUTER SYSTEM DESIGN PROJECT II	3
CSE 4321	SOFTWARE TESTING & MAINTENANCE	3
CSE 4322	SOFTWARE PROJECT MANAGEMENT	3
CSE 4361	SOFTWARE DESIGN PATTERNS	3
CSE 4380	INFORMATION SECURITY	3
Approved Mathematics elective ²		3
Approved Science elective ²		4
Approved Technical electives ²		9
Total Hours		124

¹ All pre-professional courses must be completed with a C or better before enrolling in professional courses

² A list of acceptable electives is available from the departmental office or Web site.

³ All prerequisites for professional courses must be completed with a C or better

Note: Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical language courses in addition to the previously listed requirements

Refer to the College of Engineering section (p. 425) of this catalog for information concerning the following topics: Preparation in High School for Admission to the College of Engineering, Admission to the College of Engineering, Admission into the Professional Program, Advising, College of Engineering Academic Regulations, Transfer Policies, College of Engineering Probation, Repeating Course Policy and Academic Honesty.

Recommended Core Curriculum

Computer Science and Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Software Engineering" along with ENGL 1301, MATH 1426, MATH 2425, PHYS 1443 and PHYS 1444, which are within the Pre-Professional Program. The university core curriculum allows each degree plan to designate a component area to satisfy three hours of the core requirement. For the Software Engineering degree plan, the designated component area is Mathematics and MATH 2326 is selected to satisfy the requirement.

Minor in Computer Science

To receive a minor in Computer Science, a student must not be receiving his/her major degree from the department and must complete all courses listed with a grade of C or better in each course. Any substitutions must be approved in advance by the department chairperson.

Requirements for a Minor in Computer Science

To receive a minor in Computer Science, a student must complete the following courses with a grade of C or better in each:

CSE 1320	INTERMEDIATE PROGRAMMING	3
CSE 1325	OBJECT-ORIENTED PROGRAMMING	3
CSE 2315	DISCRETE STRUCTURES	3
CSE 3318	ALGORITHMS & DATA STRUCTURES	3
Any two 3000 or 4000 level courses with a grade of C or better in each as well as all required prerequisites for the chosen courses		6
Total Hours		18

¹ Grade of C or better in each, as well as all required prerequisites for the chosen courses.

Undergraduate Certificate in Cyber Security

PROGRAM OBJECTIVE

The Certificate in Cyber Security is offered through the Computer Science and Engineering Department and will educate undergraduate students in the knowledge and skills required to identify and proactively mitigate potential cyber security risks. Students will learn about cryptographic techniques and public key infrastructure, secure programming techniques, and computer network security including intrusion detection devices and firewalls.

This program aims at the dual goal of providing industry with a knowledgeable, locally available workforce while developing career opportunities for its participants. The Certificate in Cyber Security will be awarded concurrently with an undergraduate degree.

ADMISSION REQUIREMENTS

The certificate is open to all degree-seeking students.

ACADEMIC REQUIREMENTS

Students must complete 15 hours of coursework as outlined below. A combined GPA of 3.0 or better must be earned on all courses used to satisfy the certificate requirements.

Required classes		15
CSE 4340	FUNDAMENTALS OF WIRELESS NETWORKS	3
CSE 4344	COMPUTER NETWORK ORGANIZATION	3
or CSE 4352	IOT AND NETWORKING	
CSE 4380	INFORMATION SECURITY	3
CSE 4381	INFORMATION SECURITY II	3
CSE 4382	SECURE PROGRAMMING	3

***Any course substitution has to be approved beforehand by the certificate coordinator.**

COURSE DESCRIPTIONS

CSE 4340 FUNDAMENTALS OF WIRELESS NETWORKS

Fundamentals of wireless networks, radio spectrum, coding and modulation, multiple access techniques, antennas, noise and interference, channels, demodulation and decoding, error rates and capacity, link budgets, medium access control, rate adaption, and wireless LAN/PAN, ad-hoc, and sensor networks. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 4344 or CSE 4352 or consent of instructor.

CSE 4344 COMPUTER NETWORK ORGANIZATION

Design and analysis of computer networks. Emphasis on the OSI architecture but discusses other schemes (e.g., ARPAnet). Data link control, local networks, protocols/architectures, network access protocols, transport protocols, internetworking, and ISDN. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4352 IOT AND NETWORKING

Study of Ethernet stacks and layers, full implementation of an Ethernet stack and a basic low-latency, small footprint IoT protocol on bare metal embedded devices and embedded Linux systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4380 INFORMATION SECURITY

Hands-on introduction to the basics of security. Includes system security, buffer overflows, a high-level overview of cryptography, firewalls and intrusion detection/prevention, malware, penetration testing, forensics, and system administration. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4381 INFORMATION SECURITY II

Deeper study of the fundamentals of security, including symmetric key cryptography, public key cryptography, cryptographic protocols, malware design, network attacks and defenses, data security, privacy, and wireless security. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320 and C or better in CSE 4344 (or concurrently).

CSE 4382 SECURE PROGRAMMING

This course is an introduction to methods of secure software design and development. Students will learn about the major security problems found in software today. Using this knowledge, they will work in teams to find these bugs in software, fix the bugs, and design software so that it has fewer security problems. Static analysis tools will be a core part of the class, but students will also be exposed to black box testing tools. Topics will include input validation, buffer overflow prevention, error handling, web application issues, and XML. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

Undergraduate Certificate in Unmanned Vehicle Systems

PROGRAM OBJECTIVE

The Certificate in UVS (Unmanned Vehicle Systems) is offered through the Computer Science and Engineering Department and will educate undergraduate students in the knowledge and skills required for design, development and operation of UVS including UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground Systems), and UMS (Unmanned Maritime Systems). The certificate program will emphasize the common aspects of UVS such as sensors, actuators, communications, and more importantly, decision-making capabilities (autonomy). This program aims at the dual goal of providing the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants. To this end, the Certificate in UVS will be awarded concurrently with an undergraduate degree. More information about this program is available on the College of Engineering website.

ADMISSION REQUIREMENTS

The certificate is open to all degree-seeking students.

ACADEMIC REQUIREMENTS

Students must complete 15-16 hours of coursework as outlined below that include 6 hours of a core curriculum that is interdisciplinary and forms the basis of a common core in UVS Certificate and 9 hours of discipline specific curriculum. A combined GPA of 3.0 or better must be earned on all courses used to satisfy the certificate requirements.

For Computer Science majors:

Required classes

CSE 4378	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS	3
CSE 4379	UNMANNED VEHICLE SYSTEM DEVELOPMENT	3
CSE 4308	ARTIFICIAL INTELLIGENCE	3
CSE 4360	AUTONOMOUS ROBOT DESIGN AND PROGRAMMING	3

3 credit hours from the following list **3**

CSE 4309	FUNDAMENTALS OF MACHINE LEARNING	
CSE 4310	FUNDAMENTALS OF COMPUTER VISION	
CSE 4340	FUNDAMENTALS OF WIRELESS NETWORKS	

Total Hours 15

***Any course substitution has to be approved beforehand by the certificate coordinator.**

For Computer Engineering majors:

Required classes

CSE 4378	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS	3
CSE 4379	UNMANNED VEHICLE SYSTEM DEVELOPMENT	3
CSE 3313	INTRODUCTION TO SIGNAL PROCESSING	3
CSE 3442	EMBEDDED SYSTEMS I	4

3 credit hours from the following list **3**

CSE 4342	EMBEDDED SYSTEMS II	
CSE 4360	AUTONOMOUS ROBOT DESIGN AND PROGRAMMING	
CSE 4308	ARTIFICIAL INTELLIGENCE	

Total Hours 16

***Any course substitution has to be approved beforehand by the certificate coordinator.**

COURSE DESCRIPTIONS

CSE 4378 Introduction to Unmanned Vehicle Systems

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

CSE 4379 Unmanned Vehicle System Development

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through teamwork. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in CSE 4378 and admission to the UVS certificate program.

CSE 4308 Artificial Intelligence

An introduction to the field of artificial intelligence studying basic techniques such as heuristic search, deduction, learning, problem solving, knowledge representation, uncertainty reasoning and symbolic programming languages such as LISP. Application areas may include intelligent agents, data mining, natural language, machine vision, planning and expert systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318 and (IE 3301 or MATH 3313).

CSE 4360 Autonomous Robot Design and Programming

An introduction to robotics and the design and programming of autonomous robot systems. Topics include basic kinematics, dynamics, and control, as well as sensors, knowledge representation, and programming techniques. Course work includes individual and group projects involving the building and programming of simulated and real robots. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, CSE 3320 and CSE 3380 (or MATH 3330).

CSE 4309 Fundamentals of Machine Learning

This course offers an introduction to machine learning. Topics include naive Bayes classifiers, linear regression, linear classifiers, neural networks and backpropagation, kernel methods, decision trees, feature selection, clustering, and reinforcement learning. A strong programming background is assumed, as well as familiarity with linear algebra (vector and matrix operations), and knowledge of basic probability theory and statistics. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, IE 3301 or MATH 3313, and CSE 3380 or MATH 3330.

CSE 4310 Fundamentals of Computer Vision

This course introduces students to basic concepts and techniques in computer vision. The topics covered include morphological operations, connected component analysis, image filters, edge detection, feature extraction, object detection, object recognition, tracking, gesture recognition, image formation and camera models, calibration, and stereo vision. A strong programming background is assumed, as well as familiarity with linear algebra (vector and matrix operations), and knowledge of basic probability theory and statistics. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, IE 3301 or MATH 3313, and CSE 3380 or MATH 3330.

CSE 4340 Fundamentals of Wireless Networks

Fundamentals of wireless networks, radio spectrum, coding and modulation, multiple access techniques, antennas, noise and interference, channels, demodulation and decoding, error rates and capacity, link budgets, medium access control, rate adaption, and wireless LAN/PAN, ad-hoc, and sensor networks. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 4344 or CSE 4352 or consent of instructor.

CSE 3313 Introduction to Signal Processing

Examines models for presentation and processing of digital signals. Sampling theorem, correlation and convolution, time and frequency analysis of linear systems, Fourier transform, Z-transform, design of digital filters structures for discrete time systems. Prerequisite: C or better in each of the following: CSE 3318 and either CSE 3380 or MATH 3330.

CSE 3442 – Embedded Systems I

Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications. Prerequisites: C or better in each of the following: CSE 2312, CSE 2440 and CSE 2441.

CSE 4342 – Embedded Systems II

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisites: C or better in each of the following: CSE 3323, CSE 3442, and CSE 3313.

Undergraduate Certificate in Embedded Systems

PROGRAM OBJECTIVE

The Undergraduate Certificate in Embedded Systems is offered through the Computer Science and Engineering Department and will educate undergraduate students in the knowledge and skills required to design and test embedded systems, using microcontrollers, system-on-chip, and FPGA

devices. Topics include multi-threaded programming on bare-metal, custom real-time operating systems, and embedded Linux systems; implementation of IP stacks for computer networking; network and wireless protocol development for Internet of Things devices; design of real-time operating systems; implementation of RISC processors in FPGA devices; design of advanced digital logic systems; analysis and design of microprocessor systems; and control of systems with electromechanical actuators and sensors. The Certificate in Embedded Systems will be awarded concurrently with an undergraduate degree.

This certificate is managed by:

- Jason Losh, Program Coordinator
- Linda Barasch, Undergraduate Advisor

ADMISSION REQUIREMENTS

The certificate is open to all degree-seeking students.

ACADEMIC REQUIREMENTS

Students must complete 16 hours of coursework as outlined below. A combined GPA of 3.0 or better must be earned on all courses used to satisfy the certificate requirements.

COURSE REQUIREMENTS

The course requirements for the Embedded Systems certificate are:

CSE 3442	EMBEDDED SYSTEMS I	4
CSE 4342	EMBEDDED SYSTEMS II	3
and 3 of the following courses:		9
CSE 4352	IOT AND NETWORKING	
CSE 4354	REAL-TIME OPERATING SYSTEMS	
CSE 4355	ELECTROMECHANICAL SYSTEMS AND SENSORS	
CSE 4356	SYSTEM ON CHIP (SOC) DESIGN	
CSE 4357	ADVANCED DIGITAL LOGIC DESIGN	
CSE 4372	RISC PROCESSOR DESIGN	
Total Hours		16

***Any course substitution has to be approved beforehand by the certificate coordinator.**

FACULTY

The UTA Faculty contributing to this certificate program are:

- Jason Losh, Director of Undergraduate Computer Engineering Program
- Bill Carroll

Other faculty members of CSE will be contributing to the certificate programs through the existing courses included in this certificate program.

Laboratory information can be found via [cse.uta.edu \(https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/\)](https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/cse/) under the **Faculty Research** heading.

COURSE DESCRIPTIONS

CSE 3442 – Embedded Systems I

Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications. Prerequisites: C or better in each of the following: CSE 2312, CSE 2440 and CSE 2441.

CSE 4342 – Embedded Systems II

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisites: C or better in each of the following: CSE 3323, CSE 3442, and CSE 3313.

CSE 4352 – IoT and Networking

Study of protocol stacks and layers, implementation of an Ethernet protocol stack, and design of a basic low-latency, small footprint IoT protocol on bare metal embedded devices and embedded Linux systems. Prerequisite: C or better in CSE 3442.

CSE 4354 – Real-time Operating Systems

Implementation of a real-time operating system with cooperative and preemption context switching, priority scheduling, semaphores, message queues, and inter-process communications on bare metal microcontrollers. Prerequisite: C or better in CSE 3442.

CSE 4355 – Electromechanical Systems and Sensors

Applications of electronics and microcontrollers to the control of electromechanical systems. Topics include driving brushless motors (including stepper motors), brushed permanent magnet motors, and other mechanical actuators; the use of the sensors including IMU, LIDAR, RADAR, GPS, capacitive/inductive sensing, laser distance, thermocouples, strain, pressure, optical encoders, and Hall devices; and control applications. Prerequisite: C or better in CSE 3323 and CSE 3442.

CSE 4356 – System on Chip (SoC) Design

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite: C or better in CSE 3442.

CSE 4357 – Advanced Digital Logic Design

Hierarchical organization, design, simulation, implementation, and testing of digital systems. Industrial standard computer-aided design tools including hardware description languages (HDLs), field-programmable gate arrays (FPGAs), and other prototyping hardware and software will be employed. Design of arithmetic and other algorithmic processes will be covered. A term project will be required. Prerequisite: C or better in CSE 3442.

CSE 4372 – RISC Processor Design

Design of a RISC processor, based on RISC V and custom instruction set architectures with implementation on an FPGA target for test and verification. Prerequisite: C or better in CSE 3442.

Electrical Engineering

Undergraduate Degrees

- Bachelor of Science in Electrical Engineering (p. 581)
- Minor in Electrical Engineering (p. 581)

Graduate Degrees

- Electrical Engineering, M.Engr. Non-Thesis (p. 572)
- Electrical Engineering, M.S. (p. 572)
- Electrical Engineering, M.S. Fast Track (p. 572)
- Electrical Engineering, B.S. to Ph.D. (p. 575)
- Electrical Engineering, Ph.D. (p. 575)

Certificates

- Graduate Certificate in Power System Management (p. 577)
- Graduate Certificate in Photonic Devices and Systems (p. 577)
- Graduate Certificate in Embedded Systems (p. 577)
- Undergraduate Certificate in Embedded Systems (p. 584)
- Undergraduate Certificate in Unmanned Vehicle Systems (p. 584)

COURSES

EE 1000. FRESHMAN UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

EE 1101. INTRODUCTION TO ELECTRICAL ENGINEERING. 1 Hour.

After an introduction to different branches of Engineering, we focus on Electrical Engineering to illustrate concepts, methods, problem solving approach, and tools common to all Engineering, and those unique to Electrical Engineering. Various areas within Electrical Engineering will be introduced, with examples from analog and digital electronic circuits, control and robotics, microwave and optical engineering, telecommunication, energy systems, and biosensors. Students will be introduced to skills they need to succeed in subsequent Engineering courses, and ethical responsibilities. The emphasis is to engage students in active learning through exercises, mini-projects, and team activities. Selected speakers from across the College of Engineering will make presentations and emphasize the interdisciplinary nature of Engineering. Some College of Engineering requirements are satisfied by the content of this course.

EE 1106. ELECTRICAL ENGINEERING FRESHMAN PRACTICUM. 1 Hour.

A project-based course focuses on basic methods for manipulating voltages and currents to achieve specific application objectives. Basic concepts covered include circuit elements and abstractions, circuit topology and analysis methods. Students will engage in laboratory experiments and learn how to conduct a variety of measurements including voltage, current, waveform, and frequency/spectrum measurements. Prerequisite: Grade of C or better in EE 1201 (or concurrent enrollment).

EE 1201. INTRODUCTION TO ELECTRICAL ENGINEERING. 2 Hours.

This course introduces basic concepts in electrical engineering (EE) and their applications through laboratory experiments and hands-on projects. The course provides some background of the respective subareas within EE, including overviews of and motivations for analytical tools that will be developed throughout EE curriculum. Prerequisite: Grade C or better in MATH 1426 (or concurrent enrollment).

EE 1311. COMPUTING SYSTEM AND ALGORITHMIC SOLUTIONS. 3 Hours.

This course focuses on algorithmic problem solving and implementation of the algorithm using C or Python Programming Language. Fundamental concepts covered in this course include computing system architecture, operating systems, program execution, algorithm and flowchart, data structure, numerical methods, and hardware interfacing. Prerequisite: Grade C or better in MATH 1426 (or concurrent enrollment).

EE 2000. SOPHOMORE UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

EE 2181. CIRCUIT ANALYSIS LABORATORY. 1 Hour.

Circuits laboratory for non-electrical engineering majors. This is identical to the laboratory portion of EE 2440. Prerequisite: Grade C or better in MATH 2425. Corequisite: EE 2320 and PHYS 1444.

EE 2240. SOPHOMORE PROJECT LABORATORY. 2 Hours.

A project based experiential learning course that provides an opportunity for students to explore and develop comprehensive applications of electrical engineering concepts and technologies to address real-world needs. Students will work in teams and engage in project planning, management, presentation, reporting, and outcome assessment. Prerequisite: Grade of C or better in each of the following: EE 1311, EE 2315, EE 2303 (or concurrent enrollment), EE 2341 (or concurrent enrollment), and EE 2347 (or concurrent enrollment).

EE 2302. PRINCIPLES OF ACTIVE AND PASSIVE DEVICES. 3 Hours.

This course covers electric and magnetic properties of solid materials with applications in the design and fabrication of active and passive devices. Topics include charge carriers, drift and diffusion currents, electrostatics, magnetostatics, dielectric/conductor/semiconductor properties, magnetic domain, Hall effects, passive circuit elements, electronic energy band diagrams, p-n junction, diode, FET, LED, semiconductor lasers, sensor and device applications. Prerequisite: Grade of C or better in both CHEM 1465 and EE 2315.

EE 2303. ELECTRONICS I. 3 Hours.

Introduction to semiconductors, carrier statistics, drift and diffusion, and p-n junction. Electrical characteristics of diodes, bipolar junction transistors (BJTs), and field-effect transistors (FETs). Circuit applications: switches, square-law detector, and amplifier. Digital and analog electronic circuits. Logic circuits. Single and multistage electronic circuit analysis and design. Amplifier operating point and frequency response. Low frequency and high frequency analysis and design. Computer aided analysis and design. Prerequisite: Grade C or better in both EE 2315 and MATH 3319.

EE 2315. CIRCUIT ANALYSIS I. 3 Hours. (TCN = ENGR 2305)

This course covers fundamental concepts and applications in manipulating voltage and current using passive and active circuit elements. Circuit models for passive (lumped) elements (resistor, capacitor, and inductor); independent and dependent sources; switches and active elements (diode and transistor). Circuit topology, governing laws (KCL and KVL), and node and mesh analysis methods. Time-varying and time-harmonic analyses of 1st order and 2nd order passive circuits. Steady-state alternating-current (AC) phasor analysis. Frequency domain analysis and Bode plots. Properties and applications of diode and transistor. Rectifier and switches. Higher level abstractions: Thevenin and Norton equivalents, and op-amps. Properties and applications of op-amps. Computer-assisted circuit analysis and design. Prerequisite: Grade C or better in each of the following: EE 1106, MATH 2425, MATH 3319 (or concurrent enrollment) and PHYS 1444 (or concurrent enrollment).

EE 2320. CIRCUIT ANALYSIS. 3 Hours.

For non-electrical engineering majors. Basic principles of R, L, and C components. Kirchhoff's laws, network analysis, loop and node equations, basic network theorems. Steady-state Alternating Current (AC) phasor analysis, operational amplifiers, filtering, and digital circuits. Prerequisite: Grade of C or better in each MATH 2425 or HONR-SC 2425 and PHYS 1444.

EE 2341. DIGITAL CIRCUITS AND SYSTEMS. 3 Hours.

An introduction to digital system design with hands-on projects. Number systems and codes. Boolean algebra; combinatorial logic and arithmetic. Digital electronics; CMOS logic gates; digital signals and noise margin; logic gates; and combinatorial logic circuits. Timing hazard and delay. Programmable logic devices; VHDL. State machines; sequential logic elements; counters and shift registers; sequential logic circuits. Arithmetic and computer logic circuits. Prerequisite: Grade C or better in each of the following: EE 1311 and EE 2315 (or concurrent enrollment).

EE 2347. MATHEMATICAL FOUNDATIONS OF ELECTRICAL ENGINEERING. 3 Hours.

This course focuses on mathematical modeling and algorithmic thinking to solve electrical engineering problems and interpret the results. Concepts covered in this course include mathematical representation of electrical signal and system behavior, complex analysis, Fourier series and Fourier transformations, computational modeling using MATLAB or Python, data processing and analysis. Prerequisite: Grade of C or better in each of EE 1311, MATH 2425, and MATH 3319.

EE 2403. ELECTRONICS I. 4 Hours.

Introduction to semiconductors, carrier statistics, drift and diffusion, semiconductor diodes, bipolar junction transistors (BJTs), and field-effect transistors (FETs). Circuit applications of diodes. Direct Current (DC) biasing and stability of circuits containing diodes, BJTs, and FETs. Introduction to mid-band single stage small signal analysis of BJT and FET circuits. Laboratory experiments to complement concepts learned in class. Prerequisite: Grade C or better in both EE 2415 and MATH 2326.

EE 2415. CIRCUIT ANALYSIS I. 4 Hours.

Basic circuit concepts of resistor, inductor, and capacitor (RLC) components. Kirchhoff's laws, resistive network analysis, power calculations, loop and node equations, topology, basic network theorems. Dependent sources and operational amplifiers. Computer-assisted solution of circuit problems. Elementary transient time-domain analysis. Introduction to frequency domain analysis and Bode plots. Steady state A-C phasor analysis, including element laws and phasor diagrams. Problems and experimental demonstrations will be covered during recitation and laboratory sessions. Prerequisite: Grade C or better in EE 1106 and MATH 2425. Co-requisite: MATH 3319 and PHYS 1444.

EE 2440. CIRCUIT ANALYSIS WITH LAB. 4 Hours. (TCN = ENGT 1401)

For non-electrical engineering majors. Basic principles of R, L, and C components. Kirchhoff's laws, network analysis, loop and node equations, basic network theorems. Steady-state AC phasor analysis, operational amplifiers, filtering, and digital circuits. Concurrent laboratory experiments complement lecture topics. Prerequisite: Grade C or better in MATH 2425 and PHYS 1444.

EE 2441. DIGITAL DESIGN AND PROGRAMMABLE MICROCONTROLLERS. 4 Hours.

Theory and design of digital logic circuits. Number systems and binary arithmetic. Boolean algebra theorems. Optimization by algebraic and mapping methods. Logic gates, arithmetic logic units, decoders, analysis and synthesis of combinatorial logic circuits, sequential circuits. Synchronous and asynchronous state machines, hazards and races conditions with sequential circuits. Introduction of hardware description language (VHDL). Laboratory consists of "proof of concept" experiments using digital components. Prerequisite: Grade C or better in CSE 1311.

EE 3000. JUNIOR UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

EE 3140. JUNIOR PROJECT LABORATORY. 1 Hour.

Introduction to electrical engineering design concepts and strategies. Students must complete semester long projects from the areas of sensors, analog, digital, and mixed signal circuits, modules, and systems. Students are expected to use knowledge and skills previously obtained from lecture and laboratory courses (electronics, digital logic and microprocessors, and circuit analysis II) to complete their projects. The project must be well planned with clear performance objectives and constraints. Students are expected to show competency in technical writing and presentation. Prerequisite: Grade of C or better in EE 2403, EE 2441. Prerequisite or concurrent enrollment: EE 3446.

EE 3240. JUNIOR PROJECT LABORATORY. 2 Hours.

Introduction to electrical engineering design concepts and strategies, engineering ethics, and safety. Students must complete semester long projects from the areas of sensors, analog, digital, and mixed signal circuits, modules, and systems. Students are expected to use knowledge and skills previously obtained from lecture and laboratory courses to complete their projects. The project must be well planned with clear performance objectives, constraints, timeline, and deliverables. Students are expected to show competency in technical writing and presentation. Prerequisite: Must be in the professional EE program and Grade of C or better in each of the following: EE 2303, EE 2341, and EE 3346 (or concurrent enrollment).

EE 3302. FUNDAMENTALS OF POWER SYSTEMS. 3 Hours.

Introduction to power systems, three-phase circuit analysis, symmetrical components, transformer, polyphase induction motors, synchronous generators, synchronous motors, diode and diode circuits, thyristor and thyristor circuits, DC-DC switching converters, and DC-AC switching converters, Renewable energy sources. Concurrent laboratory experiments complement the course lecture topics. Prerequisite: Grade C or better in EE 3446. Corequisite: EE 3407.

EE 3310. ADVANCED MICROCONTROLLERS. 3 Hours.

Principles of operation for microcontroller, including assembly language programming, internal architecture of microcontroller, timing analysis, and interfacing techniques. Special emphasis will be placed on hardware-software interactions, design of memory systems for microcontroller and utilization of programmable peripheral devices. Prerequisite: Grade of C or better in EE 2441 and EE 2403.

EE 3314. FUNDAMENTALS OF EMBEDDED CONTROL SYSTEMS. 3 Hours.

Analyses of open-loop and close loop systems using frequency domain and state variable techniques. Analog and digital control design methods. System design requirements and specifications. Design and implementation of control system using programmable devices. Principles of operation for microcontroller, internal architecture, programming tools and techniques, timing analysis, interfacing with sensors and actuators. Real-time control applications. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2341, EE 3316, and EE 3318 (or concurrent enrollment).

EE 3316. CONTINUOUS AND DISCRETE SIGNALS AND SYSTEMS. 3 Hours.

Time-domain and frequency-domain analyses of periodic, aperiodic, continuous and discrete time signals. System abstraction, signal flow and block diagrams. Linear systems, time invariance, causality, stability, and state-space. Laplace transforms. Impulse and frequency responses of LTI systems. LTI system specification and design. Applications of LTI systems, filters and equalizers. Continuous time and discrete time (DT) signal conversion, sampling theorem, aliasing. DTFT. Time and frequency responses of LTI system to DT signals. Interpolation and LPF. Z-transform. Time and frequency domain analyses of discrete-time LTI systems. Causality and stability of DT LTI systems. Applications of DT LTI systems, FIR and IIR filters. Prerequisite: Must be in the professional EE program. Grade C or better in both EE 2347 and EE 2415.

EE 3317. LINEAR SYSTEMS. 3 Hours.

For non-electrical engineering majors. Time-domain transient analysis, convolution, Fourier Series and Transforms, Laplace Transforms and applications, transfer functions, signal flow diagrams, Bode plots, stability criteria, and sampling. Classes meet concurrently with EE 3417. ME Majors Prerequisite: Grade C or better in MATH 3330, ME Majors Corequisite: EE 2320 or equivalent. BE Majors Prerequisite: Grade C or better in MATH 3319.

EE 3318. ANALOG AND DIGITAL SIGNAL PROCESSING. 3 Hours.

Time and frequency domain analyses analog and digital signals. Time-delay and phase-shifting. Modulation and frequency shifting. ADC and DAC. System models, MA, AR, and ARMA. Analog filter specifications and design methods. Companding and matched filter. DTFT, DFT, FFT, and z-transform. Discrete time convolution. Amplitude, phase, and stability of digital filters. FIR and IIR digital filter design. Random signals and noise. Power spectral density and spectral estimation. SNR. Wiener filter. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 3316 and EE 3330 (or concurrent enrollment).

EE 3330. PROBABILITY AND STATISTICAL METHODS. 3 Hours.

Probability, random variables, functions of random variables, moments, random signals, noise, stochastic models and power spectral density. Data and statistics. Random sampling. Statistical analysis, hypothesis testing, goodness of fit test, and regression. Response of LTI systems to random signals. Rigorous mathematical concepts will be tied to engineering system issues such as characterizing uncertainty due to measurement error, component and system tolerances, and noise sources such as device noise, quantization noise, communication channel noise, and thermal noise. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2347 and EE 3316 (or concurrent enrollment).

EE 3346. CIRCUIT ANALYSIS II. 3 Hours.

Time-harmonic single-phase and poly-phase voltages and currents. Instantaneous, time-average, and complex powers. Power factor and maximum power transfer. Independent and dependent sources. Time and frequency domain analyses of open-loop and closed-loop circuits. Feedback configurations, poles and zeros, stability analysis. Oscillators and filters. Two-port networks and network parameters. Network theorems and analyses, superposition, reciprocity. Characteristics and applications of operation amplifiers. Amplifiers and active filters. Distributed networks and transmission lines. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2347 and EE 2315.

EE 3407. ELECTROMAGNETICS. 4 Hours.

Time varying electric and magnetic fields; electromagnetic (EM) sources. Laws governing EM fields and sources. Circuit and transmission line. Wave propagation on transmission line. Power flow and impedance matching. Dividers and couplers. Applications of EM theory in energy conversion. Antenna concept, EM wave radiation and polarization. Applications of EM theory in energy conversion. Waves in unbounded medium. Waves in medium with planar interfaces. Wave reflection, transmission, and scattering. Fundamentals and applications of rectangular waveguides. Fundamentals of antenna. Friis' transmission formula. Applications of EM theory in optical transmission, wireless communications, and radar. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2347, PHYS 1444, and EE 3346 (or concurrent enrollment).

EE 3444. ELECTRONICS II. 4 Hours.

Low and high frequency characteristics and circuit models for diodes, bipolar junction transistors (BJTs), and field effect transistors (FETs). Analysis and design of full spectrum small signal BJT and FET circuits. Analysis and transistor level design of active filters, oscillators, feedback configurations, and multistage differential and operational amplifiers. Concurrent laboratory exercises in support of the topics covered in class. Prerequisite: Grade C or better in EE 2403 and EE 3446.

EE 3446. CIRCUIT ANALYSIS II. 4 Hours.

Analysis and design of filters, oscillators, feedback configurations, and operational amplifiers. Dependent sources, device models, two-port networks, and mutual inductance and transformers. Network response functions, poles and zeros, network theorems, resonance, and the analysis and design of active filters. Application of phasors in steady-state circuit analysis. Introduction to distributed networks and transmission lines. Introduction to single-phase and three-phase balanced and unbalanced power networks, complex power, power factor correction, and maximum power transfer. Concurrent laboratory experiments complement lecture topics. Prerequisite: Grade C or better in EE 2347 and EE 2415.

EE 4000. UNDERGRADUATE RESEARCH. 0 Hours.**EE 4149. ENGINEERING DESIGN PROJECT. 1 Hour.**

A practicum resulting in the design, construction, and evaluation of a device or system, building on electrical or electronic knowledge and skills acquired in earlier course work, and incorporating appropriate engineering standards. The application of project management techniques in order to meet design specifications through the effective allocation of team resources, scheduling, and budgetary planning. The demonstration of the finished product/prototype through both oral presentation and a written project report. Mode of Instruction: Practicum. Prerequisite: Must be in the professional EE program and Grade of C or better in EE 4240. Grade of C or better in all prior 3000 and 4000 level EE coursework.

EE 4240. CONCEPTS & EXERCISES IN ENGINEERING PRACTICE. 2 Hours.

Integration of technical knowledge and skills with project planning, teamwork, and communication skills (written and oral). A project-oriented approach is used including the preparation of literature-based research reports and project management plans. The differences between research and product development are taught and assessed through short proposal reports. Supporting topics: technical information resources, ethics, safety, intellectual property. Students will begin their engineering capstone design experience, including team formation, project selection, background research, and preparation of preliminary project plan. Must be taken in the semester prior to EE 4149. An EE Proficiency Test is administered during the class. Prerequisite: Must be in the professional EE program and C or better in each of the following: COMS 2302, EE 3330, EE 3346, EE 3407, and ECON 2305.

EE 4301. POWER SYSTEMS ANALYSIS AND CONTROL. 3 Hours.

This course includes an introduction to synchronous machines, power flow analysis, short circuit analysis, power system controls, and the fundamentals of transient stability analysis. Prerequisite: Grade of C or better in EE 3302.

EE 4302. ENGINEERING ENTREPRENEURSHIP. 3 Hours.

Topics include special problems of newly formed firms, planning, start-up business considerations, business strategy, management basics, and business plan design. Students will engage in business and entrepreneurship training and discussion, become aware of basic business operations, and learn about inventions, intellectual property, and the patenting process. Other topics include assessment of possible markets, venture feasibility, teambuilding, and leadership. Opportunities in university environments will be discussed including incubation centers and patent licensing. We address legal issues, Small Business Innovation Research (SBIR) proposal design, SBIR funding from the National Science Foundation (NSF), National Institutes of Health (NIH), and others. Additional topics include the proposal review process, grant reporting, local high-tech business accelerators, angel-group funding, venture plans, and venture capital. Classes will feature lectures from engineering and business faculty as well as presentations by successful entrepreneurs. Course taught as EE 4302, ENGR 4302 and ENGR 5302; credit will be granted only once. Prerequisite: Student must be in an engineering professional program.

EE 4308. POWER SYSTEM MODELING AND ANALYSIS. 3 Hours.

Fundamental concepts for modeling transmission lines, distribution lines, power system generators, power transformers and power system load. The method of symmetrical components is discussed. Simulation of power systems during normal and abnormal conditions are presented. The philosophy of deregulation regarding separation of power systems into generation, transmission and distribution companies is introduced. Prerequisite: Grade of C or better in EE 3302.

EE 4310. MICROPROCESSOR SYSTEMS. 3 Hours.

Hardware/software development techniques for microprocessors with emphasis on asynchronous and synchronous memory interfaces, optimizing data throughput, and modern bus architectures. Topics include DMA controller design, SDRAM controller design, and real-world interfacing. Prerequisite: Grade of C or better in EE 3310.

EE 4311. EMBEDDED MICROCONTROLLER SYSTEMS. 3 Hours.

Hardware/software development techniques for microcontroller systems with an emphasis on hardware-software interactions, programming internal peripherals, interfacing with external sensors and devices, and real-time control applications. Prerequisite: Grade of C or better in EE 3310.

EE 4312. ADVANCED MICROPROCESSOR SYSTEMS. 3 Hours.

Study of the advanced microprocessor architectures including 32/64-bit RISC and CISC families of microprocessors will be compared based on detailed architectural analysis of the selected devices. This course may also include: address/instruction pipelines, burst cycles, memory caching and cache coherency issues, register renaming, speculative instruction execution and other performance-oriented techniques. Prerequisite: EE 4311.

EE 4313. CONTROL SYSTEMS FOR NON-EE MAJORS. 3 Hours.

For non-electrical engineering majors. Analyses of closed loop systems using frequency response, root locus, and state variable techniques. Analog and digital control design methods. System modeling, identification, and control design based on analytic and computer methods. Classes meet at the same time as EE 4314. Prerequisite: Grade of C or better in either EE 3317 or MAE 3319.

EE 4314. CONTROL SYSTEMS. 3 Hours.

Analyses of closed loop systems using frequency response, root locus, and state variable techniques. Analog and digital control design methods. System modeling, identification, and control design based on analytic and computer methods. Use of laboratory experiments with mechatronic systems to complement the course lectures. Prerequisite: Grade of C or better in EE 3316. Co-requisite EE 3318.

EE 4315. INTRODUCTION TO ROBOTICS. 3 Hours.

Overview of industrial robots. Study of principles of kinematics, dynamics, and control as applied to industrial robotic systems; robotic sensors and actuators; path planning; programming of industrial robot in the laboratory; survey of robotic applications in various modern and traditional fields; and guidelines to robot arm design and selection. Prerequisite: Grade C or better in EE 4314.

EE 4316. OP AMPS IN ANALOG SIGNAL PATHS. 3 Hours.

The course covers fundamental concepts involved in the analysis and design of a wide variety of linear and non-linear circuits that use bipolar and CMOS integrated circuit operational amplifiers (op-amps). Applications of these components in practical circuit designs are emphasized. Prerequisite: Grade of C or better in EE 3446.

EE 4317. ANALOG CMOS IC DESIGN. 3 Hours.

Analysis and design of CMOS analog integrated circuits; MOS device structure and models; single-state and differential amplifiers; current mirror and Operational Amplifier design; noise analysis and feedback; comparators and voltage references. Prerequisite: grade of C or better in EE 2403 and in EE 3444.

EE 4318. DIGITAL SIGNAL PROCESSING. 3 Hours.

Discrete time convolution. Fast convolution using the fast Fourier transform (FFT). Amplitude and phase of digital filters. Stability analyses using the Z-transform. Design of finite impulse response (FIR) digital filters through windowing and optimization approaches. Infinite Impulse Response (IIR) digital filter design approaches using transformation and optimization. Prerequisite: Grade of C or better in EE 3316 and EE 3318.

EE 4320. DIGITAL VLSI DESIGN. 3 Hours.

Introduction to Very Large Scale Integration circuit design and fabrication technology. Metal-Oxide Semiconductor (MOS) device models and digital integrated circuit design with Metal-Oxide Semiconductor Field-Effect Transistor (MOSFETs). Computer Aided Drafting (CAD) tools for VLSI design. Processing models and process flow. MOS integrated circuits for logic gates and digital systems. Prerequisite: Grade of C or better in EE 3444.

EE 4327. THEORY AND DESIGN OF ANTENNAS. 3 Hours.

Basic theory of antennas with emphasis on design and engineering application. Prerequisite: Grade of C or better in EE 3407.

EE 4328. CURRENT TOPICS IN ELECTRICAL ENGINEERING. 3 Hours.

To introduce current topics into the curriculum prior to the creation of permanent course numbers. A notice listing a descriptive course title, a course description, and the name of the instructor will be posted on the departmental webpage each time the course contents are changed. Prerequisite: Consent of instructor.

EE 4329. SEMICONDUCTOR DEVICES. 3 Hours.

Introduction to semiconductors in terms of atomic bonding and electron energy bands. Equilibrium statistics of electrons and holes. Carrier dynamics; continuity, drift, and diffusion currents; generation and recombination processes, including important optical processes. Introduction to P-N junctions, metal-semiconductor junctions; bipolar junction transistors, junction and Metal-Oxide Semiconductor Field-Effect Transistors (MOSFETs). Introduction to optoelectronic devices, including LEDs, lasers, detectors, solar cells, modulators, etc. Prerequisite: Grade of C or better in EE 3407.

EE 4330. FUNDAMENTALS OF TELECOMMUNICATIONS SYSTEMS. 3 Hours.

Examines analog and digital communication techniques including amplitude modulation, frequency modulation, and pulse code modulation. Time domain and frequency domain multiplexing. Analog and digital noise analysis, information theory. Design of communications systems. Prerequisite: Grade of C or better in EE 3316 and EE 3330. Co-requisite EE 3318.

EE 4331. DATA COMMUNICATIONS ENGINEERING. 3 Hours.

Layered approach to data communications and networking will be presented. Network models such as TCP/IP and OSI will be introduced. Protocols and technologies related to each layer will be studied in depth. For physical layer, analog and digital signaling, modulation, bandwidth, multiplexing as well as line and block coding techniques. For data link layer, various MAC layer protocols involving multiple access, error detection (CRC), wired (Ethernet) versus wireless (Wi-Fi) LANs, switching. For network layer, internet protocol (IP) and routing principle. Underlying technologies learned from this course are applicable to wide range of traditional and current data communication protocols. Performance analysis of well-known protocols using probabilistic model will also be studied. Prerequisite: Grade of C or better in EE 4330.

EE 4333. WIRELESS COMMUNICATIONS AND IoT. 3 Hours.

Fundamental principles of radio system design and propagation. Basics of cellular systems, environment, propagation models, traffic models and spectral capacity. Multiple-access techniques including FDMA (frequency division multiple access), TDMA (time division multiple access), CDMA (code division multiple access). Internet of Things (IoT) system architecture, IoT enabling technologies such as sensors and sensor networks, IoT communication and networking protocols, IoT services and applications. IoT demands, impacts, and implications on sensors technologies, big data management, and future internet design for various IoT use cases, such as smart cities, smart environments, smart homes, etc. Prerequisite: Grade of C or better in EE 3316 and EE 3330. Prerequisite or concurrent enrollment in EE 3318.

EE 4334. PROGRAMMABLE LOGIC DESIGN. 3 Hours.

Design of digital systems using programmable logic devices and high-level techniques. The course emphasizes the understanding of state-of-the-art hardware devices as well as design and simulation tools. Hardware description language will be taught and used for digital system design. Various design options and compromises will be explored for typical tasks. Projects will be assigned to develop design proficiency. Prerequisite: Grade of C or better in EE 2341.

EE 4336. FOUNDATIONS OF MEDICAL IMAGING. 3 Hours.

This course introduces the engineering, physics, mathematics, and signal processing methods fundamental to medical image acquisition and processing. X-ray projection, X-ray computed tomography, magnetic resonance imaging, and ultrasound imaging. Brief introduction to optical and infrared imaging and nuclear imaging (SPECT/PET) will be included. Open to students in an engineering or science professional program. Prerequisite: EE 3316 or equivalent.

EE 4339. RADIO FREQUENCY CIRCUIT DESIGN. 3 Hours.

Analysis of waves on ideal transmission lines, assorted practical transmission line systems, and hollow waveguides. Circuit theory for transmission line systems involving scattering parameters and the Smith chart. Microwave impedance matching techniques. Design of lumped element amplifiers from VHF to microwave frequencies. Real world microwave characterization techniques. Prerequisite: Grade of C or better in EE 3444 and EE 3407.

EE 4340. CONCEPTS & EXERCISES IN ENGINEERING PRACTICE. 3 Hours.

Integration of technical knowledge and skills with project planning, teamwork, and communication skills (written and oral). A project-oriented approach is used including the preparation of literature-based research reports, research proposals, product development proposals, and project management plans. Supporting topics: technical information resources, ethics, safety, intellectual property. Students will begin their engineering capstone design experience, including team formation, project selection, background research, and preparation of preliminary project plan. Must be taken in the semester prior to EE 4349 (Engineering Design Project). An EE Proficiency Test will be administered on first day of class. Prerequisite: Grade of C or better in each of COMS 2302, EE 3330, EE 3446, and EE 3407. Corequisite ECON 2305.

EE 4344. INTRODUCTION TO MEMS AND DEVICES. 3 Hours.

Develops the basics for microelectromechanical devices and systems including microsensors, and micromotors, principles of operation, different micromachining techniques, and thin-film technologies as they apply to MEMS. Prerequisite: EE 3407.

EE 4349. ENGINEERING DESIGN PROJECT. 3 Hours.

A practicum resulting in the design, construction, and evaluation of a device or system, building on electrical or electronic knowledge and skills acquired in earlier course work, and incorporating appropriate engineering standards. The application of project management techniques in order to meet design specifications through the effective allocation of team resources, scheduling, and budgetary planning. The demonstration of the finished product/prototype through both oral presentation and a written project report. Mode of Instruction: Practicum. Prerequisite: Grade of C or better in EE 4340. Grade of C or better in all prior 3000 and 4000 level EE coursework.

EE 4357. INTRODUCTION TO MACHINE LEARNING. 3 Hours.

The course presents fundamental principles and techniques on detecting meaningful patterns in data. Supervised learning techniques with applications in regression and classification will be presented, as well as support vector machines in classification. Further, the toolbox of neural networks will be detailed with applications in classification problems. Unsupervised learning will be studied on clustering problems. Feature extraction and dimensionality reduction will also be covered. Boosting methods will also be covered. Prerequisite: Grade of B or better in EE 3330, EE 2347, MATH 2326, and MATH 3319.

EE 4362. DIGITAL COMMUNICATIONS. 3 Hours.

Fundamental principles underlying the transmission of digital data over noisy channels. Basics of source coding techniques including entropy coding, Lempel-Ziv. Channel capacity. Spectral analysis of digital modulation techniques. Optimum receiver design and error probability performance of commonly used modulation schemes. Applications to lightwave and wireless systems. Prerequisite: Grade of C or better in EE 3318 and in EE 4330.

EE 4364. INFORMATION THEORY AND CODING. 3 Hours.

Entropy, conditional entropy, relative entropy, mutual information, transfer entropy, entropy rates of stochastic process, data compression, Huffman coding, Shannon coding, compressive sensing, channel capacity, differential entropy, rate distortion, information theoretical foundations for wireless communications such as wireless channel capacity, opportunity communications, network information theory, etc. Prerequisite: Must be in the professional EE program and grade C or better in EE 3330.

EE 4375. INTRODUCTION TO POWER ELECTRONICS. 3 Hours.

This course discusses conceptualization, analysis, and design of power electronics components, circuits, and systems. It discusses different classes of switching converters (dc-dc, ac-dc, dc-ac) and elements of power electronics (magnetic design, loads, and capacitors). Applications of power electronics in renewable energy systems and vehicular electronics are discussed. Prerequisite: Grade of C or better in EE 2403 and EE 3446.

EE 4378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty.

EE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: EE 4378.

EE 4380. PRINCIPLES OF PHOTONICS AND OPTICAL ENGINEERING. 3 Hours.

Optical fields with applications to laser, optical fibers, and photonic signal processing. Encoding, manipulating, transmitting, storing, and retrieving information using light. Light propagation including isotropic and birefringent optical media, dielectric interfaces, interference and diffraction, Gaussian beams, optical cavities and principles of laser action, optical waveguides and fibers, electro- and acousto-optic modulation. Design, analysis and application of optical devices in communications and signal processing. Prerequisite: Must be in the professional EE program and grade of C or better in EE 3407.

EE 4382. OPTICAL BIOSENSORS. 3 Hours.

Introduction to modern biological and chemical sensing for in-vivo and in-vitro disease diagnosis. Photonics and nanotechnologies for biomolecular analysis. Bio/chemical sensor principle, instrumentation, and applications. Prerequisite: Grade of C or better in EE 3407, or PHYS 3445, or PHYS 4324.

EE 4391. ADVANCED PROBLEMS IN ELECTRICAL ENGINEERING. 3 Hours.

A research project under the direction of a faculty supervisor. May be taken as a technical elective with the permission of the department.

EE 5190. ELECTRICAL ENGINEERING GRADUATE SEMINAR. 1 Hour.

Topics vary from semester to semester. May be repeated for credit. Graded F, P. Prerequisite: graduate standing or consent of the department.

EE 5191. ADVANCED STUDY IN ELECTRICAL ENGINEERING. 1 Hour.

Individual research projects in electrical engineering. Prior approval of the EE Graduate Advisor is required for enrollment. A written report is required. Graded F, I, P.

EE 5302. RANDOM SIGNALS AND NOISE. 3 Hours.

Probability, random variables, and stochastic processes in physical systems. Topics include probability space, discrete and continuous random variables, density and conditional density functions, functions of random variables, mean-square estimation, random signals, system response, optimum system design, and Markov processes.

EE 5304. CYBER-PHYSICAL SYSTEMS. 3 Hours.

Cyber-physical system fundamentals; model-based designs; data-driven analytics; co-design techniques of integrated communication, control, and computing components; implementation considerations; and applications, such as internet of things, intelligent transportation, and robot networking. Topics include but are not limited to hybrid systems, stochastic networks, uncertainty quantification, experimental design, data fusion techniques, stochastic optimal control, networking and edge computing, network control, and related software, hardware, and middleware issues.

EE 5305. ANALOG INTEGRATED CIRCUIT DESIGN. 3 Hours.

Analysis and design of basic analog integrated circuits; device physics; single-stage and differential amplifiers; current mirror and biasing technique; feedback and operational amplifier; noise analysis.

EE 5306. ELECTROMAGNETIC THEORY. 3 Hours.

Advanced study of electromagnetic theory, its content, methods, and applications. Topics include theorems in electromagnetic theory, cylindrical and spherical wave functions, waveguides, integral equation methods, scattering and diffraction.

EE 5307. LINEAR SYSTEMS ENGINEERING. 3 Hours.

Topics include state-space description of dynamic systems, analysis and design of linear systems, similarity transformation, state feedback, state observers, and matrix characterization of multivariable systems.

EE 5308. POWER SYSTEM MODELING AND ANALYSIS. 3 Hours.

Fundamental concepts for modeling transmission lines, distribution lines, power system generators, power transformers and power system load. The method of symmetrical components is discussed. Simulation of power systems during normal and abnormal conditions are presented. The philosophy of deregulation regarding separation of power systems into generation, transmission and distribution companies is introduced.

EE 5309. TOPICS IN ELECTRICAL ENGINEERING. 3 Hours.

Material may vary from semester to semester. Topics are selected from current areas of electrical engineering interest. May be repeated when topic changes.

EE 5310. DIGITAL VLSI DESIGN. 3 Hours.

Introduction of VLSI digital circuit design methodology and processing technology. Application of various design software packages for circuit analysis and layout. Design of basic CMOS digital logic circuits. Implementation of digital logic design at the transistor level.

EE 5311. VLSI SIGNAL PROCESSING ARCHITECTURES. 3 Hours.

Design and synthesis of DSP and telecommunication systems using integrated modeling, design, and verification tools. Exploration of high-level architectural transformations that can be used to design families of DSP architectures for a given signal processing algorithm. Prerequisite: EE 5350.

EE 5312. CMOS RFIC DESIGN. 3 Hours.

Basic concept of RF design; CMOS transceiver architectures for wireless communications; low noise amplifiers; mixers; oscillators; phase-locked loops; frequency synthesizer; power amplifier. Prerequisite: EE 5305.

EE 5313. MICROPROCESSOR SYSTEMS. 3 Hours.

Hardware/software development techniques for microprocessors with emphasis on asynchronous and synchronous memory interfaces, optimizing data throughput, and modern bus architectures. Topics include DMA controller design, SDRAM controller design, and real-world interfacing.

EE 5314. EMBEDDED MICROCONTROLLER SYSTEMS. 3 Hours.

Hardware/software development techniques for microcontroller systems with an emphasis on hardware-software interactions, programming internal peripherals, interfacing with external sensors and devices, and real-time control applications.

EE 5315. SYSTEM ON CHIP (SOC) DESIGN. 3 Hours.

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite: EE 5314.

EE 5316. CMOS MIXED SIGNAL IC DESIGN. 3 Hours.

Design of CMOS mixed signal ICs with emphasis on full custom chip design. Comparators, switched-capacitor circuits, converter architectures, analog-to-digital converters, digital-to-analog converters, integrator-based filters. A project is required, including design, simulation and layout using an IC design tool. Prerequisite: EE 5305 or EE 5318.

EE 5317. ADVANCED DIGITAL VLSI DESIGN. 3 Hours.

Design of logical gates using CMOS technologies; static and dynamic circuit techniques; advanced techniques in logic circuits; general VLSI system components design; arithmetic circuits in VLSI; low power design; chip layout strategies. A design project using computer tools is required. Prerequisite: EE 5310.

EE 5319. TOPICS IN DIGITAL SYSTEMS. 3 Hours.

Formal instruction in selected topics in digital systems and microcomputers. May be repeated when topic changes.

EE 5321. OPTIMAL CONTROL. 3 Hours.

Design of optimal control systems. Topics include optimization under constraints, linear quadratic regulators, Ricatti's equation, suboptimal control, dynamic programming, calculus of variations, and Pontryagin's minimum principle. A prior introductory systems course, such as EE 5307, is desirable.

EE 5322. INTELLIGENT CONTROL SYSTEMS. 3 Hours.

Principles of intelligent control including adaptive, learning, and self-organizing systems. Neural networks and fuzzy logic systems for feedback control. Mobile robots. Discrete event systems and decision-making supervisory control systems. Manufacturing work-cell control. Advanced sensor processing including Kalman filtering and sensor fusion. A prior introductory systems course, such as EE 5307, is desirable.

EE 5323. NONLINEAR SYSTEMS. 3 Hours.

Analysis and design of nonlinear systems. A general course in nonlinear systems with examples from multiple engineering and science disciplines. Topics include phase planes, Lyapunov's theory, describing functions, iterative maps, chaos and fractals, and nonlinear optimization methods. A prior introductory systems course, such as EE 5307, is desirable.

EE 5325. ROBOTICS. 3 Hours.

Principles of kinematics, dynamics, and control of robot manipulators and mobile robots. Analysis of dynamical equations and design of robot control systems using modern nonlinear systems techniques. Computer simulation of robotic and mobile robot systems. Path planning, workcell coordination and control. Also listed as ME 5337.

EE 5327. SYSTEM IDENTIFICATION AND ESTIMATION. 3 Hours.

Introduction to parametric and non-parametric modeling and identification and estimation methods for linear and nonlinear systems. Methods covered include linear and non-linear least squares, LTI (linear time-invariant) black-box models, empirical transfer function estimate, state-space and frequency domain model reduction methods, Kalman filtering and self-tuning adaptive control. Introductory systems and signals courses, such as EE 5302 and EE 5307, are desirable.

EE 5329. TOPICS IN SYSTEMS ENGINEERING. 3 Hours.

Formal instruction in selected topics in systems engineering, such as advanced controls, systems performance, manufacturing, graphics subsystems design, stochastic control, decision and information theory, hierarchical or distributed parameter control. May be repeated when topic changes.

EE 5330. DISTRIBUTED DECISION AND CONTROL. 3 Hours.

Topics include cooperative decision and control algorithms for networked teams of dynamical agents on communication graphs. Included are multi-agent local decision protocols that yield global team behavior, synchronization of dynamics including coupled oscillators and chaotic systems, analysis of stability and consensus convergence behaviors, and group decision and adversarial games on graphs. Applications are to engineering systems such as dynamical systems on communications networks, networked teams of autonomous systems and vehicles, and formation flight.

EE 5331. RF SYSTEMS ENGINEERING. 3 Hours.

Topics include design and performance analysis of transmitter and receiver systems for communications and radar, including digital and analog modulators, transmit lineups, power amplifiers and linearization techniques, feedline structures, antennas, RF propagation channels, receiver lineups, and demodulation techniques. Additional topics include frequency planning, noise and interference mitigation, and regulatory and compliance issues.

EE 5332. ANTENNA SYSTEM ANALYSIS. 3 Hours.

Fundamental study of antennas and antenna design techniques. Topics include analysis of wire antennas, aperture antennas, patch antennas, horns and reflector antennas, and selected novel antennas. Antenna synthesis and measurements. Prerequisite: EE 5306.

EE 5333. WAVE PROPAGATION AND SCATTERING. 3 Hours.

Fundamentals of electromagnetic wave propagation and scattering in radar and wireless communications. Propagation over irregular terrain, in built-up areas, and inside buildings. Scattering from objects and area extensive targets. Propagation and scattering modeling and their applications in wireless communications and remote sensing. Signal statistics. Prerequisites: EE 5302 and EE 5306.

EE 5334. FUNDAMENTALS OF RADAR REMOTE SENSING. 3 Hours.

Active and passive remote sensing systems, platforms for remote sensing, radar equation, interaction of electromagnetic waves with matter, radar cross section, scattering from area extensive targets, surface scattering, volume scattering, radiative transfer theory, radar data collection and analysis, retrieval of target parameters, and subsurface sensing.

EE 5335. FUNDAMENTALS OF RADAR IMAGING. 3 Hours.

Radar system, electromagnetic waves scattering from targets, radar signal and noise, detection and extraction of signal from noise or clutter, range and Doppler profiles, ambiguity function, radar image formation, real aperture radar imaging, SAR imaging, ISAR imaging, and superresolution radar imaging techniques.

EE 5336. FOUNDATIONS OF MEDICAL IMAGING. 3 Hours.

This course introduces the engineering, physics, mathematics, and signal processing methods fundamental to medical image acquisition and processing: X-ray projection, X-ray computed tomography, magnetic resonance imaging, and ultrasound imaging. Brief introduction to optical and infrared imaging and nuclear imaging (SPECT/PET) will be included. Open to graduate students in College of Engineering or College of Science.

EE 5338. COMPUTATIONAL METHODS IN ELECTRICAL ENGINEERING. 3 Hours.

Mathematical and computational methods to analyze physical phenomena in electrical engineering, including Fourier transformation, finite difference method, finite element method, and integral equation method.

EE 5339. TOPICS IN ELECTROMAGNETICS. 3 Hours.

Formal instruction in selected topics in electromagnetics. May be repeated when topic changes.

EE 5340. SEMICONDUCTOR DEVICE THEORY. 3 Hours.

Quantum mechanics applicable to semiconductor theory. Energy band theory, density of states and effective mass theory. Intrinsic and extrinsic semiconductors, equilibrium statistics for electrons and holes. Transport, generation and recombination of excess carriers. Device equations and physics. Theory and performance of p-n and Schottky diodes, bipolar and MOS transistor electronic devices, and optoelectronic devices.

EE 5341. ELECTRONIC MATERIALS: FUNDAMENTALS AND APPLICATIONS. 3 Hours.

Fundamental theory required for the study of electronic materials: waves and particles, quantum mechanics, crystal structures, chemical bonds, and band theory. Materials and properties considered will be metals, semiconductors, and dielectrics including effective mass, doping, and carrier statistics, and electronic, dielectric, magnetic, and optical properties of materials as applied to integrated circuits, wireless communication, optoelectronics, optical communication, and data storage.

EE 5342. SEMICONDUCTOR DEVICE MODELING AND CHARACTERIZATION. 3 Hours.

Device models and characterization procedures for the pn junction and Schottky diodes, the BJT, JFET, MOSFET, HBT, and optical sources and detectors. SPICE derived and higher level circuit simulator models will be presented. Prerequisite: EE 5340 or EE 5341.

EE 5343. SILICON INTEGRATED CIRCUIT FABRICATION TECHNOLOGY. 3 Hours.

Basic integrated circuit fabrication processes: crystal growth (thin film and bulk), thermal oxidation, dopant diffusion/implantation, thin film deposition/etching, and lithography. Introduction to process simulators, such as SUPREM. Fabrication and characterization of resistors, MOS capacitors, junction diodes and MOSFET devices. Prerequisite: Pass the NanoFAB Safety and Clean Room Protocol test.

EE 5344. INTRODUCTION TO MICROELECTROMECHANICAL SYSTEMS (MEMS) AND DEVICES. 3 Hours.

Develops the basics for microelectromechanical devices and systems including microsensors, and micromotors, principles of operation, different micromachining techniques, and thin-film technologies as they apply to MEMS.

EE 5345. INTRODUCTION TO BIO-NANOTECHNOLOGY. 3 Hours.

Introduction to the area of bio-nanotechnology. Basics of nanotechnology as applicable to biological and biomedical sensing, therapy and diagnostics. Theory, fabrication, techniques and uses of nano-scale devices and objects in biomedical and biology.

EE 5346. MICROWAVE DEVICES. 3 Hours.

Device physics and applications of microwave semiconductor devices and vacuum tubes. Topics include operation, modeling and characterization of MESFETs and HEMTs, microwave diodes, and microwave vacuum tubes. Prerequisite: EE 5340 and EE 5341.

EE 5348. RADIO-FREQUENCY CIRCUIT DESIGN. 3 Hours.

Design of lumped- and distributed-element radio-frequency circuits; scattering parameters; impedance-matching circuits; transmission line theory and design; low noise amplifiers; power amplifiers; resonant circuits; noise analysis; RF filter design. Prerequisite: EE 5305.

EE 5349. TOPICS IN INTEGRATED CIRCUIT TECHNOLOGY. 3 Hours.

Formal instruction in selected topics in integrated circuit technology. May be repeated when topic changes.

EE 5350. DIGITAL SIGNAL PROCESSING. 3 Hours.

Time and frequency domain analyses of linear time invariant systems. Stability analyses of causal and non-causal systems using the Z-transform. FIR digital filter design. Design of frequency selective IIR digital filters using frequency transformations and the bilinear transform. Design of infinite and finite impulse response filters.

EE 5351. DIGITAL VIDEO CODING. 3 Hours.

Fundamentals, principles, concepts and techniques of data compression such as Huffman, Lempel-Ziv, Arithmetic, Facsimile, Transform, DPCM, VQ, and Hybrid coding and applications in ITU, ISO, and IEC standards related to audio, video, and image compression.

EE 5352. STATISTICAL SIGNAL PROCESSING. 3 Hours.

Estimation of autocorrelations, cross-correlations and power spectral densities. Least squares filter design via Toeplitz recursion and autoregressive modeling. Steepest descent applications in adaptive noise cancellation and signal recovery. Algorithm development using maximum likelihood and minimum mean square error approaches. Lower bounds on estimation error variance. Prerequisites: EE 5350 or equivalent.

EE 5353. NEURAL NETWORKS AND DEEP LEARNING. 3 Hours.

First and second order training algorithms for both shallow and deep neural networks. Initialization lemmas. Approximation of continuous functions and Bayes discriminants using feedforward networks. Structure and training of convolutional networks, and their relationship to conventional pattern recognition systems. Analyses of drop out and mini-batches. Methods for evaluating network performance. Applications in pattern recognition, estimation and forecasting.

EE 5354. MACHINE LEARNING. 3 Hours.

Fundamental principles and techniques on detecting meaning patterns in data. Supervised learning with applications in regression and classification. Kernel methods and nonlinear spaces along with support vector machines in classification and training of neural networks. Clustering techniques in unsupervised learning. Feature extraction and dimensionality reduction. Graphical models and Hidden Markov models for sequential data and latent variables. Advanced boosting methods, recommended systems as well as online and reinforcement learning techniques.

EE 5355. DISCRETE TRANSFORMS AND THEIR APPLICATIONS. 3 Hours.

Principles and properties of discrete transforms such as discrete Fourier, discrete cosine, Walsh-Hadamard, slant, Haar, discrete sine, discrete Hartley, LOT and Wavelet transforms, and their applications in signal and image processing.

EE 5356. DIGITAL IMAGE PROCESSING. 3 Hours.

Digital image processing as applied to image sampling and quantization, image perception, image enhancement, image restoration, image reconstruction from projections, and filtering and image coding.

EE 5357. STATISTICAL PATTERN RECOGNITION. 3 Hours.

Theories of optimal feature extraction for statistical pattern recognition. Feature extraction using transform based methods, convolutional and other block based approaches. The relationships of Bayes discriminants to neural net, nearest neighbor, SVM, and deep classifiers. Sensor fusion in conventional and convolutional systems. Feature selection using transformation and subsetting approaches.

EE 5358. COMPUTER VISION. 3 Hours.

Techniques for the interpretation, analysis, and classification of digital images. Methods for segmentation, feature extraction, object recognition, stereo vision and 3-D modeling. A research project will be assigned.

EE 5359. TOPICS IN SIGNAL PROCESSING. 3 Hours.

Formal instruction in selected topics in signal processing. May be repeated when topic changes.

EE 5360. DATA COMMUNICATIONS ENGINEERING. 3 Hours.

Layered approach to data communications and networking will be presented. Network models such as TCP/IP and OSI will be introduced. Protocols and technologies related to each layer will be studied in depth. For physical layer, analog and digital signaling, modulation, bandwidth, multiplexing as well as line and block coding techniques. For data link layer, various MAC layer protocols involving multiple access, error detection (CRC), wired (Ethernet) versus wireless (Wi-Fi) LANs, switching. For network layer, internet protocol (IP) and routing principle. Underlying technologies learned from this course are applicable to wide range of traditional and current data communication protocols. Performance analysis of well-known protocols using probabilistic model will also be studied.

EE 5362. DIGITAL COMMUNICATIONS. 3 Hours.

The course presents fundamental principles underlying the transmission and reception of digital information, and studies the different parts of a modern digital communication system. Specifically, the course will touch upon different digital modulation schemes, as well as the design and performance analysis of optimum receivers for additive white Gaussian noise (AWGN) channels. Some concepts of information theory and channel coding will also be studied. Further, techniques for carrier and symbol synchronization will be presented. Communication over bandlimited channels will also be explored, and the effects of intersymbol interference (ISI), as well as channel equalization techniques will be considered.

EE 5364. INFORMATION THEORY AND CODING. 3 Hours.

Entropy, conditional entropy, relative entropy, mutual information, transfer entropy, entropy rates of stochastic process, data compression, Huffman coding, Shannon coding, compressive sensing, channel capacity, differential entropy, rate distortion, information theoretical foundations for wireless communications such as wireless channel capacity, opportunity communications, network information theory, low density parity check (LDPC) codes, etc.

EE 5365. FIBER OPTIC TRANSMISSION SYSTEMS. 3 Hours.

Propagation in optical fibers, characteristics and manufacture of fibers, semiconductor lightwave sources and detectors, optical transmitters and receivers, lightwave transmission systems for wide area and local area networks.

EE 5368. WIRELESS COMMUNICATION AND IoT. 3 Hours.

Fundamental principles of radio system design and propagation. Basics of cellular systems, environment, propagation models, traffic models and spectral capacity. Multiple-access techniques including FDMA (frequency division multiple access), TDMA (time division multiple access), CDMA (code division multiple access). Machine learning for wireless communications. Internet of Things (IoT) system architecture, IoT enabling technologies such as sensors and sensor networks, IoT communication and networking protocols, IoT services and applications. IoT demands, impacts, and implications on sensors technologies, big data management, and future internet design for various IoT use cases, such as smart cities, smart environments, smart homes, etc.

EE 5369. TOPICS IN COMMUNICATIONS. 3 Hours.

Formal instruction in selected topics in communications. May be repeated when topic changes.

EE 5370. ELECTRIC MOTOR DRIVES. 3 Hours.

Fundamentals of electromechanical energy conversion devices and systems; Principles of inductors, transformers, force/torque formulation, and reference frame transformation; induction motors and permanent magnet machines; Inverter topologies and switching strategies; Scalar and vector control methods for machine drive systems.

EE 5371. POWER SYSTEM PLANNING, OPERATION, AND CONTROL IN A DEREGULATED ENVIRONMENT. 3 Hours.

Current market structure and practices are discussed. The issues of system planning, operation, and control in a deregulated environment are addressed. Prerequisite: EE 5308.

EE 5372. CONGESTION MANAGEMENT. 3 Hours.

Phenomena of congestion and transmission pricing are presented. Thermal related congestion, such as power flow, and stability related congestion, such as voltage stability, transient stability, and dynamic stability, are covered. The effects of reactive power are discussed. Reliability and security issues of power transmission systems are presented. Congestion management and congestion relief measures are discussed. Prerequisite: EE 5308.

EE 5373. UNBUNDLING SERVICES OF A DEREGULATED POWER SYSTEM. 3 Hours.

The fundamental operating functions of a deregulated power system are presented. Unbundling of these functions and cost allocations are discussed. Topics of ancillary services, power marketing, price forecasting, and load forecasting are covered. Prerequisite: EE 5308.

EE 5374. POWER SYSTEM PROTECTIVE RELAYING. 3 Hours.

Fundamental understanding of symmetrical components, applications of symmetrical components in system protection, philosophy of power system protection, various protective relay systems, and the special considerations in applying the microprocessor based relays are covered. Experiments utilizing the Power System Simulation Laboratory are required.

EE 5375. POWER SYSTEM DISTRIBUTION. 3 Hours.

The basic functions of a Distribution Company are presented. Load representation, distribution load flow and the philosophy of simulation for a distribution system are discussed in detail.

EE 5376. POWER SYSTEM RELIABILITY IN PLANNING AND OPERATION. 3 Hours.

Loss of Load indices, Loss of Energy indices, Frequency and Duration methods, Interconnected Reliability methods, and Composite Generation and Transmission Reliability methods will be covered.

EE 5377. PROGRAMMABLE LOGIC CONTROLLERS IN INDUSTRIAL AUTOMATION. 3 Hours.

The application of Programmable Logic Controllers (PLC) in industrial automation and energy systems monitoring will be covered. Transducers, Supervisory Control and Data Acquisition (SCADA) systems, and Distributed Control Systems (DCS) will be discussed. Material covered is also applicable to various mechanical and civil engineering fields, thus enrollment of graduate engineering students from other disciplines is welcome. Experiments utilizing the Power System Simulation Laboratory are required.

EE 5378. POWER QUALITY. 3 Hours.

Principles of harmonics and filtering, source of voltage surges and surge protection, causes of voltage sags, flickers, and interruptions, and voltage supporting devices, and utility and end-user strategies for improving power quality are covered.

EE 5379. TOPICS IN POWER SYSTEM ENGINEERING. 3 Hours.

Formal instruction in selected topics in power system engineering. May be repeated when topic changes.

EE 5380. PRINCIPLES OF PHOTONICS AND OPTICAL ENGINEERING. 3 Hours.

Optical fields with applications to laser, optical fibers, and photonic signal processing. Encoding, manipulating, transmitting, storing, and retrieving information using light. Light propagation including isotropic and birefringent optical media, dielectric interfaces, interference and diffraction, Gaussian beams, optical cavities and principles of laser action, optical waveguides and fibers, electro- and acousto-optic modulation. Design, analysis and application of optical devices in communications and signal processing.

EE 5381. FOUNDATIONS IN SEMICONDUCTORS. 3 Hours.

Electronic properties of semiconductors affecting semiconductor devices: quantum behavior; Kronig-Penny model; energy bands; carrier statistics; density of states; one, two, and three dimensional systems; carrier transport; thermoelectric effects; surface and bulk generation-recombination statistics; continuity equations and their solutions; optical properties; semiconductor characterization techniques.

EE 5382. OPTICAL DETECTORS AND RADIATION. 3 Hours.

Basic principles of optical detectors used in imaging and communications. The course focuses on infrared detectors. Geometric optics, blackbody radiation, radiometry, photon detection mechanisms, thermal detection mechanisms, noise in optical detectors, figures of merit for detectors, photovoltaic detectors, photoconductive detectors, bolometers, pyroelectric detectors, and quantum well detectors.

EE 5383. SOLAR ELECTRICITY & PHOTOVOLTAICS. 3 Hours.

Solar radiation and other forms of renewable energy: wind, tide, biomass and hydropower. Fundamental theory of photovoltaics: crystal structures, band theory, semiconductors, doping, carrier statistics, optical absorption, and p-n junctions. Status of solar cell, including cost, optical design, system engineering, silicon solar cells and thin film solar cells. Prospects of solar cells, regarding low-cost and high-efficiency solar cells. Prerequisite: EE 5340 or EE 5341.

EE 5384. OPTOELECTRONIC DEVICES FOR COMMUNICATION. 3 Hours.

Electronic and optical processes in semiconductors. Light emitting diodes. Laser diodes: structures, properties and operating principles. Photodetectors and solar cells. Noise and the photoreceiver. Optoelectronic modulators and switching devices. Systems needs and new device challenges.

EE 5385. NONLINEAR OPTICS. 3 Hours.

Nonlinear optical processes and applications in crystals, optical fibers and waveguides. Second- and third- order nonlinear susceptibility, symmetry properties, coupled-wave propagation, phase-matching techniques, sum- and difference-frequency generation, parametric amplification, four-wave mixing, self- and cross-phase modulation, soliton propagation, and Raman scattering.

EE 5386. INTEGRATED OPTICS. 3 Hours.

Theory and techniques of integrated optics including optical waveguiding, coupling, modulation, grating diffraction, detection and integrated systems.

EE 5387. FOURIER OPTICS AND HOLOGRAPHY. 3 Hours.

Theory of Fourier optics and holography including scalar diffraction theory, Fresnel and Fraunhofer diffraction, Fourier transforming properties of lenses, optical imaging systems, spatial filtering, and the theory and applications of holography. Prerequisite: EE 5306.

EE 5388. LASERS. 3 Hours.

Propagation of optical rays and waves, Gaussian laser beams, laser resonators, atomic systems, lasing and population inversion, laser amplifiers, practical gas and solid-state lasers including continuous-wave and pulsed lasers, mode locking, Q-switching, frequency doubling, tunable lasers, semiconductor lasers, vertical-cavity lasers and applications of lasers.

EE 5389. TOPICS IN OPTICS. 3 Hours.

Formal instruction in selected topics in optics. May be repeated when topic changes.

EE 5391. ADVANCED STUDY IN ELECTRICAL ENGINEERING. 3 Hours.

Individual research projects in electrical engineering. Prior approval of the EE Graduate Advisor is required for enrollment. A written report is required. Graded F,P,R.

EE 5392. PROJECT IN ELECTRICAL ENGINEERING. 3 Hours.

Individual research projects performed for fulfilling the requirements of the thesis substitute option. Prior approval of the EE graduate advisor is required for enrollment. A written and oral report is required. Graded F, P, R.

EE 5398. THESIS. 3 Hours.

Graded F, P, R. Prerequisite: Graduate standing in electrical engineering.

EE 5698. THESIS. 6 Hours.

Graded F, P, R. Prerequisite: Graduate standing in electrical engineering.

EE 6313. ADVANCED MICROPROCESSOR SYSTEMS. 3 Hours.

Study of the advanced microprocessor architectures including 32/64-bit RISC and CISC families of microprocessors will be compared based on detailed architectural analysis of the selected devices. Topics include: address/instruction pipelines, burst cycles, memory caching and cache coherency issues, register renaming, speculative instruction execution and other performance-oriented techniques. Prerequisite: EE 5313.

EE 6314. ADVANCED EMBEDDED MICROCONTROLLER SYSTEMS. 3 Hours.

Study of advanced microcontroller system designs with an emphasis on multi-tasking, real-time control of devices. Topics include: design of real-time control systems, design of bootloaders, USB peripherals, and Ethernet applications. Prerequisite: EE 5314.

EE 6321. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty.

EE 6322. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: EE 6321.

EE 6342. ADVANCED QUANTUM DEVICES. 3 Hours.

Advanced concepts in quantum theory of semiconductors. Epitaxial growth and characterization of heterostructures, quantum wells, and superlattices including strained layers; electronic and optical properties of these structures; electronic and optoelectronic devices based on quantum wells and superlattices. Prerequisite: Graduate standing.

EE 6343. QUANTUM WELL LASERS. 3 Hours.

Introduction to semiconductor heterostructures and quantum wells. Quantum theory of optical processes and laser operation. Threshold, spectral, and dynamical behavior. Modern laser structures and technologies, including strained-layer and surface emitting lasers. Prerequisite: EE 5340 and EE 5341.

EE 6344. NANOSYSTEMS AND QUANTUM ELECTRONIC DEVICES. 3 Hours.

Design, analysis, and techniques for conceptualizing and fabricating nanoscale systems. Role of quantum confinement and mesoscopic behavior, phase coherence, quantum transport, single electron devices, semiconductor heterostructures, self-assembly and molecular electronic schemes, lithographic methods, atomic epitaxy, and surface analysis techniques. Prerequisite: EE 5340 and EE 5341.

EE 6345. ADVANCED MEMS -- MICROELECTROMECHANICAL SYSTEMS. 3 Hours.

Microelectromechanical systems (MEMS) and devices including micro-actuators and optical MEMS. Application strategy of MEMS; fabrication and design; actuation mechanism and architectures; optical sensor and communication applications. Mask layout and hands-on design, fabrication procedures, design rules, demonstrated examples, and integration architectures. Prerequisite: EE 5344.

EE 6353. CONVEX OPTIMIZATION FOR ENGINEERS. 3 Hours.

This course presents an overview of standard methods in convex optimization with applications to real-world problems from multiple areas of engineering and sciences including, signal processing, machine learning, control, networks, power system analysis, mechanical and aerospace, and circuit design. Course materials include advanced linear algebra, numerical algorithms, constrained and unconstrained optimization, duality theory, semidefinite programming, nonlinear and mixed-integer optimization, convex algebraic geometry, and several engineering applications.

EE 6356. IMAGE AND VIDEO CODING. 3 Hours.

Fundamentals, principles, concepts, and techniques of data (image/video/audio) compression such as Huffman coding, arithmetic coding, Lempel-Ziv coding, facsimile coding, scalar and vector quantization, DPCM, PCM, sub-band coding, transform coding, hybrid coding and their applications. Prerequisite: EE 5350.

EE 6364. ADVANCED DATA NETWORKS. 3 Hours.

Network performance analysis, link and upper layer. Internet and ATM protocols, Internet routing and traffic management, ATM switch design and ATM traffic management. Prerequisite: EE 5360.

EE 6365. ADVANCED FIBER OPTICS SYSTEMS. 3 Hours.

Course reviews the modern WDM systems and methods of their design. Topics include architecture of state-of-the-art WDM systems; design of optical amplifiers; signal-to-noise-ratio budget; estimation of various system impairments; popular modulation formats; transmitter and receiver design issues; balancing optical nonlinearity and dispersion; optical networking; and characterization of WDM system's performance. Familiarity with fiber optics and telecommunications is desirable.

EE 6367. ADVANCED AND NEXT-G WIRELESS COMMUNICATIONS. 3 Hours.

Performance analysis of wireless communication systems with multiple input multiple output (MIMO). Space time coding design criteria, space time trellis codes, space time block codes. The next-G wireless communications including mm-wave communications, advanced channel coding, BCJR decoding, Turbo codes, Polar codes, and selected topics in Next-G wireless communications.

EE 6373. RENEWABLE ENERGY SYSTEMS. 3 Hours.

Wind energy harvest, solar energy sources and harvesting, hydropower resources, geothermal, fuel cell and hydrogen economy, power grid interface and distributed generation, microscopic energy harvest from vibration and thermal, role of power electronics in integration of renewable energy systems. Familiarity with the principles of power electronics and electric power recommended.

EE 6375. POWER ELECTRONICS ENGINEERING. 3 Hours.

The course presents selected topics in modeling and analysis of power electronics devices and systems, including dc-dc and dc-ac converters, studies different converter topologies, and investigates various control techniques. The course content helps graduate students to develop and/or improve their research skills in power and energy systems.

EE 6381. NANOPHOTONICS. 3 Hours.

Introduction to nanophotonic materials, devices, systems integration, and applications. Principles of nanoscale structures, quantum dots, photonic crystals, near field optics, plasmonics and metamaterials. Design, modeling, synthesis and fabrication of nano-structures and devices. Scaling of photonic components and optoelectronic integration.

EE 6382. OPTICAL BIOSENSORS: INSTRUMENTATION AND TECHNIQUES. 3 Hours.

Introduction to modern biological and chemical sensing for in-vivo and in-vitro disease diagnosis. Photonics and nanotechnologies for biomolecular analysis. Bio/chemical sensor principle, instrumentation, and applications.

EE 6397. RESEARCH IN ELECTRICAL ENGINEERING. 3 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of electrical engineering. Graded F, P, R.

EE 6399. DISSERTATION. 3 Hours.

Graded F, R.

EE 6697. RESEARCH IN ELECTRICAL ENGINEERING. 6 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of electrical engineering. Graded F, P, R.

EE 6699. DISSERTATION. 6 Hours.

Graded F, R, P, W.

EE 6997. RESEARCH IN ELECTRICAL ENGINEERING. 9 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of electrical engineering. Graded F, P, R.

EE 6999. DISSERTATION. 9 Hours.

Graded F, P, R.

EE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Electrical Engineering - Graduate Programs

Objective

The course offerings provide the student with an opportunity to broaden as well as to intensify his or her knowledge in a number of areas of electrical engineering. The student, with the aid of a faculty adviser, may plan a program in any one of a number of fields of specialization within electrical engineering or from the offerings of related departments in science and engineering.

Graduate study and research are offered in the areas of:

1. Digital and Microprocessor/Controller Systems: Digital Signal Processors, Embedded Microcontrollers, Microprocessors, Advanced Microprocessor Systems
2. Solid-State Devices, Circuits and Systems: Semiconductor Theory, Microwave Devices and Circuits, Analog Electronics.
3. Systems and Controls: Systems, Controls, Manufacturing, Discrete Event Control, Neural and Fuzzy Control, Nonlinear Modern Control, Biomedical Signal Processing and Instrumentation
4. Electromagnetic Fields and Applications: Remote Sensing, Electromagnetic Fields, Propagation, Scattering, Radiation, and Microwave Systems.
5. Digital Signal and Image Processing: Vision Systems, Neural Networks, Statistical Signal Processing, Nonlinear Image Processing, Virtual Prototyping, and Virtual Environments.
6. Telecommunications and Information Systems: Information Transmission and Communication Systems
7. Power Systems: Efficient Operation, Generation, Transmission, Distribution, Deregulation
8. Optical Devices and Systems: Optics, Electro-optics, Diffractive Optics, Nonlinear Optics, and Lasers
9. Nanotechnology and MEMS - Materials and Devices: Quantum Electronic Devices, Semiconductor Surfaces and Interfaces, Single Electron Devices, Sensors and Detectors, Carbon Nanotube Devices, Noise and Reliability in Nano-Electronic Devices, Microactuators, RF MEMS, Polymer Electronics, and Nanophotonics
10. Renewable Energy Systems and Vehicular Technology: Power Electronics Engineering, Motor Drives, Renewable Energy Systems, Grid-Integration, and Vehicular Power Structure

The program is designed to satisfy the needs of students pursuing master's and doctoral degrees and to provide for the student seeking to increase knowledge in areas of electrical engineering related to engineering practice. The courses offered will provide practicing engineers with advanced, up-to-date education in electrical engineering.

Continuation

The Electrical Engineering Graduate Program, in fulfillment of its responsibility to graduate highly qualified engineers, has established certain policies and procedures. In addition to the requirements of the Graduate School listed elsewhere, to continue in the program each electrical engineering graduate student must maintain at least a B (3.0) GPA in all electrical engineering coursework and at least a B (3.0) GPA in all coursework for M.S. students. A student working toward a Ph.D. must maintain a 3.5 GPA in all electrical engineering coursework and at least a 3.5 GPA in all coursework.

Admission Criteria

The admission process considers all of the application material including official transcripts, GRE and TOEFL or IELTS scores. No single objective factor is used to finalize the decision for admission or to deny admission. It is expected that an applicant have background in such areas as linear systems, dc and ac electronics circuits, static and dynamic electromagnetic fields, microprocessors, among the courses completed in a typical electrical engineering curriculum. Students with a BS in other fields are encouraged to apply, but they may be required to remedy a lack of required EE courses by taking some undergraduate EE courses. An attempt will be made to match the technical aspirations of the potential graduate students with the departmental resources in order to provide a stimulating academic environment for the students and their graduate education.

Criteria concerning (1) unconditional admission, (2) provisional admission, (3) probationary admission, (4) deferred admission, (5) denial of admission, and (6) fellowship, are given below.

1. Admission with Unconditional Status: The Department has two alternative sets of conditions that allow applicants to be unconditionally admitted to the MS program. The Departmental Graduate Advisor(s) reviews all applications and determines if they qualify for admission under one of these two sets of criteria. Applicants who are not unconditionally admitted may be admitted with provisional or probationary status, their admission may be deferred or admission may be denied.

Unconditional Admission Set #1: GRE Condition

A typical MS applicant who is "admitted" will have met the following admission requirements.

- The minimum undergraduate GPA requirement - For MSEE admission 3.25 (on a 4.0 scale) based on upper division coursework (junior and senior level or equivalent)
- Relevance of the student's undergraduate degree(background) to the EE curriculum.
- Rigor of the student's Bachelor's degree.
- Reputation of the University/College that the student received his/her previous degrees

- GRE scores of at least the following:
Quantitative score
= 720 (new scale: 156) for M.S.
or
= 750 (new scale: 159) for Ph.D.
Verbal score = 400 (new scale: 146)
Analytical Writing = 3 for M.S. or =3.5 for Ph.D
- For an International student, an additional requirement beyond those stated above: The applicant must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog.

Unconditional Admission Set #2: GRE Waiver A typical applicant who is "admitted" will have met the following admission requirements.

- The student must have graduated from or be in the final year of the EE bachelor's degree program*:
- at UT Arlington
- at another reputable ABET-accredited EE bachelor's degree program

or

- at other select universities.**

*Students admitted during the final year of undergraduate study must demonstrate successful completion of the bachelor's degree.

**Subject to Graduate Advisor approval.

- The student's undergraduate grade-point average must equal or exceed 3.25 in the following calculations:
- as calculated for admission to the Graduate School;
- overall;
- in the major field; and
- in all upper-division work

2. Admission with Provisional status: An applicant unable to supply all required official documentation prior to the admission deadline, but whose available documentation otherwise appears to meet admission requirements may be granted provisional admission.

3. Admission with Probationary status: An applicant whose undergraduate courses do not cover the breadth required for a MS student.

4. Deferred status: A deferred decision may be granted when a file is incomplete.

5. Denied Status: An applicant that does not meet categories 1, 2, 3 or 4 above will be denied admission.

6. Fellowships: Award of a fellowship will be based on the criteria required by the sponsor agency (including the graduate school) on a competitive basis.

Master's Degree Requirements

Master's degree requirements are described in the general catalog section titled Requirements for the Master's Degree/Degree Plans and Hours Required. The MSEE degree options available are thesis option, thesis substitute option and non-thesis option. The courses taken for all degrees must be distributed over three of the nine areas given in the Objective section. The MSEE program of work in electrical engineering may include up to nine graduate level semester hours of supporting courses outside the Electrical Engineering Department in math, science and engineering. The Graduate Advisor must approve supporting courses that are permitted on a degree plan. The courses approved outside electrical engineering may be used in lieu of one of the three distribution areas. The thesis option requires 24 semester hours plus six semester hours of thesis (30 semester hours). The thesis substitute option requires 30 semester hours of which three semester hours must be in the thesis substitute project. The non-thesis option requires 30 semester hours.

The EE department also offers a MS Fast Track option. Information about this option can be obtained from the EE Graduate and Undergraduate Advisors.

Technical Areas, Courses, and Technical Proficiency Courses

MSEE students must take courses from three Technical Areas. Non-thesis students must take one technical proficiency course from each of three areas, and earn at least a 3.3 GPA in those three courses.

Technical Areas	Courses	Technical Proficiency Courses
1. Digital and Microprocessor/Controller Systems	EE 5313	EE 5313 - Microprocessor Systems
	EE 5314	Approved Substitution: EE
	EE 5315	
	EE 6313	
	EE 6314	

2. Solid State Devices, Circuits and Systems	EE 5305	EE 5305 - Advanced Electronics
	EE 5310	EE 5310 - Digital VLSI Design
	EE 5311	EE 5340 - Semiconductor Device Theory
	EE 5312	EE 5341 - Fundamentals for Semiconductor Devices
	EE 5316	Approved Substitution: EE
	EE 5317	
	EE 5340	
	EE 5341	
	EE 5342	
	EE 5346	
	EE 5347	
	EE 5348	
	EE 6341	
3. Systems and Controls	EE 5307	EE 5307 - Linear Control Systems Theory
	EE 5320	EE 5320 - Control System Design
	EE 5321	EE 5328 - Instrumentation and Measurement
	EE 5322	Approved Substitution: EE
	EE 5323	
	EE 5324	
	EE 5325	
	EE 5326	
	EE 5327	
	EE 5328	
4. Electromagnetic Fields and Applications	EE 5306	EE 5306 - Electromagnetic Theory
	EE 5331	EE 5331 - Microwave Systems Engineering
	EE 5332	Approved Substitution: EE
	EE 5333	
	EE 5334	
	EE 5335	
	EE 5337	
	EE 5338	
5. Digital Signal and Image Processing	EE 5302	EE 5302 - Random Signals and Noise
	EE 5350	EE 5350 - Digital Signal Processing
	EE 5351	EE 5356 - Digital Image Processing
	EE 5352	Approved Substitution: EE
	EE 5353	
	EE 5354	
	EE 5355	
	EE 5356	
	EE 5357	
	EE 5358	
6. Telecommunications and Information Systems	EE 6356	
	EE 5360	EE 5360 - Data Communication Engineering
	EE 5361	EE 5362 - Digital Communications
	EE 5362	Approved Substitution: EE
	EE 5363	
	EE 5364	
	EE 5365	
	EE 5366	
	EE 5367	

	EE 5368	
	EE 6362	
	EE 6363	
	EE 6364	
	EE 6365	
	EE 6367	
	EE 6368	
7. Power Systems	EE 5308	EE 5308 - Power System Modeling and Analysis
	EE 5371	EE 5371 - Power System Transmission I
	EE 5372	Approved Substitution: EE
	EE 5373	
	EE 5374	
	EE 5375	
	EE 5376	
	EE 5377	
	EE 5378	
	EE 6372	
8. Optical Devices and Systems	EE 5380	EE 5380 - Principals of Photonics and Optical Engineering
	EE 5382	Approved Substitution: EE
	EE 5383	
	EE 5384	
	EE 5385	
	EE 5386	
	EE 5387	
	EE 5388	
9. Nanotechnology and MEMS - Materials and Devices	EE 5343	EE 5343 - Silicon IC Fab Technology
	EE 5344	EE 5344 - Introduction to MEMS
	EE 5345	EE 5381 - Foundations in Semiconductors
	EE 5381	Approved Substitution: EE
	EE 6342	
	EE 6343	
	EE 6344	
	EE 6345	
10. Renewable Energy Systems and Vehicular Technology	EE 5309 (Grid-Integration of Renewable Energy Systems)	EE 6375 - Power Electronics Engineering
	EE 5309 (Renewable Energy Systems)	
	EE 5309 (Electric Motor Drive)	
	EE 5309 (Hybrid Electric Drive)	
	EE 6375	

Admission Criteria

The admission process considers all of the application material including official transcripts, GRE scores, letters of recommendation, and the statement of purpose. No single objective factor is used to finalize the decision for admission or to deny admission. It is expected that an applicant have background in such areas as linear systems, dc and ac electronics circuits, static and dynamic electromagnetic fields, microprocessors, among the courses completed in a typical electrical engineering curriculum. Students with a BS in other fields are encouraged to apply, but they may be required to remedy a lack of required EE courses by taking some undergraduate EE courses. An attempt will be made to match the technical aspirations of the potential graduate students with the departmental resources in order to provide a stimulating academic environment for the students and their graduate education.

Criteria concerning (1) unconditional admission, (2) provisional admission, (3) deferred admission, (4) denial of admission, and (5) fellowship, are given below.

1. Admission with Unconditional Status: A typical applicant who is "admitted" will have met the following admission requirements.
 - The minimum undergraduate GPA requirement
 - i. For Ph.D. admission 3.5 based on MSEE or equivalent
 - Relevance of the student's undergraduate degree (background) to the EE curriculum.
 - Rigor of the student's Bachelor's degree.
 - Reputation of the University/College that the student received his/her previous degrees
 - The publications in scholarly conferences/journals are optional but will improve both a student's chances of securing admission and receiving financial support.
 - Three recommendation letters from individuals who can judge the probability of success of the student's graduate study.
 - GRE scores of at least the following:
 - Quantitative score
 - = 720 (new scale: 156) for M.S.
 - or
 - = 750 (new scale: 159) for Ph.D.
 - Verbal score = 400 (new scale: 146)
 - Analytical Writing = 3 for M.S. or =3.5 for Ph.D
 - For an International student, an additional requirement beyond those stated above:

The applicant must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with a TOEFL score of 79 for the internet-based test with a minimum of writing 22, speaking 21, reading 20, listening 16 in each of the four categories. Alternatively, IELTS scores of 6.5 in all categories will be viewed similarly.

2. Admission with Provisional status: An applicant unable to supply all required official documentation prior to the admission deadline, but whose available documentation otherwise appears to meet admission requirements may be granted provisional admission.
3. Deferred status: A deferred decision may be granted when a file is incomplete.
4. Denied Status: An applicant that does not meet categories 1, 2 or 3 above will be denied admission.
5. Fellowships: Award of a fellowship will be based on the criteria required by the sponsor agency (including the graduate school) on a competitive basis.

Doctoral Degree Requirements

The Ph.D. is a degree with emphasis on research. Requirements for the doctoral degree are described elsewhere in the general catalog section on Degree Offerings/Requirements. Permission to continue beyond the master's degree will be based on the grade point average and GRE scores as described above. Approval to continue in the doctoral program is given by satisfactory completion of the following procedure:

1. Obtaining the approval of a dissertation adviser, and
2. Passing the Diagnostic Examination. This exam will be over the three Technical Proficiency areas selected by the student.

Review courses for the Diagnostic Examination should be completed during the M.S. degree or during the first 30 graduate hours required for entrance into the Ph.D. program.

This procedure must be completed within the year of coursework toward the Ph.D. A student not having attempted the Diagnostic Examination by this time will be allowed one more opportunity to take the examination during the next full semester.

The program of work is expected to include a minimum of 15 semester hours of advanced graduate level coursework beyond the master's degree and sufficient dissertation semester hours as required to complete the dissertation. All graduate level courses are counted in the 15 hour minimum. Among the 15 hour minimum, a minimum of 6 semester hours of advanced graduate level coursework is required. The supervising professor may require additional coursework beyond the 15 hour minimum if deemed necessary to accomplish the research required for the dissertation. These courses may include graduate level mathematics, science, or engineering relevant to the student's dissertation program, but only with approval of the Graduate Advisor.

For the direct PhD program, the program of work is expected to include a minimum of 30 semester hours of graduate level coursework beyond the bachelor's degree and sufficient dissertation semester hours as required to complete the dissertation. Among the 30 hour minimum, a minimum of 6 semester hours of advanced graduate level coursework is required. In addition, 2 semesters of 1 semester hour seminar course (EE 5190) are required. The seminar course is not counted in the 30 hour minimum.

The status of a doctoral candidate is approved for students who have passed an oral Comprehensive Examination (a comprehensive dissertation proposal) and submitted a Final Program of Work. The Comprehensive Examination will be required by the time the student has completed the required coursework. If the student fails the examination, he/she would be given one more chance to pass it no later than during the following semester. Upon completion of the Comprehensive Examination, the candidate should enroll in the dissertation course EE 6699 DISSERTATION or EE 7399. The

student can only enroll in EE 7399 DOCTORAL DEGREE COMPLETION one time. If the student does not graduate in the semester EE 7399 is used, all future semesters the student must enroll in EE 6699 until the dissertation is defended. 9 semester hours of Dissertation is required to graduate.

Ph.D. Supervisory Committee

A doctoral student's committee shall consist of at least five members of the Graduate Faculty, a majority of whom must be in Electrical Engineering.

Graduate Certificate in Power System Management

PROGRAM OBJECTIVE

The certificate program will emphasize the common aspects of Power System Management (PSM) including renewable energy, utility deregulation, distributed energy resources, and smart grid development, while also providing training in traditional power system operation and control. This program aims at the dual goal of providing the utility industry with a knowledgeable, locally available workforce and offering career advancement opportunities for their employees. This will also enhance employment opportunities of the participants in industry, government, and service sectors.

Upon completion, students will be able to:

- Model the transmission lines, distribution lines, generators, transformers, and loads.
- Perform Power Flow, Short Circuit, and Stability Analyses.
- Understand the principles and operation of deregulated market.
- Understand and analyze the operation of the distribution networks.
- Design operation and control strategies of Microgrid, Virtual Power Plants, and Distributed Energy Resources.
- Perform study on renewable energies integration.
- Understand main techniques on converter and inverter design. Use power electronic devices for grid following and grid forming.
- Utilize the Programmable Logic Controllers (PLC) in industrial automation and energy systems monitoring and control.
- Apply transducers and Intelligent Electronic Devices (IED) on Supervisory Control and Data Acquisition (SCADA) systems, and Distributed Control Systems (DCS).
- Understand the impact of power quality on the operation of the power system and develop strategies for power quality improvement.

ADMISSION REQUIREMENTS

Unconditional Admission is granted if all of the following conditions are met:

Stand-alone certificate

- A Bachelor's degree in an engineering discipline with a minimum GPA of 3.0.
- Those who desire to complete the certificate program without enrolling in graduate degree program must be admitted to UTA as a non-degree seeking student.
- An essay detailing the applicant's background and skills as pertaining to PSM, his/her interest in a specific domain and his/her expected benefit from completing this program.

Concurrent certificate

- A Bachelor's degree in an engineering discipline with a minimum GPA of 3.25 (junior and senior level or equivalent) or a current enrollment in an engineering Master's program at UTA with a minimum GPA of 3.0.
- An essay detailing the applicant's background and skills as pertaining to PSM, his/her interest in a specific domain and his/her expected benefit from completing this program.
- GRE Quantitative and Verbal sections scores should meet the EE admission requirement for new applicants.
- If English is not the applicant's native language, he/she should meet the EE admission requirement on TOEFL iBT, or IELTS. International applicants who have successfully completed a BS or MS from an institution in the United States and are not seeking funding as a Graduate Teaching Assistant, are not required to meet this requirement.
- Performance on the GRE will not be the sole criterion for admitting applicants or denying admission to the master's program. In cases where GRE performance does not meet the minimum requirements, all other qualifications presented by the applicant will be carefully evaluated for evidence of potential for success.

ACADEMIC REQUIREMENTS

Students must complete one (1) required/Core course and two (2) elective courses as outlined above. All courses used to satisfy the certificate requirements must be passed with a grade of B or better. The time limit for completion of the Certificate Program is 6 years.

Students who successfully complete the non-degree certificate program will be eligible to apply for admission to the MS in Electrical Engineering and count course credit from the certificate toward completion of non-degree certificate.

Required/Core Courses

EE 5308	POWER SYSTEM MODELING AND ANALYSIS	3
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Elective Courses

EE 5371	POWER SYSTEM PLANNING, OPERATION, AND CONTROL IN A DEREGULATED ENVIRONMENT	3
EE 5374	POWER SYSTEM PROTECTIVE RELAYING	3
EE 5375	POWER SYSTEM DISTRIBUTION	3
EE 5377	PROGRAMMABLE LOGIC CONTROLLERS IN INDUSTRIAL AUTOMATION	3
EE 5378	POWER QUALITY	3
EE 6353	CONVEX OPTIMIZATION FOR ENGINEERS	3
EE 6373	RENEWABLE ENERGY SYSTEMS	3
EE 6375	POWER ELECTRONICS ENGINEERING	3

Graduate Certificate in Photonic Devices and Systems

PROGRAM OBJECTIVE

Students completing this certificate program will gain both fundamental and practical understanding of the Photonics technology, including the optical systems, lasers, photonic devices and sub-systems, and methods widely employed in the industry. They will be prepared to take part in developing and operating various photonic devices, sub-systems, and systems for optical communications / information technology, chemical and biomedical sensing, solar-energy conversion, as well as space and defense applications. The knowledge and skills acquired by the students will facilitate the next steps in their careers and enhance their employment potential in industrial and government sectors.

Upon completion, students will be able to:

- Describe propagation of light in free space, at dielectric interfaces, in birefringent and semiconducting materials, and in waveguides;
- Design and analyze simple imaging systems consisting of lenses and mirrors;
- Understand principles of operation and design trade-offs of key photonic devices and instruments: lasers, optical amplifiers, modulators, filters, couplers, polarizers, waveplates, interferometers, spectrometers, detectors, solar cells, optical sensors, etc.;
- List important applications of second- and third-order nonlinear effects in classical and quantum optics.
- Describe principles and key features of second harmonic generation, optical parametric amplification, self- and cross-phase modulation, four-wave mixing, and Raman amplification.
- Identify the main components of modern WDM communication systems, make simple estimates of system's performance under various conditions, and design a system with appropriate parameters for given application.
- Understand modern biological and chemical sensing techniques and their applications;
- List basic principles, applications, and latest advances in the area of nanophotonics;
- Understand main techniques used in nano- and micro-fabrication;
- Perform basic fabrication and processing steps for simple electronic / photonic devices.

ADMISSION REQUIREMENTS

Unconditional Admission is granted if all of the following conditions are met:

Stand-alone certificate

- A Bachelor's or Master's degree in a STEM discipline is required.
- Those who desire to complete the certificate program without enrolling in graduate degree program must be admitted to UTA as a non-degree seeking student.
- A personal statement detailing the applicant's background and skills pertaining to photonics, his/her interest in specific topics, and his/her expected benefit from completing this program.

Concurrent certificate

The unconditional admission criteria are the same as those to the MSEE program, which are currently as follows:

- A Bachelor's degree in an engineering discipline with a minimum GPA of 3.25 (junior and senior level or equivalent) or a current enrollment in an engineering Master's program at UTA with a minimum GPA of 3.0.
- GRE Quantitative and Verbal sections scores should meet the EE admission requirement for new applicants.
- If English is not the applicant's native language, he/she should meet the EE admission requirement on TOEFL iBT, or IELTS. International applicants who have successfully completed a BS or MS from an institution in the United States and are not seeking funding as a Graduate Teaching Assistant, are not required to meet this requirement.

- Performance on the GRE will not be the sole criterion for admitting applicants or denying admission to the master's program. In cases where GRE performance does not meet the minimum requirements, all other qualifications presented by the applicant will be carefully evaluated for evidence of potential for success.

ACADEMIC REQUIREMENTS

The certificate consists of 12 hours of graduate work with at least a 3.0 GPA at UTA. The time limit for completion of the Certificate Program is 6 years.

Students who successfully complete the non-degree certificate program will be eligible to apply for admission to the MS in Electrical Engineering and count course credit from the certificate toward completion of non-degree certificate

Required/Core Courses

EE 5380	PRINCIPLES OF PHOTONICS AND OPTICAL ENGINEERING	3
EE 5384	OPTOELECTRONIC DEVICES FOR COMMUNICATION	3

Elective Courses

Select two courses from the following list:

EE 5343	SILICON INTEGRATED CIRCUIT FABRICATION TECHNOLOGY	3
EE 5385	NONLINEAR OPTICS	3
EE 5388	LASERS	3
EE 5389	TOPICS IN OPTICS (Nanophotonic Device Engineering)	3
EE 5389	TOPICS IN OPTICS (Silicon Photonics)	3
EE 6365	ADVANCED FIBER OPTICS SYSTEMS	3
EE 6381	NANOPHOTONICS	3
EE 6382	OPTICAL BIOSENSORS: INSTRUMENTATION AND TECHNIQUES	3

CSE/EE Graduate Certificate in Embedded Systems

PROGRAM OBJECTIVE

The Graduate Certificate in Embedded Systems is offered through the Computer Science and Engineering Department and Electrical Engineering Department. The certificate will educate graduate students in the knowledge and skills required to design and test embedded systems, using microcontrollers, system-on-chip, and FPGA devices. Topics include multi-threaded programming on bare-metal, custom real-time operating systems, and embedded Linux systems; implementation of IP stacks for computer networking; network and wireless protocol development for Internet of Things devices; design of real-time operating systems; implementation of RISC processors in FPGA devices; design of advanced digital logic systems; and control of systems with electromechanical actuators and sensors.

Our Embedded Systems Certificate is intended to educate students in the knowledge and skills required to:

- Design and test embedded systems
- Use microcontrollers, system-on-chip, and FPGA devices
- Understand multi-threaded programming on bare-metal, custom real-time operating systems, and embedded Linux systems
- Implement IP stacks for computer networking
- Develop network and wireless protocols for Internet of Things devices
- Design real-time operating systems
- Implement RISC processors in FPGA devices
- Design advanced digital logic systems
- Design control systems with electromechanical actuators and sensors

ADMISSION REQUIREMENTS

The certificate can be taken by current UTA graduate students or by persons not currently enrolled in UTA who hold at least a BS degree or equivalent. The admission criterion is the successful completion of CSE 3442 (Embedded Systems I), CSE 5400 (Fundamentals of Computer Engineering), or EE 5314 (Embedded Microcontrollers).

The program consists of 4 graduate-level classes. Current students need only take the courses listed for the certificate and then submit a Request for Certificate form to the Office of Records. At the end of each term, the Office of Records will evaluate the requests.

ACADEMIC REQUIREMENTS

A grade of C or better and an overall GPA of 3.0 or higher is required in all courses counted towards the completion of the certificate. Students enrolled in the certificate program will take courses with students studying for master's and/or PhD programs in the CSE or EE Department.

Required/Core Courses

CSE 5342	EMBEDDED SYSTEMS II	3
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3 of the following Elective Courses

CSE 5352	IoT AND NETWORKING	3
CSE 5354	REAL-TIME OPERATING SYSTEMS	3
or EE 6314	ADVANCED EMBEDDED MICROCONTROLLER SYSTEMS	
CSE 5355	ELECTROMECHANICAL SYSTEMS AND SENSORS	3
EE 5315	SYSTEM ON CHIP (SOC) DESIGN	3
or CSE 5356	SYSTEM ON CHIP (SoC) DESIGN	
CSE 5357	ADVANCED DIGITAL LOGIC DESIGN	3
CSE 5372	RISC PROCESSOR DESIGN	3

Electrical Engineering - Undergraduate Programs

Accreditation

Accreditation is an assurance that the professionals that serve us have a solid educational foundation and are capable of leading the way in innovation, emerging technologies, and in anticipating the welfare and safety needs of the public. The Electrical Engineering Department at the University of Texas at Arlington has been continuously accredited since 1965 by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Overview of Electrical Engineering

Electrical Engineering is a cross-cutting field that includes power systems, control systems, microelectronics and nanoelectronics, embedded systems and computer networks, communications (wireless, including cellular and satellite, and wired/fiber optic), remote sensing, signal and data processing, optics (electro-optics, optoelectronics and photonics) and other emerging technologies. Modern applications include renewable energy sources and microgrids, 4G and 5G cellular phones and base stations, Internet of Things (IoT), machine learning, deep learning (such as neural networks), medical devices and instruments, electric vehicles, vehicular networking, and assisted/autonomous vehicles (including drones and robots), and many others.

Electrical engineers must be prepared to apply fundamental concepts in the applications of new technologies and to contribute to the growth of these technologies. They must also have the skills to communicate their ideas and to manage projects within a schedule and budget. Because of the broad nature of the field, electrical engineers are involved in a wide range of engineering design projects and they must be able to employ knowledge from other disciplines in electrical engineering designs. They must also be prepared to support engineers in other disciplines.

Engineering designs are a team effort and require good communication skills, both oral and written. Therefore it is important that each student develops these necessary communication skills.

The benefit of having an education in electrical engineering is that the student is prepared for a career not only in technical areas but also for further training in other disciplines that require strong organizational and analytical skills such as medicine, law, public policy, business, economics, management, and teaching.

Educational Objectives of the Undergraduate Program

The Program Educational Objectives are to produce graduates who:

- Advance the mission of their organization by significantly contributing to any of the following disciplines: component and/or system design, R&D, manufacturing, customer support, technical training, sales and marketing.
- Demonstrate leadership in one or more significant roles since graduation, as evidenced for example by successful entrepreneurship in a start-up, significant promotions and awards in a company or engineering firm.
- Successfully build on the BSEE degree from UTA by: completing a graduate degree; or taking professional course(s); or earning professional certificate(s).

Student Outcomes of the Undergraduate Program

From these Program Educational Objectives, the department designed its baccalaureate program to offer its graduates the following student learning outcomes:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The program has been continuously accredited since 1965 by the Engineering Accreditation Commission (EAC) of ABET, <http://www.abet.org>.

Admission Requirements

Requirements for admission as an EE major are governed by the requirements as stated in the College of Engineering section of this catalog. EE majors are only allowed to enroll in pre-professional courses until they meet the requirements for the professional program as outlined below.

Undergraduate Advising

General academic advising for new students (excluding transfer course evaluation) is done during the scheduled orientation period prior to registration. Academic advising for continuing students will be done during each semester prior to registration. The dates for advising new and continuing students will be listed in the appropriate schedule of classes. Personal academic advising is available in the office of the Undergraduate Advisor during the semester by appointment. To graduate, the student must have an approved degree plan on file in the Registrar's Office.

The students can use the course sequences described above to plan their studies. Recommended electives are listed in the advising office and on the Web site at www.uta.edu/engineering/ee (<http://www.uta.edu/ee/>). A supplemental EE Undergraduate Program Guide is available in the Advising Office; it provides more details of the different areas of specialization in Electrical Engineering as well as on other matters relevant to completing the BSEE degree.

Admission to the Professional Program

Requirements for admission to the professional program in Electrical Engineering are in accordance with those of the College of Engineering with the following added stipulations:

- Application to the professional program is to be made to the Undergraduate Advisor during the semester that the advancement requirements are being completed.
- No professional electrical engineering courses may be taken until the student is admitted into the professional program or obtains the written consent of the Undergraduate Advisor.
- Each student must complete all pre-professional courses stipulated under "Requirements for a Bachelor of Science Degree in Electrical Engineering" with a minimum grade of C in each course and a minimum GPA of 2.25 in:
 - a. all courses,
 - b. in all math, science, and engineering courses, and
 - c. in all EE courses.

To graduate, the student must be admitted to the professional program and have an approved degree plan on file in the Registrar's office. The degree plan is generated upon entry to the professional program. Graduating seniors should apply to graduate during the next-to-last semester. Each student must complete all professional level electrical engineering courses stipulated under "Requirements for a Bachelor of Science Degree in Electrical Engineering" with a minimum grade of C in each course. All engineering courses used on the BSEE degree plan must be C or better.

Program Features

The pre-professional program reflects a concentration of preliminary science, mathematics, and engineering courses to prepare the student for the professional engineering program. EE students are admitted to the professional program as described above. The pre-professional program consists of core courses in electronics; digital systems, microprocessors, and computer programming. The professional program consists of core courses in electromagnetics; power systems and energy conversion; continuous and discrete time systems; controls; and communications. The core curriculum provides the needed foundation for a variety of technical areas in electrical engineering. The design experience is emphasized throughout the program, with particular emphasis on the team concept in the engineering design courses. Through careful selection of technical electives, the student may specialize in certain fields of electrical engineering. Information on these areas is available in the Electrical Engineering Department Advising Office. In addition, there are opportunities to participate in ongoing research projects of the faculty in Electrical Engineering. Independent study credit can be obtained through EE 4391 ADVANCED PROBLEMS IN ELECTRICAL ENGINEERING.

Cooperative Education Program

Cooperative education opportunities are plentiful for EE students. Interested students should contact the Cooperative Education Office in the College of Engineering.

Master's Degree Path

The electrical engineering field is continually evolving in all areas. To stay current in technical areas requires a commitment to lifelong learning. Completing a master's degree certainly gives the student a head start on this.

Students graduating with a GPA of 3.0 or higher and GRE scores of 146 verbal or higher, 156 quantitative or higher, and 3.0 writing can be admitted to the EE master's program upon application. Interested students should contact the graduate advisor. Students can take a project course, EE 4391, as one of their technical electives to begin their studies on a topic that they may use for their MS research and thesis. Also, students that require less than 12 hours to graduate can dual enroll in the graduate program in the last semester of their BS program.

Fast Track Program for Master of Science in Electrical Engineering

Students within 30 credit hours of completing their bachelor's degree with a GPA of at least 3.5 may be eligible for admission into the Fast Track Program for Master of Science in Electrical Engineering. Once admitted, students will be allowed to take select graduate courses that may be used to satisfy both bachelor's and master's degree requirements. Interested students should contact the graduate advisor.

Competence in Oral Communication and Computer Use Certificate

Electrical Engineering students will satisfy the University Competence in Oral Presentations requirement by completing the course COMS 2302. They will satisfy the University Competence in Computer Use requirement by completing EE 2347.

Requirements for a Bachelor of Science Degree in Electrical Engineering

The program is divided into a pre-professional program and a professional engineering program, with the division essentially occurring between the sophomore and junior years.

Pre Professional Requirements that may also satisfy Core requirements ¹		26
UNIV 1131	STUDENT SUCCESS ⁵	
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
MATH 1426	CALCULUS I ²	
MATH 2425	CALCULUS II	
MATH 2326	CALCULUS III	
PHYS 1443	GENERAL TECHNICAL PHYSICS I	
PHYS 1444	GENERAL TECHNICAL PHYSICS II	
General Education		24
History Electives: 6 hours of history courses that satisfy University Core Curriculum requirements		
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
English literature elective: Any English or modern and classical languages literature that meets the 3 University Core Curriculum requirement for Language, Philosophy and Culture is accepted.		
Communication: COMS 2302		
Creative arts elective: any course which satisfies the University Core Curriculum requirements for Creative Arts is accepted. ³		
Social/behavioral elective: ECON 2305		
Program Requirements		
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
CHEM 1465	CHEMISTRY FOR ENGINEERS ⁴	4
EE 1201	INTRODUCTION TO ELECTRICAL ENGINEERING	2
EE 1106	ELECTRICAL ENGINEERING FRESHMAN PRACTICUM	1
EE 1311	COMPUTING SYSTEM AND ALGORITHMIC SOLUTIONS	3
EE 2315	CIRCUIT ANALYSIS I	3
EE 2240	SOPHOMORE PROJECT LABORATORY	2
EE 2347	MATHEMATICAL FOUNDATIONS OF ELECTRICAL ENGINEERING	3
EE 2302	PRINCIPLES OF ACTIVE AND PASSIVE DEVICES	3
EE 2303	ELECTRONICS I	3
EE 2341	DIGITAL CIRCUITS AND SYSTEMS	3
Professional Courses		
EE 3316	CONTINUOUS AND DISCRETE SIGNALS AND SYSTEMS	3
EE 3330	PROBABILITY AND STATISTICAL METHODS	3
EE 3346	CIRCUIT ANALYSIS II	3
EE 3407	ELECTROMAGNETICS	4
EE 3318	ANALOG AND DIGITAL SIGNAL PROCESSING	3
EE 3314	FUNDAMENTALS OF EMBEDDED CONTROL SYSTEMS	3
EE 3240	JUNIOR PROJECT LABORATORY	2
EE 4240	CONCEPTS & EXERCISES IN ENGINEERING PRACTICE	2
EE 4149	ENGINEERING DESIGN PROJECT	1

Select four Electrical Engineering Junior/Senior Elective courses	12
Select one Engineering Elective course (also includes Electrical Engineering) ³	3
Select one 3000/4000 courses in Mathematics or Science Elective ³	3
MAE 3309 THERMAL ENGINEERING	3
Total Hours	125

- ¹ All pre-professional courses must be completed before enrolling in professional program courses
- ² The Mathematics Department requires passing a placement test provided by the Mathematics Department before enrolling.
- ³ A list of acceptable electives is available in the EE Dept. advising office.
- ⁴ Chem 1465 can be substituted with Chem 1441 and Chem 1442 (8 hours).
- ⁵ For transfer students, UNIV 1131 can be substituted with ENGR 1101.
- ⁶ Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take two courses of foreign language in addition to the previously listed requirements.

Recommended Core Curriculum

Electrical Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Electrical Engineering" along with ENGL 1301, ENGL 1302, MATH 1426, MATH 2425, MATH 2326, MATH 3319, PHYS 1443 and PHYS 1444, which are also part of the Pre-Professional Program. For more information, see University Core Curriculum (p. 50).

Refer to the College of Engineering section of this catalog for information concerning the following topics: Admission into Engineering, Admission into Pre-Engineering, Admission into the Professional Program, Counseling or Advising, Transfer and Change of Major Policies, Honors Program, Academic Regulations, Professional Engineering Registration, Cooperative Education, Academic Probation, Repeating Course Policy, and Academic Dishonesty.

Refer to the Electrical Engineering Department website for the suggested course sequence (<http://www.uta.edu/ee/>).

Requirements for a Minor in Electrical Engineering

To receive a minor in Electrical Engineering, a student must complete the following five courses with a grade of C or better in each:

EE 2415	CIRCUIT ANALYSIS I	4
EE 2403	ELECTRONICS I	4
EE 2441	DIGITAL DESIGN AND PROGRAMMABLE MICROCONTROLLERS	4
EE 3407	ELECTROMAGNETICS	4
EE 3316	CONTINUOUS AND DISCRETE SIGNALS AND SYSTEMS	3
Total Hours		19

Undergraduate Certificate in Embedded Systems

PROGRAM OBJECTIVE

The Undergraduate Certificate in Embedded Systems educates undergraduate students in the knowledge and skills required to design, develop, and deploy Embedded Systems including Industrial, Security, Entertainment and Automation Systems. This program aims at the dual goal of providing the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants.

Through this program the students will learn hardware/software development techniques for microprocessors and their programmable peripherals, perform DMA/SDRAM controller design, and real-world interfacing, gain proficiency in C programming, HDL, design of digital systems using programmable logic devices and high-level techniques.

ADMISSION REQUIREMENTS

- A current enrollment in an engineering undergraduate's program at UTA with a minimum GPA of 3.0.
- If English is not the applicant's native language, he/she should meet the EE admission requirement on TOEFL iBT, or IELTS.

ACADEMIC REQUIREMENTS

Students must complete one (1) required/Core course and two (2) elective courses as outlined above. The average GPA of all courses used to satisfy the certificate requirements must be 3.0 or better. The time limit for completion of the Certificate Program is 6 years.

Required/Core Courses

EE 4311	EMBEDDED MICROCONTROLLER SYSTEMS	3
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Elective Courses

EE 4310	MICROPROCESSOR SYSTEMS	3
EE 4312	ADVANCED MICROPROCESSOR SYSTEMS	3
EE 4334	PROGRAMMABLE LOGIC DESIGN	3

Undergraduate Certificate in Unmanned Vehicle Systems (UVS)

PROGRAM OBJECTIVE

The Certificate in Unmanned Vehicle Systems (UVS), offered through the Department of Electrical Engineering (EE), will educate undergraduate students in the knowledge and skills required for design, development and operation of UVS including Unmanned Aircraft Systems (UAS), Unmanned Ground Systems (UGS), and Unmanned Maritime Systems (UMS). The certificate program will emphasize common aspects of UVS such as sensors, actuators, communications, and more importantly, decision-making capabilities (autonomy), while also covering development of domain-specific mobile platforms such as airplane and rotorcraft. This program aims at the dual goal of providing the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants. To this end, the Certificate in UVS will be awarded concurrently with the BSEE degree.

ADMISSION REQUIREMENTS

- A Bachelor's degree in an engineering discipline with a minimum GPA of 3.0 or a current enrollment in an engineering Master's program at UTA with a minimum GPA of 3.0.
- Those who desire to complete the certificate program without enrolling in
- Graduate degree program must be admitted to UTA as a non-degree seeking student.
- An essay detailing the applicant's background and skills as pertaining to UVS, his/her interest in a specific domain and his/her expected benefit from completing this program.

ACADEMIC REQUIREMENTS

Students must complete 15 hours of coursework as outlined below that include 9 hours of a core curriculum that is interdisciplinary and forms the basis of a common core in UVS Certificate and 6 hours of discipline specific curriculum. All courses used to satisfy the certificate requirements must be passed with a grade of B or better.

Required/Core Courses

EE 5307	LINEAR SYSTEMS ENGINEERING	3
EE 6321	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS	3
EE 6322	UNMANNED VEHICLE SYSTEM DEVELOPMENT	3

Elective Courses

EE 5321	OPTIMAL CONTROL	3
EE 5322	INTELLIGENT CONTROL SYSTEMS	3
EE 5325	ROBOTICS	3
EE 5327	SYSTEM IDENTIFICATION AND ESTIMATION	3
AE 5301	ADVANCED TOPICS IN AEROSPACE ENGINEERING	3
CSE 5369	SPECIAL TOPICS IN INTELLIGENT SYSTEMS	3
EE 5323	NONLINEAR SYSTEMS	3

Industrial, Manufacturing and Systems Engineering

Description

Industrial engineers focus on how to get the work done most efficiently, balancing many factors, such as time, number of workers needed, available technology, actions workers need to take, achieving the end product with no errors, workers' safety, environmental concerns, and cost. They also engage in supply chain management and conduct quality assurance activities.

Undergraduate Degree

- Industrial Engineering, B.S. (p. 599)

Graduate Degrees

- Engineering Management, M.S. (p.)
- Industrial Engineering, M.S. (p. 594)
- Industrial Engineering, Ph.D. (p. 596)

Certificates

- Unmanned Vehicle Systems (Undergraduate, Graduate) (p.)
- Industrial Applications (Graduate) (p.)
- Decision Analytics (Graduate) (p. 594)
- Logistics (Graduate) (p. 596)

COURSES

IE 1104. INTRODUCTION TO ENGINEERING. 1 Hour. (TCCN = ENGR 1101)

Introduction to basic engineering concepts. Students will become familiar with engineering and its many sub-fields, ethical responsibilities, creativity and design.

IE 1110. FIRST SEMESTER INDUSTRIAL ENGINEERING SEMINAR. 1 Hour.

This class focuses on creating a collaborative and inclusive environment for both freshmen and transfer students to the Industrial Engineering program at UTA. This course uses team building exercises, introduces faculty to students through presentations about their classes and research, and presents the curriculum within the "big picture" of how the courses fit together to prepare students for a successful career. This course is intended to provide students the opportunity to form productive study groups and to meet and interact with their professors.

IE 1205. INTRODUCTION TO INDUSTRIAL ENGINEERING AND COMPUTING. 2 Hours.

Introduction to basic industrial engineering concepts and industrial engineering as a field. Microsoft Excel skills are stressed and the software is used to analyze collected data. Some College of Engineering requirements are satisfied by the content of this course.

IE 1325. INTRODUCTION TO DATA ANALYSIS. 3 Hours.

This course is an introduction to organizing, manipulating, analyzing, and visualizing data. Students will become proficient in using Microsoft Excel functions, pivot tables, advanced analytics modules, visualization tools and external data sources. This class will prepare students for success in future industrial engineering classes. Prerequisite: IE 1110 or concurrent enrollment.

IE 2000. UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. May be taken a maximum of three times. Prerequisite: Departmental good standing and permission of instructor.

IE 2305. COMPUTER APPLICATIONS IN INDUSTRIAL ENGINEERING. 3 Hours.

An overview of Industrial Engineering concepts and issues important to the design and operation of industrial and service systems. Students will learn the use of software tools developed to enhance the Industrial Engineer's ability such as database management, high level programming languages, electronic spreadsheets, and computer graphics. Prerequisite: IE 1325 (or IE 1205).

IE 2308. ECONOMICS FOR ENGINEERS. 3 Hours.

Methods used for determining the comparative financial desirability of engineering alternatives. Provides the student with the basic tools required to analyze engineering alternatives in terms of their worth and cost, an essential element of engineering practice. The student is introduced to the concept of the time value of money and the methodology of basic engineering economy techniques. The course will provide the student with the background to enable them to pass the Engineering Economy portion of the Fundamentals of Engineering exam. Prerequisites: MATH 1426 or concurrent enrollment.

IE 3000. UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. May be taken a maximum of three times. Prerequisite: Departmental good standing and permission of instructor.

IE 3301. ENGINEERING PROBABILITY. 3 Hours.

Topics in engineering that involve random processes. Applications and backgrounds for topics in reliability, inventory systems, and queuing problems, including absolute and conditional probabilities, discrete and continuous random variables, parameter estimation, hypothesis testing, and an introduction to linear regression, experimental design, and analysis of variance. Prerequisite: MATH 2425.

IE 3312. ECONOMICS FOR ENGINEERS. 3 Hours.

Tools and methods used for determining the comparative financial desirability of engineering alternatives. Prerequisite: MATH 1426 or concurrent enrollment.

IE 3314. ENGINEERING RESEARCH METHODS. 3 Hours.

A continuation of IE 3301. Simple and multiple linear regression analysis, design of experiments, analysis of variance, and quality control statistics. Emphasis on the application of these methods to engineering data, with computerized data analysis. Prerequisite: IE 3301 and MATH 2326.

IE 3315. OPERATIONS RESEARCH I. 3 Hours.

An introduction to the major deterministic quantitative techniques of operations research and their application to decision problems. These techniques include linear programming, integer programming, network analysis, and nonlinear programming. Modeling with these techniques is emphasized. Appropriate solvers are used. Prerequisite: MATH 2326 or concurrent enrollment.

IE 3343. METRICS AND MEASUREMENT. 3 Hours.

This course presents methods for determining the most effective utilization of effort in the man-machine environment as well as systems and methods to measure enterprise performance. Prerequisite: MATH 2326, IE 2308 or concurrent enrollment, and IE 3301 or concurrent enrollment.

IE 4000. UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. May be taken a maximum of three times. Prerequisite: Departmental good standing and permission of instructor.

IE 4191. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING. 1 Hour.

The investigation of special individual problems in industrial engineering under the direction of a faculty member. Prerequisite: Consent of instructor and undergraduate advisor.

IE 4291. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING. 2 Hours.

The investigation of special individual problems in industrial engineering under the direction of a faculty member. Prerequisite: Consent of instructor and undergraduate advisor.

IE 4300. TOPICS IN INDUSTRIAL ENGINEERING. 3 Hours.

A study of selected topics in industrial engineering. May be repeated when topics vary. Prerequisite: consent of instructor and undergraduate advisor.

IE 4302. ENGINEERING ADMINISTRATION AND ORGANIZATION. 3 Hours.

A survey of administration, control and organization of engineering and research activities. Strategic planning as well as project planning and control are discussed. Prerequisite: accepted in an UTA engineering professional program.

IE 4303. PRODUCTION AND INVENTORY CONTROL. 3 Hours.

Fundamental theory and design of systems for the control of production, inventories and their economic interaction, particularly in cases involving uncertainty of demand, of supply availability, and of production rates. Prerequisite: IE 2305, IE 3301 and IE 3315.

IE 4304. ENTERPRISE SYSTEMS. 3 Hours.

An extension of Production and Inventory Control (IE 4303), this course covers enterprise resource planning systems (ERP) in manufacturing, E-Commerce and supply chain environments. ERP software and case studies are reviewed. Prerequisite: IE 4303.

IE 4305. ENGINEERING DECISION MAKING WITH DATA USING PYTHON. 3 Hours.

This course utilizes statistical tools using Python to analyze real world data on engineering applications. Students explore file handling, database access, and various case studies using Machine Learning techniques. Machine Learning topics include Regression, Classification, Clustering, Dimensionality Reduction, Ensemble Methods, Neural Networks and Deep Learning. Some programming experience is required. Prerequisite: IE 3301 and accepted into an UTA engineering professional program.

IE 4308. QUALITY SYSTEMS. 3 Hours.

A comprehensive coverage of modern quality systems techniques to include the design of statistical process control systems, acceptance sampling, and process analysis and design. Prerequisite: IE 3301 or concurrent enrollment.

IE 4310. INDUSTRIAL AND PRODUCT SAFETY. 3 Hours.

Scientific, managerial, and legal aspects of safety hazard control and elimination in the industrial workplace. Methods for enhancing product safety. Prerequisite: accepted in an UTA engineering professional program.

IE 4314. DATA MINING AND ANALYTICS. 3 Hours.

This course provides an introduction to data mining and pattern recognition. The basic theories, algorithms, key technologies in data analytics and machine learning will be discussed. Topics include data processing and visualization methods, supervised learning methods (parametric/non-parametric algorithms, KNN, decision tree, discriminant functions, Bayesian classification models, support vector machines, neural networks), unsupervised learning methods (clustering, dimensionality reduction, recommender systems), ensemble learning methods (random forests and adaptive boosting), feature selection methods, and deep learning methods. Prerequisite: IE 3301 and accepted into an UTA engineering professional program.

IE 4315. OPERATIONS RESEARCH II. 3 Hours.

A continuation of IE 3315 that includes probabilistic techniques of operations research and their application to decision problems. Topics include Markov chains, game theory, decision analysis, multiple-objective decision making, and queuing theory. Modeling with these techniques is emphasized. Appropriate solvers are used. Projects are required. Prerequisite: IE 3301, IE 3315, and MATH 3319 (or concurrent enrollment).

IE 4318. ENTERPRISE DESIGN. 3 Hours.

This course provides students with an introduction to enterprise systems. Students will be exposed to the technology and analysis methodologies for enterprise resource planning, system design, supply chain management. Also, modern and next-generation enterprise systems will be introduced and basic data mining and machine learning methods will be covered. Prerequisite: Accepted in an UTA engineering professional program.

IE 4322. ENTERPRISE SIMULATION. 3 Hours.

The design and analysis of complex manufacturing and service systems using computer-based discrete event simulation techniques. Topics include an introduction to simulation methods, and the design, construction and analysis of discrete-event simulation models, as well as their computer applications. The course also covers the execution and management of simulation projects and the formal presentation of their findings. Prerequisite: IE 3314 and IE 4315.

IE 4323. AGENT-BASED MODELING AND SIMULATION. 3 Hours.

A series of agent-based modeling topics will be covered including the fundamental concepts of agent-based modeling approach, when to apply, and how to design and implement agent-based simulation to represent complex systems and solve decision problems. Some programming experience and Excel basic knowledge is required. Prerequisite: IE 3301 and accepted into an UTA engineering professional program.

IE 4325. AUTOMATION AND ROBOTICS I. 3 Hours.

Study of the use of industrial automation and robotics technologies in manufacturing industries. The course introduces the major classes of industrial automation. Issues associated with the successful deployment of automation are presented. Laboratory exercises focus on a practical introduction to various automation technologies. Prerequisite: IE 4303 or concurrent enrollment.

IE 4339. PRODUCT DEVELOPMENT, PRODUCIBILITY AND ENTREPRENEURSHIP. 3 Hours.

This course covers the product and process development and engineering design process with focus on entrepreneurship; design disciplines, design for manufacturing, reliability design, testing, and product support considerations are emphasized. Prerequisite: Accepted in an UTA engineering professional program.

IE 4340. ENGINEERING PROJECT MANAGEMENT. 3 Hours.

Introduces engineering project management concepts and tools needed to form, develop and manage cross-disciplinary engineering design teams. Topics include: Understanding R&D organizations, teams and work groups, job design, organizational effectiveness, and leading technical professionals. Prerequisite: Admitted into an Engineering Professional Program.

IE 4343. FACILITIES PLANNING AND DESIGN. 3 Hours.

The course covers strategic facilities planning through detailed facilities layout design. Considerations include product flow, space and activity relationships, personnel requirements, material handling, and layout. Traditional and contemporary issues in manufacturing and their impact on facilities design including receiving, shipping, warehousing, and integration with manufacturing and supporting operations are explored. Facilities planning models and the process of evaluating, selecting, preparing, presenting, and implementing the facilities plan are covered. Prerequisite: IE 4303 or concurrent enrollment.

IE 4344. HUMAN FACTORS ENGINEERING. 3 Hours.

Study of the interactions between people and their work, workplace, and the environment. Involves identification, measurement, analysis, and evaluation of interactions via human physical and mental capacities and limitations, and social interactions. Prerequisite: IE 3301, IE 2308, and IE 3343.

IE 4345. DECISION ANALYSIS IN SYSTEM DESIGN. 3 Hours.

Application of decision theory principles and tools to evaluate alternative hardware/software system architectures based on technical design requirements such as mass, reliability, power and life cycle costs. Systems engineering trade study approaches are presented with applications in defense, aerospace, energy and related areas. Methods for dealing with technical data risk and uncertainty are presented. Prerequisite: Accepted into an engineering professional program at UTA.

IE 4349. INDUSTRIAL AUTOMATION. 3 Hours.

Project oriented course focusing on the design, implementation, and operation of technology. An in-depth study of the design and deployment of industrial technology to meet the needs of high-precision, multi-product environments. The laboratory activities associated with the course provide practical experience. Prerequisite: IE 4325.

IE 4350. INDUSTRIAL ENGINEERING CAPSTONE DESIGN. 3 Hours.

This course provides an open-ended design experience through the planning and design of an enterprise in which the student must demonstrate the ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy. Contemporary project management techniques are utilized. The design experience project includes submittal of several written and oral presentations culminating in a written project report and oral presentation at the end of the semester. IE 4350 is the capstone design course and draws on material from the total industrial engineering curriculum. The impact of engineering design on society is discussed. Prerequisite: all required 4000 level IE courses or concurrent enrollment.

IE 4351. FUNDAMENTALS OF SYSTEMS ENGINEERING. 3 Hours.

This course includes a survey of concepts, principles and processes required to engineer complex systems throughout the life-cycle from concept through disposal. Topics include systems thinking, technical and management processes, life cycle models, sustainability, and model-based systems engineering. Prerequisite: Accepted into an engineering professional program at UTA.

IE 4378. INTRODUCTION TO UNMANNED VEHICLES SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

IE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in IE 4378 and admission to the UVS certificate program.

IE 4391. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING. 3 Hours.

The investigation of special individual problems in industrial engineering under the direction of a faculty member. Prerequisite: Consent of instructor and undergraduate advisor.

IE 5191. ADVANCED STUDIES IN INDUSTRIAL ENGINEERING. 1 Hour.

Individually approved research projects and reading courses in industrial engineering. Such individual studies will be graded A, B, C, D, F or X. Subject to the approval of the Graduate Advisor, IE 5191, IE 5291 and IE 5391 may be repeated as the topics change. In addition, work on a thesis substitute will be performed under IE 5391. In this case, IE 5391 is graded P/F/R.

IE 5291. ADVANCED STUDIES IN INDUSTRIAL ENGINEERING. 2 Hours.

Individually approved research projects and reading courses in industrial engineering. Such individual studies will be graded A, B, C, D, F or X. Subject to the approval of the Graduate Advisor, IE 5191, IE 5291 and IE 5391 may be repeated as the topics change. In addition, work on a thesis substitute will be performed under IE 5391. In this case, IE 5391 is graded P/F/R.

IE 5300. TOPICS IN INDUSTRIAL ENGINEERING. 3 Hours.

A study of selected topics in industrial engineering. May be repeated when topics vary. Prerequisite: consent of instructor and Graduate Advisor.

IE 5301. INTRODUCTION TO OPERATIONS RESEARCH. 3 Hours.

An introduction to the major quantitative techniques of operations research and their application to decision problems. These techniques include linear programming, integer programming, network analysis, nonlinear programming, game theory, Markov Chains, and queuing theory. Modeling with these techniques is emphasized. Appropriate solvers are used. Prerequisites: IE 3301 or IE 5317 or equivalent.

IE 5302. INTRODUCTION TO INDUSTRIAL ENGINEERING. 3 Hours.

An introduction to the fundamental principles of Industrial Engineering. Topics include Human Factors Engineering, Metrics and Measurement, Production and Inventory Control, Quality Systems, Simulation and Optimization, and Facilities Planning and Design. Prerequisite: Graduate standing.

IE 5303. QUALITY SYSTEMS. 3 Hours.

Principles and practices of industrial quality control. Topics include the Deming philosophy, process improvements, statistical process control, process capability analysis and product acceptance. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 5304. ADVANCED ENGINEERING ECONOMY. 3 Hours.

Analysis of capital investments in engineering and technical projects. Topics include decision analysis methods, cash flows, revenue requirements, activity-based analysis, multi-attribute decisions, probabilistic analysis and sensitivity/risk analysis. Prerequisite: graduate standing.

IE 5305. LINEAR OPTIMIZATION. 3 Hours.

Theory and applications of linear programming including linear programming formulation, the simplex method, duality, revised simplex, general linear programs, infeasibility, the dual simplex method, column generation, and network flow problems. Prerequisite: IE 3315, or IE 5301, or equivalent.

IE 5306. DYNAMIC OPTIMIZATION. 3 Hours.

Dynamic optimization methods including dynamic programming, the calculus of variations, and optimal control theory. Emphasis is on the modeling and solution of practical problems using these techniques. Prerequisites: IE 5317 or equivalent or IE 5318 concurrent.

IE 5307. QUEUEING THEORY. 3 Hours.

The fundamentals of queueing theory including Markovian birth-death models, networks of queues, and general arrival and service distributions. Prerequisites: IE 3301, or IE 5317, or equivalent.

IE 5309. STOCHASTIC PROCESSES. 3 Hours.

The study of probabilistic model building including the fundamentals of both discrete and continuous Markov chains, queueing theory and renewal theory. Prerequisite: IE 3301, IE 5317, or equivalent.

IE 5310. PRODUCTION SYSTEMS DESIGN. 3 Hours.

Methods for the design and analysis of manufacturing and logistics systems. Emphasis is placed on reducing cycle time, increasing throughput, lowering variation, and improving both quality and customer responsiveness through modeling techniques. Prerequisites: IE 3301, or IE 5317, or equivalent; IE 5301 current or equivalent; IE 5329 concurrent or equivalent.

IE 5311. DECISION ANALYSIS. 3 Hours.

A survey of methods for making optimal decisions. Topics include decision models, formal logic, fuzzy controls, statistical decision theory, game theory, multiobjective decisions, stochastic programming, information theory and qualitative aspects of the decisions. Prerequisites: IE 3301, or IE 5301, or equivalent.

IE 5312. PLANNING AND CONTROL OF ENTERPRISE SYSTEMS. 3 Hours.

A continuation of IE 5329 covering enterprise resource planning systems (ERP) and other advanced production control techniques. Computer modeling is emphasized. Prerequisite: Graduate standing.

IE 5313. RELIABILITY AND ADVANCED QUALITY CONTROL TOPICS. 3 Hours.

Includes advanced quantitative topics in reliability design and quality control. Management of reliability and quality control functions are also included. Prerequisites: IE 4308, or IE 5303, or equivalent.

IE 5314. SAFETY ENGINEERING. 3 Hours.

Methods to identify, measure, analyze, and evaluate safety hazards in the workplace. Scientific and managerial methods to prevent or control safety hazards. Prerequisite: graduate standing.

IE 5315. DATA SCIENCE PROJECT MANAGEMENT. 3 Hours.

Management and control of multifaceted science and engineering projects. Coordination and interactions between client and various service organizations. Project management selection. Typical problems associated with various phases of project life cycle. Case studies illustrate theories and concepts. Students will be expected to demonstrate an understanding of communication and collaboration, including workflow, reproducibility, codebase management, collaboration tools, oral and written communication, presentation, storytelling, and team management, as well as ethics, such as understanding bias, fairness, credibility and misinformation, security, privacy and codes of conduct. Prerequisite: Graduate standing.

IE 5317. INTRODUCTION TO PROBABILITY AND STATISTICS. 3 Hours.

Topics include descriptive statistics, set theory, combinatorics, mathematical expectation, probability distributions, confidence interval estimation, regression analysis, analysis of variance, and design of experiments. Prerequisite: MATH 1426, or equivalent and permission of advisor.

IE 5318. APPLIED REGRESSION ANALYSIS. 3 Hours.

An in-depth study of one predictor variable followed by the matrix approach to multiple linear regression. Topics include estimation, prediction, analysis of variance, residual analysis, transformations, multicollinearity, model selection, weighted least squares, ridge regression, and robust regression. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 5319. ADVANCED STATISTICAL PROCESS CONTROL AND TIME SERIES ANALYSIS. 3 Hours.

Design of control schemes for statistical monitoring and control of modern manufacturing systems. Topics include charts for process control, effect of autocorrelation on SPC charts, and sampling plans for acceptance inspection. Prerequisite: IE 3301 and IE 5303 or equivalent.

IE 5320. ENTERPRISE ENGINEERING METHODS. 3 Hours.

A survey of enterprise engineering methods. Topics include system development methodology, discussion of enterprise architectures, activity modeling, business modeling, activity-based performance analysis, and process improvement. Prerequisite: Graduate standing.

IE 5321. ENTERPRISE ANALYSIS AND DESIGN. 3 Hours.

An in-depth study of techniques useful for the analysis and design of the manufacturing enterprise. This course presents an advanced process description technique that is used, with simulation and activity based costing, to facilitate analysis and design. Prerequisites: Graduate standing.

IE 5322. SIMULATION AND OPTIMIZATION. 3 Hours.

An in-depth study of discrete event simulation theory and practice. Optimization and search techniques used in conjunction with simulation experiments are introduced. A commercial simulation software application is used. Prerequisite: IE 5317 or equivalent or IE 5318 concurrent.

IE 5323. AGENT BASED SIMULATION. 3 Hours.

Topics include the fundamental concepts of agent-based modeling and implementing agent-based simulation. Students are expected to be proficient in programming and Excel. Prerequisite: IE 5317.

IE 5326. INDUSTRIAL BIOMECHANICS. 3 Hours.

The development and application of biomechanical models of physical work tasks, especially manual materials handling and hard-arm work activities. Prerequisite: Graduate Standing.

IE 5327. ADVANCED STATISTICS. 3 Hours.

Continuation of IE 5317. Topics include multiple linear regression analysis, design of experiments, analysis of variance, and quality control statistics. Prerequisite: IMSE advisor approval.

IE 5329. PRODUCTION AND INVENTORY CONTROL SYSTEMS. 3 Hours.

The fundamentals of production and inventory control systems. The economic impacts of fluctuating demand, supply availability and production rates are examined. Prerequisite: Graduate standing in IMSE, or permission of IMSE advisor.

IE 5330. AUTOMATION AND ADVANCED MANUFACTURING. 3 Hours.

The design of automated and advanced production processes for manufacturing. Topics include numerical control, robotics, group technology, just-in-time, automated inspection and flexible manufacturing systems. Prerequisite: Graduate standing in IMSE or permission of IMSE advisor.

IE 5331. INDUSTRIAL ERGONOMICS. 3 Hours.

The analysis and design of physical work, workplace, and hand tools using ergonomic principles for enhancing performance, health, and safety. Work refers mainly to whole body and hand-arm activities, while workplace refers to industrial and computerized office environments. Applications focus on people's anthropometric, musculoskeletal and psychological characteristics. Prerequisite: Graduate standing in IMSE or permission of IMSE advisor.

IE 5332. NONLINEAR PROGRAMMING. 3 Hours.

Methods for nonlinear optimization including classical theory; gradient methods; sequential unconstrained methods; convex programming; genetic algorithms; simulated annealing; and separable, quadratic, and geometric programming. Prerequisite: Graduate standing.

IE 5333. LOGISTICS TRANSPORTATION SYSTEMS DESIGN. 3 Hours.

The design and analysis of domestic and international transportation systems of people, processes, and technology. Topics include the role of transportation in the extended enterprise, transportation modeling and optimization techniques, value-added supply chain issues, and financial performance measures. Prerequisites: IE 3301, or IE 5317, or equivalent or IE 5318; IE 5301 concurrent or equivalent.

IE 5334. LOGISTICS DISTRIBUTION SYSTEMS DESIGN. 3 Hours.

The design and analysis of distribution systems of people, processes and technology. The focus is on distribution, warehousing and material handling. Topics include the role of the warehouse in the extended enterprise, warehouse planning, process design, layout, equipment selection, workforce and workplace issues, and financial performance measures. Prerequisites: IE 3301, or IE 5317, or equivalent.

IE 5335. ADVANCED OCCUPATIONAL ENVIRONMENTAL HYGIENE ENGINEERING. 3 Hours.

Interaction of workers with physical environmental agents such as heat, cold, noise, vibration, illumination, radiation, and gravity. The design of work and the workplace to control environmental stresses, and their effects on workers' performance, health and safety. Prerequisite: Graduate standing.

IE 5338. HUMAN ENGINEERING. 3 Hours.

Human structural, physiological, psychological, and cognitive capacities and limitations in the workplace, and their effects on the design of work systems to enhance productivity, and maintain health and safety. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 5339. PRODUCT DESIGN, DEVELOPMENT, PRODUCIBILITY, AND RELIABILITY DESIGN. 3 Hours.

This course covers product development and engineering design process with a focus on collaborative design. Software, manufacturing, reliability, testing, logistical and product support considerations are emphasized. Prerequisite: graduate standing.

IE 5342. METRICS AND MEASUREMENT. 3 Hours.

Work measurement, methods improvements, and performance measurement. A survey of enterprise and management measurement systems is presented. Prerequisite: IE 3301, or IE 5317 or equivalent.

IE 5343. HEALTHCARE SYSTEMS ENGINEERING. 3 Hours.

Application of continuous process improvement tools in the analysis of healthcare systems. Plan and execute studies that impact healthcare quality and costs. Evaluates the effectiveness of healthcare and administrative processes and procedures. Prerequisite: graduate standing.

IE 5345. MANAGEMENT OF KNOWLEDGE AND TECHNOLOGY. 3 Hours.

Review of contemporary issues in knowledge management, databases, decision support systems, and intelligent systems. Topics include knowledge acquisition, intelligent database design, decision support systems, data mining, knowledge transfer, and collaborative development. Prerequisite: Graduate standing.

IE 5346. TECHNOLOGY DEVELOPMENT AND DEPLOYMENT. 3 Hours.

Review of management issues in developing and implementing new technologies and methodologies into an organization. Topics include technology forecasting, management of technology based projects, technological competitiveness, technology alliances, and collaboration. Prerequisite: Graduate standing.

IE 5350. GRADUATE DESIGN CAPSTONE. 3 Hours.

Practicum consisting of professional level experience in a relevant company, agency, or institution. Students will be expected to demonstrate an understanding of communication and collaboration, including workflow, reproducibility, management, collaboration tools, oral and written communication, presentation and storytelling, and team management, as well as ethics, such as understanding bias, fairness, credibility and misinformation, security, privacy, and codes of conduct. Prerequisite: 9 hours of graduate work.

IE 5351. INTRODUCTION TO SYSTEMS ENGINEERING. 3 Hours.

This course includes a survey of concepts, principles and processes required to engineer complex systems throughout the life-cycle from concept through disposal. Topics include systems thinking, technical and management processes, life cycle models, sustainability, and model-based systems engineering. Prerequisite: Graduate standing.

IE 5352. REQUIREMENTS ENGINEERING. 3 Hours.

This course focuses on system requirements engineering and related processes and methods. System verification will also be covered. Students will be introduced to model-based systems engineering related to the processes covered in the class. Prerequisite: graduate standing in engineering or consent of instructor.

IE 5353. SYSTEMS ARCHITECTURE & DESIGN. 3 Hours.

This course focuses on systems architecting and design for complex systems. Topics covered include logical and physical system architecture analysis, system design, implementation, transition to use, and enabling products. Students will be introduced to model-based systems engineering related to the processes covered in the class. Prerequisite: graduate standing in engineering or consent of instructor.

IE 5354. MANAGEMENT OF COMPLEX SYSTEMS. 3 Hours.

This course focuses on the management of the engineering of complex systems including key systems engineering management processes.

Prerequisite: graduate standing in engineering or consent of instructor. Prerequisite: graduate standing in engineering or consent of instructor.

IE 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Permission of instructor.

IE 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: Permission of instructor.

IE 5391. ADVANCED STUDIES IN INDUSTRIAL ENGINEERING. 3 Hours.

Individually approved research projects and reading courses in industrial engineering. Such individual studies will be graded A, B, C, D, F or X. Subject to the approval of the Graduate Advisor, IE 5191, IE 5291 and IE 5391 may be repeated as the topics change. In addition, work on a thesis substitute will be performed under IE 5391. In this case, IE 5391 is graded P/F/R.

IE 5398. THESIS. 3 Hours.

Graded F, R.

IE 5698. THESIS. 6 Hours.

Graded P, F, R.

IE 6197. RESEARCH IN INDUSTRIAL ENGINEERING. 1 Hour.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6297. RESEARCH IN INDUSTRIAL ENGINEERING. 2 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6301. ENTERPRISE ARCHITECTURES AND FRAMEWORKS. 3 Hours.

A survey of enterprise architectures and analysis frameworks that have been proposed for the integration of large complex enterprise systems. Emphasis is placed on state-of-the-art approaches. Prerequisite: IE 5320.

IE 6302. FACILITIES PLANNING AND DESIGN. 3 Hours.

Facilities planning through layout design. Product flow, space-activity relationships, personnel requirements, and material handling are considered, as well as receiving, shipping, warehousing, and integration with manufacturing. Facilities planning models are explored. Prerequisite: IE 3301, or IE 5317, or equivalent; IE 5301 concurrent or equivalent.

IE 6303. COMBINATORIAL OPTIMIZATION. 3 Hours.

A survey of problems and algorithms in combinatorial optimization. Topics include integer programming formulation, branch-and-bound and cutting plane algorithms, computational complexity, and polyhedral theory. Prerequisite: IE 5301 or consent of instructor.

IE 6305. ENGINEERING MANAGEMENT I. 3 Hours.

The management of the engineering function in high-technology industry with principal emphasis on the historical development of industrial management principles, decision-making and planning. Prerequisite: Graduate standing.

IE 6306. ENGINEERING MANAGEMENT II. 3 Hours.

The management of the engineering function in high-technology industry with principal emphasis on human resources and staffing, directing and leading, and controlling. Prerequisite: Graduate standing.

IE 6308. DESIGN OF EXPERIMENTS. 3 Hours.

Introduction to statistical design and analysis of experiments with applications from engineering, health care and business. Analysis includes analysis of variance, multiple comparisons and model adequacy. Designs include complete factorial, complete block, incomplete block, Latin square, Youden, two-level fractional factorial and hierarchically nested. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 6309. RESPONSE SURFACE METHODOLOGY AND COMPUTER EXPERIMENTS. 3 Hours.

Empirical model building and process optimization using experimental design and statistical modeling. The first half of the course covers first and second order models and designs, multiresponse experiments and mixture experiments. The second half introduces designs based on Latin hypercubes, orthogonal arrays, and number-based theoretic methods, plus models using kriging, multivariate adaptive regression splines and neural networks. Prerequisite: IE 6308.

IE 6310. INDUSTRIAL APPLICATIONS. 3 Hours.

Project oriented course focusing on the requirements and selection criteria for the integration of technology into simple and complex industrial activities. Prerequisite: IE 5330 or equivalent.

IE 6318. DATA MINING & ANALYTICS. 3 Hours.

An in-depth introduction to data mining and pattern recognition. Basic theories, algorithms, and key technologies in data analytics will be discussed. Case studies and real-world applications will be presented. Prerequisite: IE 3301 or IE 5317 or equivalent.

IE 6397. RESEARCH IN INDUSTRIAL ENGINEERING. 3 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6399. DISSERTATION. 3 Hours.

Graded F, R.

IE 6697. RESEARCH IN INDUSTRIAL ENGINEERING. 6 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6699. DISSERTATION. 6 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F, or W.

IE 6997. RESEARCH IN INDUSTRIAL ENGINEERING. 9 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6999. DISSERTATION. 9 Hours.

Supervised research projects directed toward the thesis. Graded P, R, F, or W.

IE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Industrial, Manufacturing and Systems Engineering - Graduate Programs

M.S. in Industrial Engineering

The Industrial Engineering Program is designed to provide the student with fundamental knowledge in multiple areas of industrial engineering. A student may pursue a broad based degree or they may specialize in a specific area such as general industrial engineering, manufacturing systems, ergonomics/human factors, or advanced analytics/operations research.

M.S. in Engineering Management

The Master of Science in Engineering Management is a STEM program designed to introduce both engineering and business tools to engineering professionals who will be moving into leadership positions in product development, strategic planning, or managing the organization's technology resources. Graduates develop an understanding of how to use an organization's technical knowledge, skills, and abilities to meet their strategic objectives.

Ph.D. in Industrial Engineering

The Industrial Engineering Program for doctoral students is designed to prepare engineers to advance their degrees in industry, government, and academia. This is a research focused program with areas of specialization in general industrial engineering, manufacturing systems, ergonomics/human factors, advanced analytics/operations research, or systems engineering/engineering management.

Graduate Certificates in Industrial Engineering

The Graduate Certificates provide students with the opportunity to be recognized for developing skills in a specialization. The Certificate in Unmanned Vehicle Systems may be earned while enrolled in the M.S. in Industrial Engineering program. The Certificates in Industrial Applications, Decision Analytics, and Logistics may be earned as a stand alone degree or while enrolled in the M.S. in Industrial Engineering program.

Admission Criteria:

M.S. in Industrial Engineering

M.S. in Engineering Management Programs

Unconditional Admission

- A GPA of at least 3.0 in the last 60 hours of undergraduate coursework.
- A GPA of at least 3.0 in all prior graduate work.
- A minimum score of 155 on the GRE Quantitative section and 146 on the GRE Verbal section.
- A minimum score of 79 on the TOEFL iBT, or a minimum score of 6.5 on the IELTS, if English is not the applicant's native language. International applicant's who have successfully completed a bachelors degree or masters degree from an institution in the United States, and are not seeking funding as a Graduate Teaching Assistant are not required to meet this requirement.
- A BS or MS in Engineering or Science.

Remedial course work may be required if an applicant does not have an engineering or science background.

GRE Waiver

Applicants may request a GRE Waiver if they meet all other admission criteria, they have graduated from an ABET accredited institution, and have a minimal of two years of relevant work experience post-degree. GRE waiver requests may be submitted at <https://common.forms.uta.edu/view.php?id=71616>.

Continuation

In order to continue in the program toward graduation, each graduate student must:

- Maintain at least a 3.0 overall GPA in all coursework taken as a graduate student and in their program, and
- Demonstrate suitability for professional practice.

If questions are raised by graduate faculty regarding either of the above, the student will be notified and will be provided the opportunity to respond to the Committee on Graduate Studies in the Department. The Committee on Graduate Studies will review the student's performance and make a recommendation concerning the student's eligibility to continue in the program. Appeal of a decision on continuation may be made through normal procedures outlined in the section of this catalog entitled "Grievances Other than Grades."

Student Outcomes

In accordance with our educational objectives, we have designed our programs to ensure graduates of our Master's and Doctoral Programs will:

- Have attained mastery of theoretical concepts in the field
- Be able to use techniques and tools important in the field
- Appreciate the need for ethical and professional behavior
- Be able to work and communicate effectively in teams

M.S. in Industrial Engineering - Degree Plan

Core Courses (12 credit hours) - Students should complete the core courses as soon as possible

- IE 5301 Advanced Operations Research
- IE 5304 Advanced Engineering Economy
- IE 5317 Introduction to Statistics
- IE 5318 Applied Linear Regression

Application Courses (12 credit hours) - Students must complete 4 additional industrial engineering graduate courses

Electives (6 credit hours) - Students must complete 2 additional graduate courses from the College of Engineering, the College of Science, or approved courses from the College of Business. Students may elect to pursue a Capstone under supervision of an Industrial Engineering Department faculty member by substituting a 3-hour elective course with a 3-hour capstone course.

Students may elect to pursue a Thesis option by substituting two 3-hour elective courses with two 3-hour thesis courses, under the supervision of an Industrial Engineering Department faculty member.

Fast Track Program for a Masters in Industrial Engineering

The Fast Track Program enables outstanding UT Arlington senior undergraduate students in Industrial Engineering to satisfy degree requirements leading to a master's degree in Industrial Engineering while completing their undergraduate studies. When senior-level students are within 15 hours of completing their undergraduate degree requirements, they may take up to 6 hours of approved senior level coursework designated by the Industrial Engineering Program to satisfy both undergraduate and graduate degree requirements. In the limiting case, a student completing the maximum allowable hours (6) while in undergraduate status would have to take only 24 additional masters level hours to meet minimum requirements for graduation.

Interested UT Arlington undergraduate Industrial Engineering students should apply to the Fast Track Program just prior to beginning their last 30 hours of their bachelor's degree. They must have completed at least 30 hours at UTA, achieving an overall GPA of 3.0 or better in all work done at UTA. Additionally, they must have completed 9 hours of specified foundation courses with a minimum GPA of 3.3 in those courses. Contact the Undergraduate Advisor or Graduate Advisor in Industrial Engineering for more information about the program.

M.S. in Engineering Management - Degree Plan

Core Courses (6 credit hours) - Students should complete the core courses as soon as possible

- IE 5304 Advanced Engineering Economy
- IE 5317 Introduction to Statistics

Application Courses (18 credit hours) - Students must complete 6 additional industrial engineering and business courses

- IE 6305 Engineering Management I
- IE 6306 Engineering Management II
- IE 5351 Introduction to Systems Engineering
- IE 5346 Technology Development and Deployment
- IE 5321 Enterprise Analysis and Design
- ACCT 5307 Measurement and Analysis for Business Decision Making

Electives (6 credit hours) - Students must complete 2 additional graduate courses from the College of Engineering, the College of Science, or approved courses from the College of Business. Students may elect to pursue a Capstone under supervision of an Industrial Engineering Department faculty member by substituting a 3-hour elective course with a 3-hour capstone course.

Final Comprehensive Examination

A final comprehensive examination is required for each master's candidate. It is taken in the last semester of the student's program of study. Students electing the thesis option will be required to complete a final thesis defense in place of the final comprehensive examination.

Transfer Credit

A student may transfer a maximum of 6 hours of graduate coursework from engineering, science, or business to the M.S. programs in the Department of Industrial, Manufacturing, & Systems Engineering. The coursework must be appropriate for the degree program. Students electing the thesis option may only transfer industrial engineering courses to their program.

Doctoral Program Objective

The Industrial, Manufacturing, & Systems Engineering Department Doctoral program is designed for advanced graduate students who wish to advance their careers in research and development in industry, government, or academia.

A student's program will consist of coursework, independent study, and a dissertation in a field pertinent to the student's areas of interest. The program for each student will be planned by the student and a committee of faculty members.

Students with undergraduate degrees in fields other than engineering may be required to take necessary courses to establish a background in science, mathematics, and engineering.

Admission Criteria for the Doctoral Program

Unconditional Admission

Unconditional Admission into the Doctoral program in Industrial Engineering is granted if all of the following conditions are met.

- A GPA of at least 3.0 in the last 60 hours of undergraduate coursework.
- A GPA of at least 3.3 in all prior graduate coursework.
- A minimum score of 155 on the GRE Quantitative section and 150 on the Verbal section.
- A minimum score of 79 on the TOEFL iBT, or equivalent, if English is not the applicant's native language.
- A completed MS in Engineering or Science.

Remedial course work may be required if an applicant does not have an engineering or science background.

Probationary Admission

Prospective students not meeting the conditions for unconditional admission may be granted probationary admission if their qualifications indicate a potential for success. Deficiency coursework may be required. Satisfying all deficiency requirements and maintaining a GPA of at least 3.0 in each of their first two semesters of graduate work may clear probationary status.

Continuation

In order to continue in the program toward graduation, each graduate student must:

- Maintain at least a 3.0 overall GPA in all coursework taken as a graduate student and in the program, and
- Demonstrate suitability for professional practice.

If questions are raised by graduate faculty regarding either of the above, the student will be notified and will be provided the opportunity to respond to the Committee on Graduate Studies in the Department. The Committee on Graduate Studies will review the student's performance and make a recommendation concerning the student's eligibility to continue in the program. Appeal of a decision on continuation may be made through normal procedures outlined in the section of this catalog entitled "Grievances Other than Grades."

Bachelors to Doctoral Program for UTA Graduates

The Bachelors to Doctoral Program in Industrial Engineering is available to UTA Industrial Engineering graduates who apply within one year of graduation. The program requires 48 credit hours of coursework and additional credit hours of dissertation.

Student Outcomes

In accordance with our educational objectives, we have designed our program to ensure graduates of our Doctoral Program will

- Have attained a comprehensive master of the theoretical concepts in the field
- Be able to use and develop techniques and tools in the field

- Appreciate the need for ethical and professional behavior
- Be able to work, communicate, and lead teams effectively

Admission Criteria:

Unconditional Admission

- A GPA of at least 3.0 in the last 60 hours of undergraduate coursework.
- A GPA of at least 3.0 in all prior graduate work.
- A minimum score of 155 on the GRE Quantitative section and 146 on the GRE Verbal section.
- A BS or MS in Engineering or Science.

Remedial course work may be required if an applicant does not have an engineering or science background.

GRE Waiver

Applicants may request a GRE Waiver if they meet all other admission criteria, they have graduated from an ABET accredited institution, and have a minimal of two years of relevant work experience post-degree. GRE waiver requests may be submitted at <https://common.forms.uta.edu/view.php?id=71616>.

Continuation

In order to continue in the program toward graduation, each graduate student must:

- Maintain at least a 3.0 overall GPA in all coursework taken as a graduate student and in their program, and
- Demonstrate suitability for professional practice.

If questions are raised by graduate faculty regarding either of the above, the student will be notified and will be provided the opportunity to respond to the Committee on Graduate Studies in the Department. The Committee on Graduate Studies will review the student's performance and make a recommendation concerning the student's eligibility to continue in the program. Appeal of a decision on continuation may be made through normal procedures outlined in the section of this catalog entitled "Grievances Other than Grades."

Student Outcomes

In accordance with our educational objectives, we have designed our programs to ensure graduates of our Master's and Doctoral Programs will:

- Have attained mastery of theoretical concepts in the field
- Be able to use techniques and tools important in the field
- Appreciate the need for ethical and professional behavior
- Be able to work and communicate effectively in teams

Certificate in Unmanned Vehicle Systems - Degree Plan

Academic Requirements

Students must complete the following requirements:

- 6 hours of an interdisciplinary core curriculum forming the basis of a common core in UVS Certificate
- 9 hours of discipline specific curriculum.
- Maintain a combined GPA of 3.0 or better in all courses used to satisfy the certificate requirements.

Core Courses (12 credit hours) - Students should complete the core courses as soon as possible

- IE 5378 Introduction to Unmanned Vehicle Systems
- IE 5379 Unmanned Vehicle System Development

Application Courses (9 credit hours) - Students must complete 3 additional industrial engineering graduate courses

Students must complete 15 hours of coursework and maintain 3.0 grade point average or better in the five program courses. Course requirements are managed by the certificate program advisor

Certificate in Industrial Applications - Degree Plan

- REQUIRED (1 COURSE)
 - IE 5317 Introduction to Statistics
- ELECTIVES (Select 3 COURSES)

- IE 5303 Quality Systems
- IE 5321 Enterprise Analysis and Design
- IE 5322 Simulation and Optimization
- IE 5329 Production and Inventory Control
- IE 5330 Automation and Advanced Manufacturing
- IE 5338 Human Engineering
- IE 5342 Metrics and Measurements
- IE 6302 Facilities Planning and Design
- OPEN ELECTIVE (1 COURSE)
 - Select one elective graduate from engineering or science, or an approved course from the College of Business

Certificate in Decision Analytics - Degree Plan

- REQUIRED (2 COURSES)
 - IE 5317 Introduction to Statistics
 - IE 5301 Operations Research
- ELECTIVES (Select 2 COURSES)
 - IE 5303 Quality Systems
 - IE 5305 Linear Programming
 - IE 5306 Dynamic Programming
 - IE 5311 Decision Analysis
 - IE 5318 Applied Regression Analysis
 - IE 5322 Simulation and Optimization
 - IE 6308 Design of Experiments
 - IE 6318 Data Mining and Analysis
- OPEN ELECTIVE (1 COURSE)
 - Select one elective graduate courses from engineering or science, or an approved course from the College of Business

Certificate in Logistics - Degree Plan

- REQUIRED (1 COURSE)
 - IE 5317 Introduction to Statistics
- ELECTIVES (Select 3 COURSES)
 - IE 5310 Production Systems Design
 - IE 5329 Production and Inventory Control Systems
 - IE 5333 Logistics Transportation Systems
 - IE 5334 Logistics Distribution Systems
 - OPMA 5368 Global Supply Chain Management
 - OPMA 5369 Logistics Management
- OPEN ELECTIVE (1 COURSE)
 - Select one elective graduate courses from engineering or science, or an approved course from the College of Business

Industrial, Manufacturing and Systems Engineering - Undergraduate Program

Overview

Industrial Engineering students will be prepared for engineering practice through a curriculum culminating major engineering design experience that 1) incorporates appropriate engineering standards and multiple constraints, and 2) is based on the knowledge and skills acquired in earlier course work.. The curriculum will prepare graduates to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy. The curriculum includes in-depth instruction to accomplish the integration of systems using appropriate analytical, computational, and experimental practices.

Program Educational Objectives

Industrial engineers analyze, design, and transform complex systems of people, processes, and technology to accomplish organizational goals. To this end, the program educational objectives of the Industrial Engineering program are what we expect our students to attain within three to five years of graduation as follows.

- To create value for stakeholders through the identification, development, and implementation of new or optimized processes, products, or integrated systems.
- To successfully communicate and document process descriptions, methodologies, data, analyses, results, and proposals to stakeholders.
- To achieve goals through effective team interactions, followership, and leadership.
- To maintain basic knowledge and skills and to evolve capabilities through professional development and advanced education.
- To maintain connection with the University and the professional community.

The following student outcomes prepare graduates to attain the program educational objectives:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Students will be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints. The curriculum will prepare graduates to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy. The curriculum includes in-depth instruction to accomplish the integration of systems using appropriate analytical, computational, and experimental practices.

ABET Accreditation

Accreditation is an assurance that the professionals that serve us have a solid educational foundation and are capable of leading the way in innovation, emerging technologies, and in anticipating the welfare and safety needs of the public. The program in Industrial Engineering has been accredited since 1967 by the Engineering Accreditation Commission (EAC) of ABET, <http://www.abet.org>.

Admission to Industrial Engineering Program

For admission to the industrial engineering program, all students must meet the requirements for admission to the College of Engineering. A grade point average of 2.25 in science, mathematics, and engineering courses is required for unconditional transfer into the department.

Advancement into Industrial Engineering Professional Program

Requirements for advancement into the Professional Program in Industrial Engineering are in accordance with those in the College of Engineering with the added stipulations that:

- Application to the Professional Program is to be made to the Undergraduate Advisor during the semester following completion of the last pre-professional course.
- No professional Industrial Engineering course may be taken unless the student is admitted into the professional program or obtains the consent of the Undergraduate Advisor. Professional courses may be taken to fill out a schedule in the semester that the last pre-professional course is taken.

- Each student must complete all pre-professional courses stipulated under "Requirements for a Bachelor of Science Degree in Industrial Engineering" with a minimum grade of C in each course and a minimum GPA of 2.25 in each of three categories: (1) overall, (2) required math, science, and engineering courses, and (3) required IE courses.

Most professional Industrial Engineering courses are offered only once a year. Students are urged to plan their course sequence schedules carefully to avoid delaying their graduation

Advising

The advising process is designed to assist students as they make important decisions related to their academic progress at UTA and career goals in general.

Specifically, the purpose of advising is:

- To empower students to clarify and achieve their educational goals by providing timely and accurate information about degree requirements, as well as College and University policies and procedures.
- To provide every student with the opportunity to develop a relationship with a knowledgeable advisor in order to obtain sound academic advising with a degree of continuity.
- To provide students with information about additional services, programs, and support systems available within the College and University as appropriate.

Ultimately, the student is responsible for seeking academic advice, making decisions regarding goals, meeting degree requirements, and enrolling in appropriate courses. The academic advisor is to provide assistance in these decisions. Each student is responsible for understanding and complying with University and College practices and procedures.

During each long semester, the Industrial and Manufacturing Systems Engineering Department conducts pre-enrollment advising weeks. All students must receive this pre-enrollment advising prior to registering for classes.

Oral Communication and Computer Use Competency Requirements

Students majoring in Industrial Engineering may use COMS 2302, to demonstrate oral communication competency. Students majoring in Industrial Engineering are required to take IE 1205 INTRODUCTION TO INDUSTRIAL ENGINEERING AND COMPUTING. A computer competency examination will be administered in IE 1205 INTRODUCTION TO INDUSTRIAL ENGINEERING AND COMPUTING. For transfer students and others who do not take IE 1205 INTRODUCTION TO INDUSTRIAL ENGINEERING AND COMPUTING, the computer literacy test will be administered by the University.

Academic Honesty

The College of Engineering takes academic honesty and ethical behavior very seriously. Engineers are entrusted with the safety, health, and well being of the public. Students found guilty of academic dishonesty will be punished to the full extent permitted by the rules and regulations of UT Arlington.

In particular, any student found guilty of a second offense by the Office of Student Judicial Affairs will be subject to dismissal from the College of Engineering.

Other Provisions

Refer to the College of Engineering section of this catalog for information concerning the following topics: Preparation in High School for Admission to the College of Engineering, Admission to the College of Engineering, Admission to the Professional Program, Counseling, College of Engineering Academic Regulations, Transfer Policies, College of Engineering Probation, Repeating Course Policy, Academic Honesty, and Modern and Classical Languages Requirement.

Requirements for a Bachelor of Science Degree in Industrial Engineering

General Education Courses

POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	3
Language, Philosophy, or Culture Elective		3
Creative Arts Elective		3
History Electives		6

Pre-Professional Courses ¹

UNIV 1131 or ENGR 1101	STUDENT SUCCESS ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
MATH 1426	CALCULUS I ²	4

MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	8
Or:		
CHEM 1465	CHEMISTRY FOR ENGINEERS (& Approved Science Elective)	
MAE 1351	INTRODUCTION TO ENGINEERING DESIGN	3
IE 1110	FIRST SEMESTER INDUSTRIAL ENGINEERING SEMINAR	1
IE 1325	INTRODUCTION TO DATA ANALYSIS	3
IE 2305	COMPUTER APPLICATIONS IN INDUSTRIAL ENGINEERING (or approved alternative)	3
IE 2308	ECONOMICS FOR ENGINEERS	3
IE 3301	ENGINEERING PROBABILITY	3
IE 3315	OPERATIONS RESEARCH I	3
Professional Courses		
IE 3314	ENGINEERING RESEARCH METHODS	3
IE 3343	METRICS AND MEASUREMENT	3
IE 4303	PRODUCTION AND INVENTORY CONTROL	3
IE 4305	ENGINEERING DECISION MAKING WITH DATA USING PYTHON	3
IE 4308	QUALITY SYSTEMS	3
IE 4315	OPERATIONS RESEARCH II	3
IE 4318	ENTERPRISE DESIGN	3
IE 4322	ENTERPRISE SIMULATION	3
IE 4325	AUTOMATION AND ROBOTICS I	3
IE 4339	PRODUCT DEVELOPMENT, PRODUCIBILITY AND ENTREPRENEURSHIP	3
IE 4340	ENGINEERING PROJECT MANAGEMENT	3
IE 4343	FACILITIES PLANNING AND DESIGN	3
IE 4344	HUMAN FACTORS ENGINEERING	3
IE 4345	DECISION ANALYSIS IN SYSTEM DESIGN	3
IE 4350	INDUSTRIAL ENGINEERING CAPSTONE DESIGN	3
Technical Electives		9
Total Hours		128

¹ All pre-professional courses must be completed before enrolling in professional courses.

² Placement in MATH 1426 is based on UT Arlington math placement scores.

Note: Total hours will depend upon prior preparation and academic qualifications. Also, students who do not have two units of high school foreign language will be required to take modern and classical languages courses in addition to the previously listed requirements.

The Industrial and Manufacturing Systems Engineering Department conducts academic advising each semester. Each student must make an appointment to meet with the undergraduate advisor.

Recommended Core Curriculum

Industrial Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Industrial Engineering" along with ENGL 1301, MATH 1426, MATH 2425, MATH 2326, PHYS 1443, PHYS 1444, and IE 2308, which are within the Pre-Professional Program. The university core curriculum allows each degree plan to designate a component area to satisfy three hours of the core requirement. For the industrial engineering degree plan, the designated component area is Mathematics and MATH 2326 and is selected to satisfy the requirement. For more information, see <https://nextcatalog.uta.edu/degree/requirements/generalcore/requirements/>.

Suggested Course Sequence

For a suggested course sequence see the departmental website.

Requirements for a Minor in Industrial Engineering

To receive a minor in Industrial Engineering, a student must complete the following courses with a grade of C or better in:

IE 2308	ECONOMICS FOR ENGINEERS	3
IE 3301	ENGINEERING PROBABILITY	3
IE 3315	OPERATIONS RESEARCH I	3
Three upper division IE courses for which the prerequisites are satisfied		9
Total Hours		18

Certificate in Unmanned Vehicle Systems

Program Objective

The Certificate in UVS (Unmanned Vehicle Systems) is offered through the Industrial, Manufacturing, and Systems Engineering Department and will educate undergraduate students in the knowledge and skills required for design, development and operation of UVS including UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground Systems), and UMS (Unmanned Maritime Systems). The certificate program will emphasize the common aspects of UVS such as sensors, actuators, communications, and more importantly, decision-making capabilities (autonomy). This program aims at the dual goal of providing the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants. To this end, the IMSE Certificate in UVS will be awarded concurrently with a BSIE undergraduate degree.

Admission Requirements

The certificate is open to all degree-seeking students. Students should see the undergraduate advisor for the Industrial, Manufacturing, and Systems Engineering Department for admission to the program.

Academic Requirements

Students must complete 15 hours of coursework as outlined below that include 6 hours of a core curriculum that is interdisciplinary and forms the basis of a common core in UVS Certificate and 9 hours of discipline specific curriculum. A combined GPA of 3.0 or better must be earned on all courses used to satisfy the certificate requirements.

Required classes		6
IE 4378	INTRODUCTION TO UNMANNED VEHICLES SYSTEMS	
IE 4379	UNMANNED VEHICLE SYSTEM DEVELOPMENT	
9 credit hours from the following list		9
IE 2305	COMPUTER APPLICATIONS IN INDUSTRIAL ENGINEERING	
IE 3314	ENGINEERING RESEARCH METHODS	
IE 4325	AUTOMATION AND ROBOTICS I	
One 3 hour alternate UVS related course may be substituted based on consultation with the undergraduate curriculum advisor in the program.		

Fast Track Program for a Master's Degree in Industrial Engineering

The Fast Track Program enables outstanding UT Arlington senior undergraduate students in Industrial Engineering to satisfy degree requirements leading to a master's degree in Industrial Engineering while completing their undergraduate studies. When senior-level students are within 15 hours of completing their undergraduate degree requirements, they may take up to six hours of coursework designated by the Industrial Engineering Program to satisfy both undergraduate and graduate degree requirements. In the limiting case, a student completing the maximum allowable hours (6) while in undergraduate status would have to take only 24 additional hours to meet minimum requirements for graduation.

Interested UT Arlington undergraduate Industrial Engineering students should apply to the Industrial Engineering Program when they are within 30 hours of completing their bachelor's degrees. They must have completed at least 30 hours at UT Arlington, achieving an overall GPA of 3.0 or better in all work done at UT Arlington and in the last 30 hours. Additionally, they must have completed nine hours of specified foundation courses with a minimum GPA of 3.3 in those courses. Contact the Undergraduate Advisor or Graduate Advisor in Industrial Engineering for more information about the program.

BS to PhD Program

The BS to PhD track in Industrial Engineering requires 30 credit hours including 18 hours of diagnostic coursework, a three credit hour elective and nine credit hours of research coursework. This is in addition to the PhD requirements.

Interdisciplinary Programs

Overview

Interdisciplinary programs involve two or more academic, scientific, or artistic disciplines. The College of Engineering supports a number of undergraduate interdisciplinary programs and recently added a new program in data science at the graduate level.

UNDERGRADUATE PROGRAMS:

- Minor in Nuclear Engineering (p. 425)
- Minor in Sustainable Engineering (p. 425)

GRADUATE PROGRAMS:

- Master of Science in Data Science (p. 604)

Interdisciplinary Graduate Programs

M.S. IN DATA SCIENCE

UTA's Master of Science degree in Data Science helps meet the growing need for data science professionals in STEM, health-related and other fields, expanding students' marketable skills and preparing them to enter a fast-growing job field.

The program is unique for its breadth, offering a widely encompassing set of courses that allows students without a computer science background to develop the necessary skills for data science jobs in business, engineering, healthcare and science settings. It aims to instill the acumen needed to draw insights from data, to make sound decisions using data, and to effectively communicate about data-driven findings and decisions.

Students will use real-world problems, methods and data in instruction materials through collaboration with community partners; problem-based, experiential learning which emphasizes hands-on coding exercises; service learning in which students learn while doing for social good; and inclusive learning to broaden student participation and strengthen student retention in data science education.

The degree requires 30 credit hours and can be completed in two years. After completion of a set of core courses, students choose to pursue one of five tracks: engineering, biology, geology, mathematics, or psychology. They will participate in a required capstone experience which can be integrated with workplace projects. Elective options offer additional flexibility to craft a degree that fits his or her specific situation.

Students will come from different backgrounds, but the most important factor for their growth and success will be a keen interest in learning the powerful ways in which data can be applied in various fields.

M.S. IN DATA SCIENCE

ADMISSION REQUIREMENTS

Admission to the MSDS program is based on the applicant's perceived ability to do graduate work in data science as shown by the applicant's test scores, transcripts, and other application documents.

To begin the program, an applicant must submit a completed application and fee to the UTA Graduate Admissions Office. When all application materials have been collected by Graduate Admissions, the information is forwarded to the program directors for evaluation. The admission decision is then communicated to Graduate Admissions, with the final decision sent via email from Graduate Admissions to the applicant.

If there is a delay in receiving materials, the application may be deferred until all required materials are available. The applicant is notified of the deferral by the Graduate Admissions Office via email.

Present requirements for the MSDS program include:

1. An undergraduate degree, preferably in natural and/or physical sciences, technology, engineering or mathematics (STEM) or related field, or in other fields if the applicant has professional work experience in STEM related fields.
2. A 3.0 grade point average (on a 4.0 scale) on the last two years of undergraduate coursework. In particular, performance on STEM-related courses is emphasized.
3. A sum of verbal plus quantitative scores of at least 300 on the GRE, with GRE quantitative score of at least 155 and GRE verbal score of at least 145.
4. International applicants and applicants whose native language is not English will need to take the Test of English as a Foreign Language (TOEFL) and score at least 80 with no area score of less than 20, or take the International English Language Testing System (IELTS) exam and score at least 6.5 in all areas.

Notes:

- Currently, the GRE requirement is waived for all applicants, due to circumstances related to the pandemic.
- In general, an applicant who graduated with a Bachelor's degree from an accredited U.S. institution within the last five years with a GPA of 3.2 or better on a 4.0 scale, and/or who is currently conducting professional work in related fields should contact the MSDS graduate advisors about the possibility of a GRE waiver.
- Applications with significant deficiencies in college-level mathematics may be deferred/denied as determined by the MSDS program advisors.
- If an applicant has a bachelors or master's degree from an accredited U.S. institution, the English Proficiency requirement on TOEFL/IELTS is waived. However, it is waived for admission purposes only. If the applicant wishes to be considered for possible funding as a Graduate Teaching Assistant (GTA) or have any teaching responsibility, the applicant must have a U.S. bachelor's degree or a TOEFL speaking score of at least 23, or an IELTS speaking score of at least 7. A master's degree from a U.S. institution does not suffice for a waiver of the English proficiency requirement for international applicants desiring consideration for GTA support. An applicant who does not achieve the stated English proficiency standards may be required to take the Graduate English Skills Program (GESP) qualifying exam upon arrival at UTA to determine the need for additional English language courses after admission.

- Only the following application documents are required: application, fee, transcripts from all higher education institutions attended, and GRE and TOEFL scores unless they are waived. The MSDS program neither requires nor reviews letters of recommendation, statements of purpose, or any other supplemental materials from applicants.

COURSE REQUIREMENTS (30 HOURS)

Core Courses (12 hours)

DASC/CSE 5300	FOUNDATION OF COMPUTING #
DASC 5301/CSE 5332	DATA SCIENCE
DASC 5302/IE 5317	INTRODUCTION TO PROBABILITY AND STATISTICS
DASC 5303/IE 5315	DATA SCIENCE PROJECT MANAGEMENT

A student is required to earn a 'C' or higher grade on DASC 5300/CSE 5300 to move forward in the program. A student who receives 'D' or lower may be allowed to repeat the course in order to fulfill the requirement. However, the repeated credit hours will not be counted toward the degree.

Specialization Courses (9 hours)

ENGINEERING TRACK, COMPUTER SCIENCE (CHOOSE 3)

CSE 5330	DATABASE SYSTEMS
CSE 5334	DATA MINING
CSE 5335	WEB DATA MANAGEMENT
CSE 5360	ARTIFICIAL INTELLIGENCE I
CSE 5367	PATTERN RECOGNITION
CSE 5368	NEURAL NETWORKS
CSE 6332	CLOUD COMPUTING & BIG DATA
CSE 6363	MACHINE LEARNING
CSE 6367	COMPUTER VISION

ENGINEERING TRACK, INDUSTRIAL ENGINEERING (CHOOSE 3)

IE 5301	INTRODUCTION TO OPERATIONS RESEARCH #
IE 5303	QUALITY SYSTEMS
IE 5304	ADVANCED ENGINEERING ECONOMY #
IE 5322	SIMULATION AND OPTIMIZATION
IE 5323	AGENT BASED SIMULATION #

Mandatory for students in the Industrial Engineering specialization

SCIENCE TRACK, BIOLOGY

BIOL 5340	BIOINFORMATICS
TBD	BIOL UPPER LEVEL 1
TBD	BIOL UPPER LEVEL 2

***NOTE: Previously required BIOL 5361 and 5362 are no longer available. Replacement courses which sufficiently fulfill the biology specialization requirements will be determined at a later date.

SCIENCE TRACK, GEOLOGY

GEOL 5320	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS
GEOL 5322	GLOBAL POSITIONING SYSTEM
GEOL 5323	REMOTE SENSING FUNDAMENTALS

SCIENCE TRACK, MATHEMATICS (CHOOSE 3)

MATH 5314	EXPERIMENTAL DESIGN
MATH 5353	APPLIED LINEAR MODELS
MATH 5358	REGRESSION ANALYSIS

MATH 6310	FOUNDATION OF DATA SCIENCES
MATH 6311	OPTIMIZATION ON BIG DATA

SCIENCE TRACK, PSYCHOLOGY

PSYC 5407	EXPERIMENTAL DESIGN
PSYC 6349	PSYCHOMETRIC THEORY
PSYC 6355	MULTIVARIATE ANALYSIS

Electives (6 hours)

- Any specialization courses outside a student's own specialization OR others approved by program faculty.

Capstone Project (3 hours)

DASC 5309	DATA SCIENCE CAPSTONE PROJECT #
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This requirement can be fulfilled by equivalent course approved by the program director.

COURSES FROM OUTSIDE MSDS

Course requirements may be met using coursework from outside the MSDS program, as follows:

- The requirements for DASC 5300/CSE 5300 and DASC 5302/IE 5317 can be fulfilled by appropriate undergraduate computing-related and statistics-related courses, respectively. For DASC 5301/CSE 5332 and DASC 5303/IE 5315, external courses must be at the graduate level and cover all essential topics of the corresponding core course. The requirements for specialization courses can be fulfilled by an external course if (a) the external course is at the graduate level and covers all essential topics of the specialization course; and (b) given any other specialization course in the list, the student has either taken it or the course can be fulfilled by an external course, as in (a). See the chart above for the list of specialization courses in each track.
- The student must still meet the 30-hour degree requirement. In lieu of each core or specialization course that is to be fulfilled by an external course, the student must take an extra elective in addition to the two required electives. See above for requirements regarding electives.
- External courses must be vetted by and arrangements must be approved by an MSDS program advisor.

CURRICULUM SCHEDULE

- Students should meet the requirements of DASC 5300, DASC 5301, DASC 5302, before or in the same semester when they are enrolled in any other course for fulfilling MSDS degree requirements.
- Students should only be enrolled in DASC 5309 in their final semester.
- The specialization and elective courses can be taken in any order, as long as prerequisites are satisfied.
- It is recommended that DASC 5303 is taken prior to or concurrent with any specialization and elective course.

CORE COURSES

DASC 5300/CSE 5300. Foundation of Computing. 3 Hours.

Basics of programming, data structures, and algorithms. Introduction to databases and operating systems. Basics of discrete structures and computability. Course is used for the Master's in Data Science degree program and certificate programs for non-CSE majors. It cannot be taken for credit towards any CSE degree.

DASC 5301/CSE 5332. Data Science. 3 Hours.

This inspirational course follows a data-science-for-all perspective that views data acumen as part of literacy. It aims to instill in students the data acumen, i.e., the basic skills to wrestle with data, to draw insights from data, to make sound decisions responsibly using data, and to effectively communicate about data-driven findings and decisions. Topics include 1) data management: data curation, preparation, model, and querying; 2) data description and visualization: exploratory data analysis, graphics, user interface and user experience design; 3) machine learning and knowledge discovery: supervised learning, unsupervised learning, pattern and knowledge extraction, deep learning, model evaluation and interpretation. Prerequisite: MATH1301 or MATH1302, or MATH1308, or MATH1426, or equivalent and permission of advisor.

DASC 5302/IE 5317. Introduction to Probability and Statistics. 3 Hours.

Topics include descriptive statistics, set theory, combinatorics, mathematical expectation, probability distributions, confidence interval estimation, regression analysis, analysis of variance, and design of experiments. Prerequisite: MATH 1426 or equivalent and permission of advisor.

DASC 5303/IE 5315. Data Science Project Management. 3 Hours.

Management and control of multifaceted science and engineering projects. Coordination and interactions between client and various service organizations. Project manager selection. Typical problems associated with various phases of project life cycle. Case studies illustrate theories and concepts. Students will be expected to demonstrate an understanding of communication and collaboration, including workflow, reproducibility, codebase management, collaboration tools, oral and written communication, presentation and storytelling, and team management, as well as ethics, such as understanding bias, fairness, credibility and misinformation, security, privacy, and codes of conduct.

SPECIALIZATION COURSES**ENGINEERING TRACK, COMPUTER SCIENCE****CSE 5330. DATABASE SYSTEMS. 3 Hours.**

Database system architecture; management and analysis of files, indexing, hashing, and B+- trees; the relational model and algebra; the SQL database language; database programming techniques, database design using Entry-Relationship, extended E-R, and UML modeling; basics of normalization. Introduction to database security, query processing and transaction management. Prerequisite: CSE 2320.

CSE 5334. DATA MINING. 3 Hours.

Preparing data for mining, using preprocessing, data warehouses and OLAP; data mining primitives, languages and system architecture; data mining techniques including association rule mining, classification/prediction and cluster analysis.

CSE 5335. WEB DATA MANAGEMENT. 3 Hours.

This course provides an in depth study of models, languages and techniques for large-scale Web data management in distributed and heterogeneous environments. Topics include: Web programming with an emphasis on Web data management, Web Services, semi-structured data, XML standards, modern Web search engines, web information systems, Web query languages, distributed computing, metadata management with RDF, and Semantic Web.

CSE 5360. ARTIFICIAL INTELLIGENCE I. 3 Hours.

Introduction to the methods, concepts and applications of artificial intelligence, including knowledge representation, search, theorem proving, planning, natural language processing, and study of AI programming languages. Prerequisite: CSE 2320 and CSE 3315, or consent of instructor

CSE 5367. PATTERN RECOGNITION. 3 Hours.

Principles and various approaches of pattern recognition processes, including Bayesian classification, parametric/non-parametric classifier design, feature extraction for signal representation, and techniques for classification and clustering. Current issues in pattern recognition research will also be examine. Prerequisite: CSE 2320, MATH 3313.

CSE 5368. NEURAL NETWORKS. 3 Hours.

Theoretical principles of neurocomputing. Learning algorithms, information capacity, and mapping properties of feedforward and recurrent networks. Different neural network models will be implemented and their practical applications discussed. Prerequisite: CSE 5301 or consent of instructor.

CSE 6332. CLOUD COMPUTING & BIG DATA. 3 Hours.

The focus of this course is on data management techniques and tools for storing and analyzing very large volumes of data. Topics include: cloud computing; virtualization; distributed file systems; large data processing using Map-Reduce; data modeling, storage, indexing, and query processing for big data; key-value storage systems, columnar databases, NoSQL systems; big data technologies and tools; large-scale stream processing systems; data analytics frameworks; big data applications, including graph processing, recommendation systems, and machine learning.

CSE 6363. MACHINE LEARNING. 3 Hours.

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. Prerequisite: CSE 5301 or consent of instructor.

CSE 6367. COMPUTER VISION. 3 Hours.

Advanced techniques for interpretation, analysis, and classification of digital images. Topics include methods for segmentation, feature extraction, recognition, stereo vision, 3-D modeling, and analysis of time-varying imagery. Also taught as EE 6358. Prerequisite: CSE 5301 or CSE 5360 or EE 5356 or EE 5357, and consent of instructor.

ENGINEERING TRACK, INDUSTRIAL ENGINEERING**IE 5301. INTRODUCTION TO OPERATIONS RESEARCH. 3 Hours.**

A survey of quantitative methods to develop modeling and decision-making skills. Topics include linear programming, goal programming, the simplex and dual simplex algorithms, transportation and assignment problems, integer programming, network analysis, nonlinear programming, decision trees, Markov Chains, and queuing theory. Prerequisites: IE 3301 or IE 5317 or equivalent.

IE 5303. QUALITY SYSTEMS. 3 Hours.

Principles and practices of industrial quality control. Topics include the Deming philosophy, process improvements, statistical process control, process capability analysis and product acceptance. Prerequisite: IE 5317 or equivalent or IE 5318 concurrent.

IE 5304. ADVANCED ENGINEERING ECONOMY. 3 Hours.

Analysis of capital investments in engineering and technical projects. Topics include decision analysis methods, cash flows, revenue requirements, activity-based analysis, multi-attribute decisions, probabilistic analysis and sensitivity/risk analysis. Prerequisite: graduate standing.

IE 5322. SIMULATION AND OPTIMIZATION. 3 Hours.

An in-depth study of discrete event simulation theory and practice. Optimization and search techniques used in conjunction with simulation experiments are introduced. A commercial simulation software application is used. Prerequisite: IE 5317 or equivalent or IE 5318 concurrent.

SCIENCE TRACK, BIOLOGY

BIOL 5340. BIOINFORMATICS. 3 Hours.

This course is an applied introduction to bioinformatics and computational genomics. The course is geared toward the student with a biology background and limited programming experience. The course provides an entrance to commonly used programming/scripting languages and an introduction to numerous aspects of modern genomic data analyses (e.g. identification of coding and regulatory features in novel sequences, expression analysis, and comparative/phylogenetic analyses).

TBD **BIOL UPPER LEVEL 1**

TBD **BIOL UPPER LEVEL 2**

SCIENCE TRACK, GEOLOGY

GEOL 5320. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software.

GEOL 5322. GLOBAL POSITIONING SYSTEM. 3 Hours.

Review of the NAVSTAR Global Positioning System and its segments: space, operational control, and GPS receivers. Mechanics of the satellite constellation; GPS signal structure; data and coordinate systems; precision and accuracy; error factors; absolute (point) versus relative (differential) positioning. Various positioning techniques using several types of GPS receivers; field data collection and input into GIS programs for data analysis and presentation. Prerequisite: GEOL 4330 or GEOL 5320.

GEOL 5323. REMOTE SENSING FUNDAMENTALS. 3 Hours.

The electromagnetic spectrum and the interaction of EM waves with matter; various types of sensing devices; spectral and spatial resolution parameters; airborne and satellite sensor platforms; aerial photographs and false-color images. The sequence of data acquisition, computer processing and interpretation; sources of data; the integration of remote sensing data with other data types in GIS. Prerequisite: GEOL 4330 or GEOL 5320.

SCIENCE TRACK, MATHEMATICS (CHOOSE 3)

MATH 5314. EXPERIMENTAL DESIGN. 3 Hours

This course covers the classical theory and methods of experimental design, including randomization, blocking, one-way and factorial treatment structures, confounding, statistical models, analysis of variance tables and multiple comparisons procedures. Prerequisite: MATH 5305/STATS 5305 or MATH 5355/STATS 5355 or permission of instructor.

MATH 5353. APPLIED LINEAR MODELS. 3 Hours.

The course covers, at an operational level, three topics: 1) the univariate linear model, including a self-contained review of the relevant distribution theory, basic inference methods, several parameterizations for experimental design and covariate-adjustment models and applications, and power calculation; 2) the multivariate linear model, including basic inference (e.g. the four forms of test criteria and simultaneous methods), applications to repeated measures experiments and power calculation; and 3) the univariate mixed model, including a discussion of the likelihood function and its maximization, approximate likelihood inference, and applications to complex experimental designs, missing data, unbalanced data, time series observations, variance component estimation, random effects estimation, power calculation and a comparison of the mixed model's capabilities relative to those of the classical multivariate model. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis) or equivalent.

MATH 5358. REGRESSION ANALYSIS. 3 Hours.

A comprehensive course including multiple linear regression, non-linear regression and logistic regression. Emphasis is on modeling, inference, diagnostics and application to real data sets. The course begins by developing a toolbox of methods via a sequence of guided homework assignments. It culminates with projects based on consulting-level data analysis problems involving stratification, covariate adjustment and messy data sets. Some knowledge of the SAS package is required. Prerequisites: MATH 5312/STATS 5312 or MATH 5305/STATS 5305 with a B or better or permission of the instructor.

MATH 6310. FOUNDATION OF DATA SCIENCES. 3 Hours.

Basic knowledge and computational methods in data sciences, select topics in norms, semidefinite matrix, nonnegative matrix, Cholesky decomposition, QR decompositions, linear system, least squares problem, eigenvalue and singular value decompositions, low rank approximation, nonnegative matrix factorization, introduction to simplex method, KKT conditions for optimizations, Krylov subspace methods, and applications. Prerequisite: MATH 3330 or consent of the instructor.

MATH 6311. OPTIMIZATION ON BIG DATA. 3 Hours.

Introduction to big data analysis; real world applications of data science; linear system solutions; linear programming; duality theory; convex sets; convex functions; optimality conditions; unconstrained optimization; constraint optimization; conjugate direction methods; alternating direction method of multipliers; classification/regression models and algorithms; dimensionality reduction for visualization; projects on real data. Prerequisite: MATH 3330 or consent of the instructor.

SCIENCE TRACK, PSYCHOLOGY**PSYC 5407. EXPERIMENTAL DESIGN. 4 Hours.**

Statistical aspects of complex experimental designs used in psychological research. Prerequisite: PSYC 5406.

PSYC 6349. PSYCHOMETRIC THEORY. 3 Hours.

Introduction to test construction. Topics include reliability theory, test validation, and item analysis.

PSYC 6355. MULTIVARIATE ANALYSIS. 3 Hours.

Application of general linear model to special cases such as factor analysis, multiple regression, and discriminant analysis. PSYC 5344 recommended.

CAPSTONE PROJECT**DASC 5309. Data Science Capstone Project. 3 Hours.**

Students will design, develop and present a substantial data science project by applying the knowledge and skills acquired from relevant courses. The projects will be drawn from real world applications and data through collaboration with community partners. Prerequisite: All other requirements for the Master's in Data Science degree are met prior to or while taking this course.

Materials Science and Engineering

The Materials Science and Engineering Department is the oldest and most diversified program in North Texas. It is a university-wide, highly-interdisciplinary graduate program with eight core materials faculty and approximately 25 affiliated faculty spanning from physics and chemistry to electrical, mechanical, aerospace, civil and bio engineering. It offers minor, masters and doctoral degree programs in Materials Science and Engineering. It has courses in nanoscale materials and nanotechnology, magnetic, optical and energy materials, bio/nano materials, cementitious materials, computational materials, surface engineering, and thin film technology. The department's growth is aided by high levels of research funding from NSF, NIH, DOE, ONR, NASA, DOD, SRC and other federal, industrial and state sources in the areas of micro/nano electronic devices, self-assembled nanomaterials, multifunctional nanocomposite thin films, biomaterials, construction materials, optoelectronics, biosensor, solar cells and materials for clean energy, advanced lubricants, and coatings.

Undergraduate Degree

- Minor in Materials Science and Engineering (p. 621)
- Minor in Nanotechnology (p. 621)
- Certificate in Nanotechnology (p. 623)

Graduate Degrees

- Materials Science and Engineering, M.Engr. (p. 616)
- Materials Science and Engineering, M.S. (p. 616)
- Materials Science and Engineering, B.S. to Ph.D. (p. 618)
- Materials Science and Engineering, Ph.D. (p. 618)
- Materials Science and Engineering - Physics Fast Track (<http://catalog.uta.edu/science/physics/undergraduate/>)

COURSES

MSE 3300. INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Introduction to the atomic bonding, crystal structure, defects in materials, diffusion processes, phase diagram and phase transformation, and their relation to the mechanical, electrical, optical and thermal properties of metals, semiconductors, ceramics, polymers and composites. Prerequisites: CHEM 1442 or CHEM 1465; PHYS 1444.

MSE 4191. ADVANCED PROBLEMS IN MATERIALS SCIENCE & ENGINEERING. 1 Hour.

The investigation of special individual problems in materials science and engineering under the direction of a faculty member. Prerequisite: consent of the head of the department.

MSE 4291. ADVANCED PROBLEMS IN MATERIALS SCIENCE & ENGINEERING. 2 Hours.

The investigation of special individual problems in materials science and engineering under the direction of a faculty member. Prerequisite: consent of the head of the department.

MSE 4304. ANALYSIS OF MATERIALS. 3 Hours.

Theoretical understandings and practical applications of various characterization techniques to materials analysis, ranging from x-rays and electron diffraction, x-ray spectroscopy, and surface topography, are discussed. Practice of these techniques in lab class typically includes SEM spectroscopy, powder diffraction, Laue diffraction, and the double crystal x-ray diffraction. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4310. POLYMER MATERIALS SCIENCE. 3 Hours.

Intermolecular forces of attraction in high polymers, polymer synthesis, morphology and order in crystalline polymers, mechanics of amorphous polymers, time-dependent mechanical behavior, transitional phenomena, mechanical behavior of semicrystalline polymers. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4312. MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Concept of stress and strain, theory of plasticity; elementary dislocation theory. Deformation of single crystals; strengthening mechanisms like solid solution strengthening, and precipitation hardening. Fracture mechanics; microscopic aspects of fracture, fatigue, and creep of materials; design and processing of materials for improved mechanical properties. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4315. INTRODUCTION TO COMPOSITES. 3 Hours.

Composite classification, laminate coding, fabrication, processing and properties of composite laminates, point stress analysis and failure prediction of composite laminates, material allowable, issues in composite structural design. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4316. TRIBOLOGY AND LUBRICATION. 3 Hours.

The course provides a comprehensive understanding of the Tribology and Lubrication process in materials. This course will employ theoretical and practical examples. Mechanism of coating deposition for tribological, oxidation and corrosion protection are also examined. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4320. NANOSCALE MATERIALS. 3 Hours.

Introduction to the synthesis and characterization of nano-materials. Fundamental concepts of surface physics and chemistry. Survey of electronic, biological and biomedical applications. The materials presented include semiconductor and metal thin films, nanoparticles and nanowires, carbon fullerenes and nanotubes, and organic nanoparticles. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4330. CORROSION SCIENCE AND ENGINEERING. 3 Hours.

Corrosion principles and quantitative application of electrochemical principles to corrosion reactions. Effects of material factors and environmental conditions on aqueous corrosion and high temperature oxidation along with principal methods used in corrosion prevention. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4333. MAGNETIC PROPERTIES OF MATERIALS. 3 Hours.

Classical and quantum mechanical understandings of magnetic properties of materials. Specific applications of these properties to various devices are discussed. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4334. OPTICAL PROCESSES IN SOLID MATERIALS. 3 Hours.

Basic understanding of optical response of materials based on classical and quantum models. Particular focus on all phenomena involving light in semiconductors and their optoelectronic applications. Optical properties of solid materials with reduced dimensionality such as thin films and quantum wells and dots. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4335. ELECTRICAL PROPERTIES OF MATERIALS. 3 Hours.

Advanced discussion of electronic structure, transport mechanisms in metals, semiconductors and superconductors, with applications to materials used in various electronic devices. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4337. FATIGUE OF ENGINEERING MATERIALS. 3 Hours.

Cyclic deformation, fatigue crack initiation and growth in ductile solids. Application of fracture mechanics to fatigue. Mechanisms of crack closure. Variable and multiaxial fatigue and corrosion fatigue. Fatigue of brittle solids. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4339. FRACTURE MECHANICS. 3 Hours.

Theory and applications of fracture mechanics. Stress analysis of cracks, crack-tip plasticity, fatigue crack growth, and stress corrosion cracking. Applicability to materials selection, structural design, failure analysis, and structural reliability. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4343. NANOBIOTECHNOLOGY. 3 Hours.

The objective of this course is to provide students with the fundamental principles of physical and biological sciences at the nanoscale and the basic concepts of applying such interdisciplinary principles to develop new technologies for improving human life and health. The first part of this course introduces the fundamental principles of physics, chemistry, and biology at the nanoscale and the basic techniques to generate, manipulate, and characterize man-made and nature's nanomaterials and systems. The second part of this course covers the state-of-the-art applications of nanobiotechnology, with emphasis on biomedical applications. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4345. CERAMIC MATERIALS. 3 Hours.

Crystal structure of ceramic materials. Phase equilibria in ceramic materials. The processing of ceramics and ceramic matrix composites. Strengthening mechanisms and mechanical properties of ceramics and ceramic matrix composites including flexure, tensile, fracture toughness, fatigue, and creep. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4351. CURRENT TOPICS IN NANOTECHNOLOGY. 3 Hours.

Review and discussion of the latest advancements in the field of nanoscale science and technology. Topics include nanoscale electronic materials/devices, energy materials and devices, biological and chemical sensors, cancer diagnosis and cure, self assembly of materials, nanoscale composite materials, techniques for observing and manipulating atoms and molecules, and synthesis of nanoscale materials such as nanoparticles, nanowires, and graphenes. The course will comprise of several sections (several subareas of nanoscale science and technology) and will be taught by several professors who have expertise in each field. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4353. FUNDAMENTALS OF SUSTAINABLE ENERGY. 3 Hours.

Basic concepts and applications of energy generation and storage. Topics cover a broad spectrum of sustainable energy technologies, including thermal, tide, solar, biomass, wind and electrochemical devices, with emphasis on fundamentals in materials and engineering. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4354. ELECTRONIC MATERIALS AND DEVICES. 3 Hours.

Fundamentals and applications of modern electronic devices and materials. Topics include electrical properties of semiconductors, electrons and holes, energy bands, effective electron masses and effective hole masses, p-n junctions, drift current and diffusion current, metal-oxide-semiconductor (MOS) structure, capacitance-voltage (C-V) plots, field-effect transistors, bipolar junction transistors, and integrated circuits. Prerequisites: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4355. MATERIALS FOR ENERGY. 3 Hours.

The course aims to introduce concepts and design of advanced materials for sustainable energy generation and storage systems. It will cover polymer electrolyte materials, metallic nanoparticles, semiconductors, and nano-fabrication in clean energy conversion, energy storage, fuel cells, photovoltaic cells, and other emerging energy harvesting and storage. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4358. ORTHOPEDIC IMPLANTS - MATERIAL SELECTION AND CHARACTERIZATION. 3 Hours.

Materials science basics, material selection and material characterization for orthopedic implants. Survey of metallic materials, ceramic materials, polymers and composite materials applied in orthopedic implants. Introduction to surface modification, biostability, and tribology of orthopedic implants. Several laboratory practices are included. Prerequisite: Must be in a college of engineering professional program or college of science professional program or department consent.

MSE 4359. FAILURE ANALYSIS AND RELIABILITY ENGINEERING. 3 Hours.

The basic scope of this course is to understand 1) various types of failure modes in engineering materials, 2) contributing factors to those failures and 3) analysis and detection methods employed in the relevant industries. The failure of engineering materials under discussion includes those by mechanical, electrical and chemical load. Specific cases of discussion include materials for structural as well as microelectronics applications. Also discussed will be the method of statistical analysis and its modeling. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4390. SPECIAL TOPICS IN MATERIALS SCIENCE & ENGINEERING. 3 Hours.

Special topics pertinent to the field of materials science and engineering, such as electrical, optical, and magnetic properties of materials, will vary from semester to semester depending on the availability of faculty. May be repeated, provided that topics are different. Prerequisite: prior approval by the MSE undergraduate advisor.

MSE 4391. ADVANCED PROBLEMS IN MATERIALS SCIENCE & ENGINEERING. 3 Hours.

The investigation of special individual problems in materials science and engineering under the direction of a faculty member. Prerequisite: consent of the head of the department.

MSE 5141. TRANSMISSION ELECTRON MICROSCOPY LAB. 1 Hour.

Specimen preparation. Operation of the transmission electron microscope. Beam alignment and rotation calibration. Bright field and dark field imaging. Weak beam imaging. Examination of defects.

MSE 5190. SPECIAL TOPICS IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

May be repeated for credit when topic changes.

MSE 5192. MASTER'S COMPREHENSIVE EXAMINATION. 1 Hour.

Directed study, consultation, and comprehensive examination over coursework leading to the Master of Engineering degree in Materials Science and Engineering. Required of all Master of Engineering students in the semester they plan to graduate.

MSE 5193. SEMINAR IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

Selected topics in materials science and engineering presented by faculty, students, and invited lecturers.

MSE 5290. SPECIAL TOPICS IN MATERIALS SCIENCE AND ENGINEERING. 2 Hours.

May be repeated for credit when topic changes.

MSE 5300. INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Introduction to the atomic bonding, crystal structure, defects in materials, diffusion processes, phase diagram and phase transformation, and their relation to the mechanical, electrical, optical and thermal properties of metals, semiconductors, ceramics, polymers and composites.

MSE 5304. ANALYSIS OF MATERIALS. 3 Hours.

Theoretical understandings and practical applications of various characterization techniques to materials analysis, ranging from x-rays and electron diffraction, x-ray spectroscopy, and surface topography, are discussed. Practice of these techniques in lab class typically includes SEM spectroscopy, powder diffraction, Laue diffraction, and the double crystal x-ray diffraction.

MSE 5305. SOLID STATE PHYSICS AND THERMODYNAMICS OF MATERIALS. 3 Hours.

This course comprises of three sections, a) solid state physics, b) classical thermodynamics, and c) statistical thermodynamics. The solid state physics covers the physics of crystalline solids. This includes 1) classical theory of electrons in metals, 2) Sommerfeld theory of electrons in solids, 3) reciprocal lattice, 4) Bloch's theorem, 5) energy bands of solids, and 6) electrons in weak periodic potentials. The classical thermodynamics covers macroscopic aspects of thermodynamics. It covers 1) entropy, 2) temperature, 3) first, second, and third laws of thermodynamics, 4) internal energy and free energy, 5) Helmholtz free energy, Gibbs free energy, and 6) Maxwell relations. The statistical thermodynamics covers microscopic aspects of thermodynamic laws. It includes 1) entropy and temperature, 2) second law of thermodynamics, 3) partition function and Boltzmann factor, 4) free energies, and 5) canonical and grand canonical formalisms.

MSE 5312. MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Concepts of stress and strain, theory of plasticity. Elementary dislocation theory. Deformation of single crystals. Strengthening mechanisms like solid solution strengthening, precipitation hardening, etc. Elementary concepts in fracture mechanics. Microscopic aspects of fracture, fatigue, and creep of materials.

MSE 5314. FRACTURE MECHANICS. 3 Hours.

Theory and applications of linear elastic fracture mechanics. Topics include stress analysis of cracks, crack-tip plasticity, fatigue and stress corrosion. Applicability to materials selection, failure analysis and structural reliability reviewed.

MSE 5315. FATIGUE OF ENGINEERING MATERIALS. 3 Hours.

Cyclic deformation, fatigue crack initiation and growth in ductile solids. Application of fracture mechanics to fatigue. Mechanisms of crack closure. Variable and multiaxial fatigue and corrosion fatigue. Fatigue of brittle solids.

MSE 5316. TRIBOLOGY AND LUBRICATION. 3 Hours.

The course provides a comprehensive understanding of the Tribology and Lubrication process in materials. This course will employ theoretical and practical examples. Mechanism of coating deposition for tribological, oxidation and corrosion protection are also examined.

MSE 5320. NANOSCALE MATERIALS. 3 Hours.

Use Experiment-Oriented Just-in-Time Teaching to introduce the synthesis, properties and applications of inorganic thin films and nanoparticles. Before each lab session several lectures will be given that are specifically arranged for this particular experiment, including reviews of all necessary basic knowledge and introductions to new concepts, especially nanoscale size effects. Through such know-how/know-why approach students are expected to learn how all basic knowledge bonds together to apply to nanotechnology.

MSE 5321. PHASE TRANSFORMATIONS OF MATERIALS. 3 Hours.

The theory of homogeneous and heterogeneous transformations, nucleation and growth, martensitic transformations, heat treatment and control of microstructure.

MSE 5330. CORROSION SCIENCE AND ENGINEERING. 3 Hours.

Corrosion principles and quantitative application of electrochemical principles to corrosion reactions. Effects of material factors and environmental conditions on aqueous corrosion and high temperature oxidation along with principal methods used in corrosion prevention.

MSE 5333. MAGNETIC PROPERTIES OF MATERIALS. 3 Hours.

Classical and quantum mechanical understandings of magnetic properties of materials. Specific applications of these properties to various devices are discussed.

MSE 5334. OPTICAL PROCESSES IN SOLID MATERIALS. 3 Hours.

Basic understanding of optical response of materials based on classical and quantum models. Particular focus on all phenomena involving light in semiconductors and their optoelectronic applications. Optical properties of solid materials with reduced dimensionality such as thin films and quantum wells and dots.

MSE 5335. ELECTRICAL PROPERTIES OF MATERIALS. 3 Hours.

Advanced discussion of electronic structure, transport mechanisms in metals, semiconductors and superconductors, with applications to materials used in various electronic devices.

MSE 5339. Failure Analysis and Reliability Engineering. 3 Hours.

The basic scope of this course is to understand 1) various types of failure modes in engineering materials, 2) contributing factors to those failures and 3) analysis and detection methods employed in the relevant industries. The failure of engineering materials under discussion includes those by mechanical, electrical and chemical load. Specific cases of discussion include materials for structural as well as microelectronics applications. Also discussed will be the method of statistical analysis and its modeling.

MSE 5341. TRANSMISSION ELECTRON MICROSCOPY IN MATERIALS SCIENCE. 3 Hours.

This course provides theoretical and experimental knowledge on a basic TEM optics, sample requirements, electron diffraction, the imaging modes, high-resolution TEM, and related theories of image formation. This course is intended for graduate students who are potential new users of TEM for study of materials.

MSE 5343. NANOBIO TECHNOLOGY. 3 Hours.

The objective of this course is to provide students with the fundamental principles of physical and biological sciences at the nanoscale and the basic concepts of applying such interdisciplinary principles to develop new technologies for improving human life and health. The first part of this course introduces the fundamental principles of physics, chemistry, and biology at the nanoscale and the basic techniques to generate, manipulate, and characterize man-made and nature's nanomaterials and systems. The second part of this course covers the state-of-the-art applications of nanobiotechnology, with emphasis on biomedical applications.

MSE 5345. CERAMIC MATERIALS. 3 Hours.

Crystal structure of ceramic materials. Phase equilibria in ceramic materials. The processing of ceramics and ceramic matrix composites. Strengthening mechanisms and mechanical properties of ceramics and ceramic matrix composites including flexure, tensile, fracture toughness, fatigue, and creep.

MSE 5347. POLYMER MATERIALS SCIENCE. 3 Hours.

Intermolecular forces of attraction in high polymers, polymer synthesis, morphology and order in crystalline polymers, mechanics of amorphous polymers, time-dependent mechanical behavior, transitional phenomena, mechanical behavior of semicrystalline polymers.

MSE 5348. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Composite structural analysis; structural properties, damage characterization and failure mechanisms; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints.

MSE 5350. INTRODUCTION TO COMPUTATIONAL MATERIALS SCIENCE. 3 Hours.

Atomic to mesoscale computational modeling in Materials Science and Engineering, including the random-walk model, molecular dynamics, first-principle methods, density functional theory and phase-field modeling, by using various computational software and codes, such as Matlab, XMD, LAMMPS, Quantum Espresso and Multiphysics COMSOL Modeling.

MSE 5351. CURRENT TOPICS IN NANOTECHNOLOGY. 3 Hours.

Review and discussion of the latest advancements in the field of nanoscale science and technology. Topics include nanoscale electronic materials/devices, energy materials and devices, biological and chemical sensors, cancer diagnosis and cure, self assembly of materials, nanoscale composite materials, techniques for observing and manipulating atoms and molecules, and synthesis of nanoscale materials such as nanoparticles, nanowires, and graphenes. The course will comprise of several sections (several subareas of nanoscale science and technology) and will be taught by several professors who have expertise in each field.

MSE 5352. SOLAR ENERGY MATERIALS AND DEVICES. 3 Hours.

Fundamental principles of photovoltaic devices and solar energy materials used for the devices. Topics include thermodynamics of solar energy conversion, carrier generation and recombination, the solid-state device physics of p-n junction under illumination, various state-of-the-art photovoltaic materials, simulation of photovoltaic devices, and solar module technologies.

MSE 5353. FUNDAMENTALS OF SUSTAINABLE ENERGY. 3 Hours.

Basic concepts and applications of energy generation and storage. Topics cover a broad spectrum of sustainable energy technologies, including thermal, tide, solar, biomass, wind and electrochemical devices, with emphasis on fundamentals in materials & engineering.

MSE 5354. ELECTRONIC MATERIALS AND DEVICES. 3 Hours.

Fundamentals and applications of modern electronic devices and materials. Topics include electrical properties of semiconductors, electrons and holes, energy bands, effective electron masses and effective hole masses, p-n junctions, drift current and diffusion current, metal-oxide-semiconductor (MOS) structure, capacitance-voltage (C-V) plots, field-effect transistors, bipolar junction transistors, and integrated circuits.

MSE 5355. MATERIALS FOR ENERGY. 3 Hours.

The course aims to introduce concepts and design of advanced materials for sustainable energy generation and storage systems. It will cover polymer electrolyte materials, metallic nanoparticles, semiconductors, and nano-fabrication in clean energy conversion, energy storage, fuel cells, photovoltaic cells, and other emerging energy harvesting and storage.

MSE 5356. INSTRUMENTATION FOR MATERIALS CHARACTERIZATION. 3 Hours.

This course is composed of two components: lecture and laboratory for several materials characterization techniques. The lecture part includes the instruction of basic principles and theories behind AFM, Raman, FT-IR, XRD, SEM, TEM and spectroscopic techniques. Students in the class are divided into small groups for the laboratory part (4-5 people per group) so that students can gain hand-on experiences on various characterization techniques by operating associated equipment.

MSE 5358. ORTHOPEDIC IMPLANTS - MATERIAL SELECTION AND CHARACTERIZATION. 3 Hours.

Materials science basics, material selection and material characterization for orthopedic implants. Survey of metallic materials, ceramic materials, polymers and composite materials applied in orthopedic implants. Introduction to surface modification, biostability, and tribology of orthopedic implants. Several laboratory practices are included. Prerequisite: Graduate standing in science or engineering, or department consent.

MSE 5390. SPECIAL TOPICS IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

May be repeated for credit when topic changes.

MSE 5391. ADVANCED STUDIES IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Topics selected from various areas of materials science and engineering. Work performed as a thesis substitute normally will be accomplished under MSE 5391, with prior approval of the Committee on Graduate Studies.

MSE 5392. Research Project in Materials Science and Engineering I. 3 Hours.

Research course with credit granted according to work performed. The student will have to put together a research plan for the semester with approval of his/her dissertation advisor. End of semester requirement is a written report of research performed with results and discussion. A presentation at the end of the semester on research progress may be required.

MSE 5394. MASTER'S RESEARCH PROJECT IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

The student will carry out a hands-on project under a guidance of his/her supervising professor. The student will need to provide a written project report. At the end of semester, the student will present his/her project results to MSE faculty members and students. The MSE faculty members will decide the grade.

MSE 5398. THESIS. 3 Hours.**MSE 5405. PHYS THERMO MAT. 4 Hours.****MSE 5698. THESIS. 6 Hours.****MSE 5998. THESIS. 9 Hours.****MSE 6196. MSE INTERNSHIP. 1 Hour.**

For students participating in internship programs. May be repeated for credit.

MSE 6197. ADVANCED STUDIES IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

May be repeated for credit.

MSE 6198. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6298. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 2 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6396. MSE INTERNSHIP. 3 Hours.

For students participating in internship programs. May be repeated for credit.

MSE 6397. ADVANCED STUDIES IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

May be repeated for credit.

MSE 6398. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6399. DISSERTATION. 3 Hours.**MSE 6696. MSE INTERNSHIP. 6 Hours.**

For students participating in internship programs. May be repeated for credit.

MSE 6698. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 6 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6699. DISSERTATION. 6 Hours.**MSE 6996. MSE INTERNSHIP. 9 Hours.**

For students participating in internship programs. May be repeated for credit.

MSE 6998. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 9 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6999. DISSERTATION. 9 Hours.**MSE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Materials Science and Engineering - Graduate Programs

Objective

The graduate program in materials science and engineering is designed to provide students with a fundamental understanding of phenomena occurring in materials and their associated chemical, electrical, mechanical, and physical properties. The master's program prepares students for professional careers in materials science and engineering or for additional studies at the doctoral level.

Candidates for a master's or doctoral degree may elect programs emphasizing metals, polymers, ceramics, composite materials, or electronic materials, as well as a number of other areas. Although the program is administered through the College of Engineering, it is broadly interdisciplinary, actively involving faculty in both the College of Science and the College of Engineering. In addition to materials science and engineering courses, applicable courses are in the disciplines of aerospace engineering, biomedical engineering, chemistry, civil engineering, computer science engineering, electrical engineering, mechanical engineering, and physics.

Continuation

The Materials Science and Engineering Graduate Program, in fulfillment of its responsibility to graduate highly qualified professional engineers and scientists, has established certain policies and procedures. In addition to the requirements of the Graduate School listed elsewhere in this catalog, to continue in the program each materials science and engineering graduate student must:

1. Maintain at least a B (3.0) overall GPA in all coursework, and
2. Demonstrate suitability for professional practice.

At such time as questions are raised by materials science and engineering graduate faculty regarding either of the above, the student will be notified and will be given the opportunity to respond to the Committee on Graduate Studies for Materials Science and Engineering. The Committee on Graduate Studies will review the student's performance and make a recommendation concerning the student's eligibility to continue in the program. Appeal of a decision on continuation may be made through normal procedures outlined in the section of this catalog entitled "Grievances Other than Grades."

Admission Requirements

Applicants for the master's degree must have either a baccalaureate or master's degree in engineering or science. Applicants who have completed a bachelor's degree and wish to pursue a doctoral degree without completing a master's degree may apply for admission into the B.S. to Ph.D. Track (p. 618). All applicants must meet the general requirements of the University as stated in the Graduate Admissions (p. 26) section of the catalog. Applicants not meeting all criteria may be admitted on a provisional or probationary basis.

For applicants with no prior training in engineering or with insufficient undergraduate materials coursework, the same minimum criteria will apply. Additionally, their records will be reviewed in relation to their materials backgrounds, and probationary status with specific remedial work required may be a basis for acceptance of such applicants.

The UT Arlington Materials Science and Engineering Program uses the following guidelines in the admission review process:

Unconditional Admission

Unconditional admission into the Materials Science and Engineering Program requires the submission of items 1 through 5 below for each degree program. A typical successful applicant will have met the following admission requirements:

1. Minimum undergraduate GPA of 3.0 in the last 60 hours of undergraduate work in an appropriate engineering or science discipline. (For some international applicants where GPA calculation based on a 4.0 scale is not performed, a minimum performance level of 70 percentile is expected. This minimum expectation may be higher for some countries, where less stringent grading criteria are used.) Performance in core materials-related courses is of particular importance.
2. A GRE score of at least 146 (verbal) and 155 (quantitative). For those applicants whose GRE verbal score falls below 146, high TOEFL scores may be considered to offset the GRE verbal score.
3. Three favorable, veracious recommendations, via the university's recommendation form or via recommendation letter.
4. A Statement of Purpose detailing the applicant's background, education, professional goals, technical interests, and research interests.
5. An applicant whose native language is not English must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with a TOEFL iBT total score of 84 with sectional scores of 22 for writing, 21 for speaking, 20 for reading, and 20 for listening or an IELTS score of 6.5.

Probationary Admission

Probationary admission into the Materials Science and Engineering Program may be permitted under the following conditions for each degree program:

1. If an applicant meets any two of the items 1, 2, and 3 above for the master's program.
2. A Statement of Purpose detailing the applicant's background, education, professional goals, technical interests, and research interests.

3. An applicant whose native language is not English must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog.

Provisional Admission

An applicant who is unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

Deferred

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

Denial of Admission

A candidate may be denied admission if he/she has less than satisfactory performance in two out of three of the first three admission criteria.

Waiver of Graduate Record Exam

A waiver of the Graduate record Exam may be considered for a UT Arlington graduate who graduated within the past three years and has completed an engineering or science degree closely related to materials science and engineering. The student's GPA must equal or exceed 3.0 in each of two calculations:

1. in the last 60 hours of study and
2. in all undergraduate coursework completed at UT Arlington.

The GRE waiver may be extended to include non-UT Arlington candidates that have undergraduate degrees (with GPA of 3.3 or above) from U.S. universities with an ABET accredited engineering program or other select U.S. universities subject to graduate advisor's approval. The waiver of the GRE applies only to applicants for the master's degree programs. Interested applicants should contact the Materials Science and Engineering Graduate Advisor.

Eligibility for Scholarships/Fellowships

Students that are admitted will be eligible for available scholarship or fellowship support. Award of scholarships or fellowships will be based on the student's relative standing with respect to other qualified applicants.

Master's Degree Requirements

Master of Science (MS) in Materials Science and Engineering:

The MS degree options available are: thesis option and thesis substitute option.

The thesis option is a research-oriented degree in which completion of a thesis is mandatory. The program consists of a minimum of 24 credit hours of coursework (a minimum of 18 credit hours in MSE courses) and an acceptable thesis (minimum of six credit hours).

The thesis-substitute option requires a minimum of 30 credit hours as specified below:

27 credit hours of coursework (a minimum of 21 credit hours in MSE courses);

3 credit hour MSE 5394 MASTER'S RESEARCH PROJECT IN MATERIALS SCIENCE AND ENGINEERING .

Master of Engineering (ME) in Materials Science and Engineering:

The Master of Engineering degree is an engineering practice-oriented program requiring a minimum of 30 credit hours. A minimum of 24 credit hours of coursework must be in MSE courses.

MSE 5300: This course must be taken by any students whose academic backgrounds are different from Materials Science and Engineering. An exemption may be granted by the Graduate Advisor if it is determined that the student has a solid foundation for Materials Science and Engineering. The credit for MSE 5300 will not be counted towards the total credits required for graduation. However, the grade of MSE 5300 will be counted in calculating the GPA.

The M.S. and M. Engr. degree programs require successful completion of the following four core courses:

MSE 5304	ANALYSIS OF MATERIALS	3
MSE 5305	SOLID STATE PHYSICS AND THERMODYNAMICS OF MATERIALS	3
MSE 5312	MECHANICAL BEHAVIOR OF MATERIALS	3
MSE 5321	PHASE TRANSFORMATIONS OF MATERIALS	3

Admission Requirements

Applicants for the master's or doctoral degrees must have either a baccalaureate or master's degree in engineering or science. Applicants who have completed a bachelor's degree and wish to pursue a doctoral degree without completing a master's degree may apply for admission into the B.S. to Ph.D. Track. The minimum admission requirements to this highly competitive track are the same as those for all doctoral applicants. Doctoral candidates shall also demonstrate through previous academic preparation the potential to carry out independent research in materials science and engineering. All applicants must meet the general requirements of the University as stated in the Graduate Admissions (p. 26) section of this catalog. Applicants not meeting all criteria may be admitted on a provisional or probationary basis.

For applicants with no prior training in engineering or with insufficient undergraduate materials coursework, the same minimum criteria will apply. Additionally, their records will be reviewed in relation to their materials backgrounds, and probationary status with specific remedial work required may be a basis for acceptance of such applicants.

The UT Arlington Materials Science and Engineering Program uses the following guidelines in the admission review process:

Unconditional Admission

Unconditional admission into the Materials Science and Engineering Program requires the submission of items 1 through 5 below for each degree program. A typical successful applicant will have met the following admission requirements:

1. Minimum undergraduate GPA of 3.3 in the last 60 hours of undergraduate work in an appropriate engineering or science discipline. (For some international applicants where GPA calculation based on a 4.0 scale is not performed, a minimum performance level of 75 percentile is expected. This minimum expectation may be higher for some countries, where less stringent grading criteria are used.) Performance in core materials-related courses is of particular importance.
2. A GRE score of at least 146 (verbal) and 159 (quantitative). For those applicants whose GRE verbal score falls below 146, high TOEFL scores may be considered to offset the GRE verbal score.
3. Three favorable, veracious recommendations, via the university's recommendation form or via recommendation letter.
4. A Statement of Purpose detailing the applicant's background, education, professional goals, technical interests, and research interests.
5. An applicant whose native language is not English must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with a TOEFL iBT total score of 84 with sectional scores of 22 for writing, 21 for speaking, 20 for reading, and 20 for listening or an IELTS score of 6.5.

Probationary Admission

Probationary admission into the Materials Science and Engineering Program may be permitted under the following conditions for each degree program:

1. If an applicant meets any two of the items 1, 2, and 3 above for the doctoral program.
2. A Statement of Purpose detailing the applicant's background, education, professional goals, technical interests, and research interests.
3. An applicant whose native language is not English must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog.

Provisional Admission

An applicant who is unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

Deferred

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

Denial of Admission

A candidate may be denied admission if he/she has less than satisfactory performance in two out of three of the first three admission criteria.

Waiver of Graduate Record Exam

A waiver of the Graduate record Exam may be considered for a UT Arlington graduate who graduated within the past three years and has completed an engineering or science degree closely related to materials science and engineering. The student's GPA must equal or exceed 3.0 in each of two calculations:

1. in the last 60 hours of study and
2. in all undergraduate coursework completed at UT Arlington.

The GRE waiver may be extended to include non-UT Arlington candidates that have undergraduate degrees (with GPA of 3.3 or above) from U.S. universities with an ABET accredited engineering program or other select U.S. universities subject to graduate advisor's approval. The waiver of the

GRE applies only to applicants for the master's degree programs. Interested applicants should contact the Materials Science and Engineering Graduate Advisor.

Eligibility for Scholarships/Fellowships

Students that are admitted will be eligible for available scholarship or fellowship support. Award of scholarships or fellowships will be based on the student's relative standing with respect to other qualified applicants.

Doctoral Degree Requirements

B.S. to Ph.D. Track

In addition to the requirements listed below for the Ph.D. degree, a B.S.-Ph.D. Track student will be required to enroll in at least three hours of research each semester during the student's first two years, receiving a pass/fail grade (no R grade) in these hours. A B.S.-Ph.D. student must have a faculty research (dissertation) advisor prior to the start of the student's second full semester. A B.S.-Ph.D. student must take the Ph.D. diagnostic examination prior to the start of the student's third full semester.

Doctor of Philosophy

The Ph.D. degree program involves an interdisciplinary and multidisciplinary approach which requires students to complete a set of Materials Science and Engineering core courses augmented by elective offerings in aerospace engineering, biomedical engineering, chemistry, civil engineering, electrical engineering, materials science, mechanical engineering and physics. The degree is a research degree which requires the candidate successfully to carry out independent research in an area acceptable to the Committee on Graduate Studies for Materials Science and Engineering. A student's research is directed by a faculty member from any of the departments or programs participating in the Materials Science and Engineering Program.

The Ph.D. degree program requires successful completion of the following curriculum components:

1. A minimum of 24 semester hours of graduate coursework is expected for students entering with an appropriate master's degree or, for highly qualified students, a minimum of 30 semester hours of graduate coursework is expected for student's entering with a bachelor's degree, as approved by the Committee on Graduate Studies for Materials Science and Engineering. Additional coursework may be required by the student's doctoral dissertation committee.

2. Four core courses or their equivalent are required for all doctoral students:

MSE 5304	ANALYSIS OF MATERIALS	3
MSE 5305	SOLID STATE PHYSICS AND THERMODYNAMICS OF MATERIALS	3
MSE 5312	MECHANICAL BEHAVIOR OF MATERIALS	3
MSE 5321	PHASE TRANSFORMATIONS OF MATERIALS	3
Total Hours		12

3. At least four of the following supplemental elective courses must be taken by all doctoral students, as approved by the Committee on Graduate Studies for Materials Science and Engineering. Courses from other disciplines may also be taken, which requires permissions from the Graduate Advisor and student's Supervising Advisor.

MSE 5315	FATIGUE OF ENGINEERING MATERIALS	3
MSE 5316	TRIBOLOGY AND LUBRICATION	3
MSE 5320	NANOSCALE MATERIALS	3
MSE 5330	CORROSION SCIENCE AND ENGINEERING	3
MSE 5333	MAGNETIC PROPERTIES OF MATERIALS	3
MSE 5335	ELECTRICAL PROPERTIES OF MATERIALS	3
MSE 5341	TRANSMISSION ELECTRON MICROSCOPY IN MATERIALS SCIENCE	3
MSE 5345	CERAMIC MATERIALS	3
MSE 5350	INTRODUCTION TO COMPUTATIONAL MATERIALS SCIENCE	3
MSE 5347	POLYMER MATERIALS SCIENCE	3
MSE 5351	CURRENT TOPICS IN NANOTECHNOLOGY	3
MSE 5352	SOLAR ENERGY MATERIALS AND DEVICES	3
MSE 5353	FUNDAMENTALS OF SUSTAINABLE ENERGY	3
MSE 5354	ELECTRONIC MATERIALS AND DEVICES	3
MSE 5355	MATERIALS FOR ENERGY	3

Elective courses will be taken by all doctoral students which will allow specialization within a particular academic discipline. Graduate courses in chemistry, physics and engineering will be selected for this purpose in consultation with the student's research advisor, subject to approval by the Committee on Graduate Studies for Materials Science and Engineering.

- MSE 5300: This course must be taken by any students whose academic backgrounds are different from Materials Science and Engineering. An exemption may be granted by the Graduate Advisor if it is determined that the student has a solid foundation for Materials Science and Engineering. The credit for MSE 5300 will not be counted towards the total credits required for graduation. However, the grade of MSE 5300 will be counted in calculating the GPA.

After completion of the first year's coursework (i.e., core courses), students must satisfactorily complete diagnostic examinations which may be written or oral or written and oral with a supplemental interview with faculty members, as determined by the Committee on Graduate Studies in Materials Science and Engineering.

Upon completion of all or nearly all of the coursework requirements and after having demonstrated research ability through partial completion of dissertation research, a student must satisfactorily complete a comprehensive examination.

The dissertation research will be formulated in conjunction with the student's faculty research advisor who may be associated with any of the following academic disciplines participating in the Materials Science and Engineering Program: aerospace engineering, biomedical engineering, chemistry, civil engineering, electrical engineering, materials science, mechanical engineering, and physics. The dissertation research represents the culmination of the student's academic efforts and is expected to demonstrate original and independent research activity and be a significant contribution to knowledge in the field.

Materials Science and Engineering - Undergraduate Programs

Overview

The interdisciplinary field of materials science and engineering has become critical to many emerging areas of science and advanced technology. As a result, there is a growing demand for engineers and scientists with education and training in materials science and engineering. The Materials Science and Engineering Department provides students with such education and training through its graduate master's and doctoral degree programs. Additionally, the department offers undergraduate courses for use as electives in science and engineering, in Fast Track Programs in Materials Science and Engineering, in minor programs in this discipline and in Certificate in Nanotechnology.

Minor Program in Materials Science and Engineering

Outcomes and Goals

The goal of the minor program in Materials Science and Engineering is to give students a foundation in the governing principles of materials science which complements their major field of study, as well as an understanding of the latest trends. As such, the program is flexible in coursework requirements and can be tailored to each student's interest.

Admission to the Minor Program in Materials Science and Engineering

Admission to the minor program in Materials Science and Engineering requires GPA of 2.0 or higher and approval by the Materials Science and Engineering Department undergraduate advisor as well as the student's home department. Information on admissions and course requirements can be obtained from the Materials Science and Engineering undergraduate program advisor. The minor will be conferred at the same time the degree is conferred and the degree and minor will be recorded on the student's transcript. The minor will not be on the diploma. Minors may not be conferred retroactively upon students who have graduated.

Scholarships and Research Experience

Scholarships may be available for students who meet the academic requirements set by the Materials Science and Engineering minor program. Minor program students may also work as undergraduate research assistants for Materials Science and Engineering faculty.

Requirements for a Minor in Materials Science and Engineering

To receive a minor in Materials Science and Engineering, a student must complete 18 hours of the following courses with a grade of C or better in each course. Courses must be approved in advance by the MSE undergraduate program advisor. A student must complete:

MSE 3300	INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING (MAE 3324 for MAE majors)	3
MSE 4320	NANOSCALE MATERIALS	3
Select four of the following courses for which the prerequisites are satisfied:		12
MSE 4310	POLYMER MATERIALS SCIENCE	
MSE 4312	MECHANICAL BEHAVIOR OF MATERIALS (MAE 4336 for MAE majors)	
MSE 4315	INTRODUCTION TO COMPOSITES (MAE 4315 for MAE majors)	
MSE 4337	FATIGUE OF ENGINEERING MATERIALS (MAE 4390 for MAE majors)	
MSE 4339	FRACTURE MECHANICS (MAE 4339 for MAE majors)	
MSE 4353	FUNDAMENTALS OF SUSTAINABLE ENERGY	
MSE 4355	MATERIALS FOR ENERGY	
MSE 4359	FAILURE ANALYSIS AND RELIABILITY ENGINEERING (MAE 4338 for MAE majors)	
MSE 4390	SPECIAL TOPICS IN MATERIALS SCIENCE & ENGINEERING (e.g., electrical, optical and magnetic properties of materials)	
CHEM 3307	INTRODUCTION TO POLYMER CHEMISTRY	
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	
CHEM 3321	PHYSICAL CHEMISTRY I	
CHEM 4318	INORGANIC CHEMISTRY	
CHEM 4346	ADVANCED SYNTHETIC METHODS	
MAE 3344	INTRODUCTION TO MANUFACTURING ENGINEERING	
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	
PHYS 3455	ELECTRONICS	
PHYS 4324	ADVANCED ELECTRICITY AND MAGNETISM	
PHYS 4325	SOLID STATE PHYSICS	

Minor Program in Nanotechnology

Program Objective

The minor in Nanotechnology is designed to provide undergraduate students majoring in either science or engineering with fundamental knowledge of the nanotechnology that is emerging as one of the most influential technologies shaping the future. This program intends to introduce the fundamentals and applications of nanotechnology in the areas of energy, environment, security and human health, with weighted emphasis on the development of new materials and their applications.

Admission to the Minor Program in Nanotechnology

Admission to the minor program in Nanotechnology requires GPA of 2.0 or higher and approval by the Materials Science and Engineering Department undergraduate advisor as well as the student's home department. Information on admissions and course requirements can be obtained from the Materials Science and Engineering undergraduate program advisor. The minor will be conferred at the same time the degree is conferred and the degree and minor will be recorded on the student's transcript. The minor will not be on the diploma. Minors may not be conferred retroactively upon students who have graduated.

Research Experience

Minor program students are encouraged to experience research in nanotechnology by working as undergraduate research assistants. The advisor in Materials Science and Engineering may provide a list of faculty whose research field is closely related to the student's major and career interest.

Requirements for a Minor in Nanotechnology

Students must complete 18 hours of coursework as outlined below. Transferred course credit cannot be used for the minor. Prerequisites must be met for all courses and all courses used to satisfy the certificate requirements must be passed with a minimum grade of C and their combined GPA must be at least 3.0. Consultation with the Materials Science and Engineering (MSE) advisor is encouraged to check the course availability and any changes in the course requirements.

Course Requirements

Required Courses (9 Hours):

MSE 3300 INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING

MSE 4320 NANOSCALE MATERIALS

MSE 4351 CURRENT TOPICS IN NANOTECHNOLOGY

Three elective courses are required from a single track below: Elective courses are chosen with consultation and approval of the minor advisor.

Undergraduate Research Course (3 hour) can be included in the electives with appropriate course number and research topic selected in agreement with the faculty and MSE advisor. The letter grade will be given after evaluation of student's performance by evaluation committee. A partial list of recommended courses include:

1. Micro/Nano electronics Track

MSE 4354 ELECTRONIC MATERIALS AND DEVICES OR EE 4329 SEMICONDUCTOR DEVICES

MSE 4359 FAILURE ANALYSIS AND RELIABILITY ENGINEERING

EE 4320 DIGITAL VLSI DESIGN

PHYS 4326 INTRODUCTION TO QUANTUM MECHANICS

MAE 4301 SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING (with MSE advisor approval)

2. Nanobio Track

MSE 4343 NANOBIOTECHNOLOGY

BE 4372 DRUG DELIVERY SYSTEMS

BE 4373 FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS

BE 4333 NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION

BE 4300 SPECIAL TOPICS IN BIOENGINEERING (with MSE advisor approval)

3. Energy Materials Track

MSE 4353 FUNDAMENTALS OF SUSTAINABLE ENERGY

MSE 4355 MATERIALS FOR ENERGY

EE 3302 FUNDAMENTALS OF POWER SYSTEMS

EE 4328 CURRENT TOPICS IN ELECTRICAL ENGINEERING (with MSE advisor approval)

MAE 4301 SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING (with MSE advisor approval)

List of Faculty for Undergraduate Research Course

Wei Chen (Physics, nanomaterials for energy conversion)

Hyeok Choi (CE, Environmental Nanotechnology)

Yaowu Hao (MSE, nanostructured bio-sensors)

Yi Hong (BE, NanoBiomaterials)

Choong-Un Kim (MSE, micro/nano electronics)

Seong-Jin Koh (MSE, nanoelectronics and bio-sensors)

Ping Liu (Physics, nanomagnetism)

Wei Chen (Physics, nanostructured materials for energy)

Cheng Luo (MAE, NEMS)

Robert Magnusson (EE, NanoPhotonics)

Stathis Meletis (MSE, thin films and nanostructured devices)

Hyejin Moon (MAE, Nanothermal)

Kytai Nguyen (BE, Nanobiomaterials)

Kyungsuk Yum (MSE, nanomaterials for bio applications)

Weidong Zhou (EE, NanoPhotonics)

Certificate in Nanotechnology

Program Objective

The objective of the Certificate in Nanotechnology is to provide the fundamentals, principles and applications of the emerging and exciting field of nanotechnology in the areas of energy, environment, security and human health, with weighted emphasis on the development of new materials and their applications. This program aims at the dual goal of exploring the potential of nanotechnology in addressing current global technological needs while acting as a resource for developing and educating the future workforce. Course material can be available over the internet upon request to accommodate participants from industry who do not have regular access to campus.

Admission Requirements

The certificate is open to all current science and engineering degree-seeking students and holders of a bachelor's degree in science or engineering. For those who have not completed a bachelor's degree, the Certificate in Nanotechnology will be awarded concurrently with an undergraduate degree. The completed certificate program of study will be forwarded to the Office of Admissions, Records and Registration for verification and notation on the student's transcript. A formal certificate will be prepared for the student by the university and recognition will be given at the graduation ceremonies.

Academic Requirements

Students must complete 15 hours of coursework as outlined below. Transferred course credit cannot be used for the certificate. Prerequisites must be met for all courses and all courses used to satisfy the certificate requirements must be passed with a minimum grade of C and their combined GPA must

be at least 3.0. Consultation with the Materials Science and Engineering (MSE) advisor is encouraged to check the course availability and any changes in the course requirements.

Required Courses (6 Hours):

MSE 3300 INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING

MSE 4320 NANOSCALE MATERIALS

Three elective courses are required from a single track below:

Micro/Nano Electronic Track

MSE 4354 ELECTRONIC MATERIALS AND DEVICES

MSE 4359 FAILURE ANALYSIS AND RELIABILITY ENGINEERING

EE 4320 DIGITAL VLSI DESIGN

MAE 3309 THERMAL ENGINEERING

MAE 4301 SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING

3 hour Undergraduate Research Course: research course under listed faculty, with appropriate course number, and research topic selected in agreement with the faculty and MSE advisor. The letter grade will be given after evaluation of student's performance by evaluation committee.

Nanobio Track

MSE 4343 NANOBIO TECHNOLOGY

MSE 4358 ORTHOPEDIC IMPLANTS - MATERIAL SELECTION AND CHARACTERIZATION

BE 4372 DRUG DELIVERY SYSTEMS

BE 4373 FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS

BE 4333 NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION

BE 4300 SPECIAL TOPICS IN BIOENGINEERING (with MSE advisor approval)

3 hour Undergraduate Research Course: research course under listed faculty, with appropriate course number, and research topic selected in agreement with the faculty and MSE advisor. The letter grade will be given after evaluation of student's performance by evaluation committee.

Energy Materials Track

MSE 4353 FUNDAMENTALS OF SUSTAINABLE ENERGY

MSE 4355 MATERIALS FOR ENERGY

EE 3302 FUNDAMENTALS OF POWER SYSTEMS

EE 4328 CURRENT TOPICS IN ELECTRICAL ENGINEERING

MAE 4301 SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING (with MSE advisor approval)

3 hour Undergraduate Research Course: research course under listed faculty, with appropriate course number, and research topic selected in agreement with the faculty and MSE advisor. The letter grade will be given after evaluation of student's performance by evaluation committee.

Faculty for Undergraduate Research Course

Wei Chen (Physics, nanomaterials for energy conversion)

Hyeok Choi (CE, Environmental Nanotechnology)

Yaowu Hao (MSE, nanostructured bio-sensors)

Yi Hong (BE, NanoBiomaterials)

Choong-Un Kim (MSE, micro/nano electronics)

Seong-Jin Koh (MSE, nanoelectronics and bio-sensors)

Ping Liu (Physics, nanomagnetism)

Cheng Luo (MAE, NEMS)

Robert Magnusson (EE, NanoPhotonics)

Stathis Meletis (MSE, thin films and nanostructured devices)

Hyejin Moon (MAE, Nanothermal)

Kytai Nguyen (BE, Nanobiomaterials)

Kyungsuk Yum (MSE, nanomaterials for bio applications)

Weidong Zhou (EE, NanoPhotonics)

Mechanical and Aerospace Engineering

The Department of Mechanical and Aerospace Engineering (MAE) offers baccalaureate, masters and doctoral degree programs in Mechanical Engineering and Aerospace Engineering, and Certificate Programs in Automotive Engineering, Electronic Packaging, and Unmanned Vehicle Systems. The Mechanical and Aerospace Engineering programs have been accredited since 1967 and 1968, respectively, by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. Major focus areas within the Department include Design, Manufacturing and Multidisciplinary Optimization; Dynamic Systems and Controls; Fluid Mechanics, Aerodynamics and Propulsion; Structural Mechanics and Structural Optimization; and Thermal Sciences and Energy Systems.

Undergraduate (p. 671)

- Bachelor of Science in Aerospace Engineering
- Bachelor of Science in Mechanical Engineering
- Double Major in Mechanical and Aerospace Engineering
- Minor in Aerospace Engineering
- Minor in Mechanical Engineering
- Undergraduate Certificate in Automotive Engineering
- Undergraduate Certificate in Unmanned Vehicle Systems

Graduate (p. 644)

- Aerospace Engineering, M.Engr.
- Aerospace Engineering, M.S.
- Mechanical Engineering, M.Engr.
- Mechanical Engineering, M.S.
- Aerospace Engineering, B.S. to Ph.D.
- Aerospace Engineering, Ph.D.
- Mechanical Engineering, B.S. to Ph.D.
- Mechanical Engineering, Ph.D.
- Graduate Certificate in Automotive Engineering
- Graduate Certificate in Electronic Packaging
- Graduate Certificate in Manufacturing
- Graduate Certificate in Unmanned Vehicle Systems
- Graduate Certificate in Vertical Lift/Rotorcraft

COURSES

AE 5101. GRADUATE SEMINAR. 1 Hour.

The purpose is to acquaint graduate students with ongoing research at UTA, and outside in academia and industry. Seminars are given by graduate students of the department based on their ongoing research. Seminars are also given by external speakers from academia, industry and government.

AE 5191. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 1 Hour.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5197. RESEARCH IN AEROSPACE ENGINEERING. 1 Hour.

Research in masters programs.

AE 5291. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 2 Hours.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5297. RESEARCH IN AEROSPACE ENGINEERING. 2 Hours.

Research in masters programs.

AE 5300. PREPARATORY COURSE FOR AEROSPACE ENGINEERING. 3 Hours.

The course may be offered with multiple sections, wherein each section is paired with a corresponding UG course being offered that semester. The purpose of this course is to strengthen academic preparation of students who were found inadequately prepared for a graduate degree in Aerospace Engineering. Students can concurrently enroll in multiple sections and may need to enroll in this course multiple times until their academic preparation is deemed complete. In order to pass this class, the student has to earn at least a B grade in aggregate based on all the assignments and exams. The student will earn an R grade if the class aggregate is a C/D and will need to repeat the course until the student passes the class. The student will Fail the class if the aggregate is an F. The course may be repeated as often as required.

AE 5301. ADVANCED TOPICS IN AEROSPACE ENGINEERING. 3 Hours.

To provide formal instruction in special topics pertinent to Aerospace Engineering from semester to semester depending on the availability of faculty. May be repeated for credit as provided topics change.

AE 5302. ADVANCED FLIGHT MECHANICS. 3 Hours.

Rigid body motion. Kinematics and dynamics of aerospace vehicles. Linear and nonlinear control of aircraft and spacecraft. Advanced aircraft and spacecraft modeling and control issues. Prerequisite: MAE 3405 and MAE 4310.

AE 5303. CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS. 3 Hours.

Equip the student with familiarity of significant tools of the control engineer. Topics covered include controllers and their effect on system performance and stability, block diagram algebra, stability and analysis, system performance definition, root locus, frequency techniques, and state variable methods. Digital simulation tools for design and simulation of control systems. Demonstration of controller design and performance in the laboratory. Also offered as ME 5303.

AE 5304. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

This graduate level course will cover the calculation of stresses and strains in a body that experiences elastic, plastic and/or viscoelastic deformation. This course will also highlight nanoelasticity to show the size-dependent structure-property relations of nanomaterials and piezoelectricity to demonstrate the voltage-displacement relations of piezoelectric materials. Offered as AE 5304 and ME 5304. Credit will be granted only once. Prerequisite: MAE 2312 or equivalent.

AE 5305. DYNAMIC SYSTEMS MODELING. 3 Hours.

To equip the student with the capability of determining the necessary equations for distributed and lumped parameter modeling of mixed physical system types including mechanical, fluid, electrical, and thermal components. Models are formulated for computer simulation and analysis for systems with deterministic and stochastic inputs. Topics of random vibration and system identification are included. Offered as AE 5305 and ME 5305. Credit will be granted only once.

AE 5310. FINITE ELEMENT METHODS. 3 Hours.

Finite element method in the study of the static response of complex structures and of continua applications to field problems; analytical methods emphasized and digital computer application undertaken. Offered as AE 5310 and ME 5310. Credit will be granted only once.

AE 5311. STRUCTURAL DYNAMICS. 3 Hours.

Natural frequencies; forced response of complex structural systems studied through the use of the finite element method; computational aspects of these problems discussed, and digital computer applications undertaken. Offered as AE 5311 and ME 5311. Credit will be granted only once.

AE 5312. CONTINUUM MECHANICS. 3 Hours.

Study of the underlying physical and mathematical principles relating to the behavior of continuous media; interrelationships between fluid and solid mechanics. Offered as AE 5312 and ME 5312. Credit will be granted only once.

AE 5313. FLUID DYNAMICS. 3 Hours.

Basic conservation laws, flow kinematics, special forms of the governing equations, two-dimensional potential flows, surface waves and some exact solutions of viscous incompressible flows. Offered as AE 5313 and ME 5313. Credit will be granted only once.

AE 5314. FRACTURE MECHANICS IN STRUCTURAL DESIGN. 3 Hours.

Linear elastic fracture mechanics, general yielding fracture mechanics, damage tolerance and durability design, fail safe and safe life design criteria, analysis of fatigue crack growth, residual strength analysis. Offered as AE 5314 and ME 5314. Credit will be granted only once.

AE 5315. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Fundamental relationships between the mechanical and hygrothermal behavior and the composition of multiphase media; failure criteria. Offered as AE 5315 and ME 5315. Credit will be granted only once.

AE 5320. DESIGN OPTIMIZATION. 3 Hours.

The purpose of this course is to present modern concepts of optimal design of structures. Basic ideas from optimization theory are developed with simple design examples. Analytical and numerical methods are developed and their applications discussed. Use of numerical simulation methods in the design process is described. Concepts of structural design sensitivity analysis and approximation methods will be discussed. The emphasis is made on the application of modern optimization techniques linked to the numerical methods of structural analysis, particularly, the finite element method. Prerequisite: AE 5310 or ME 5310.

AE 5322. AEROELASTICITY. 3 Hours.

A fundamental course addressing phenomena related to the time-independent interactions between structural flexibility and aerodynamic loads as relevant to flying vehicles. Emphasis is placed upon the development and use of simple analytical and/or interactive computational models that capture the essential aspects of the static aeroelastic phenomena investigated and provide insight into the response, including i) aeroelastic divergence; ii) aeroelastic change in control effectiveness; iii) aeroelastic distribution of lift; and iv) aeroelastic change in longitudinal static stability.

AE 5323. ENGINEERING RESEARCH METHODS. 3 Hours.

This hands-on course will teach the tools that are essential for conducting graduate research, with an aim to prepare the students for project-based graduate research. The course will be focused on the integration of engineering concepts to complete course projects that imitate mini research projects. Prerequisite: Undergraduate education in engineering or science.

AE 5325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Offered as AE 5325 and ME 5325. Credit will be granted only once.

AE 5326. AIR-BREATHING PROPULSION. 3 Hours.

Development of thrust and efficiency equations, thermodynamic cycle analysis, cycle design methods of aerospace propulsion systems, component performance analysis methods, component matching and dynamic interactions, and vehicle/propulsion-system integration.

AE 5327. COMPUTATIONAL AERODYNAMICS I. 3 Hours.

Solution of engineering problems by finite-difference methods, emphasis on aerodynamic problems characterized by single linear and non-linear equations, introduction to and application of major algorithms used in solving aerodynamics problems by computational methods.

AE 5328. COMPUTATIONAL AERODYNAMICS II. 3 Hours.

Review of the fundamental equations of aerodynamics, development of methods for solving Euler, boundary-layer, Navier-Stokes, and parabolized Navier-Stokes equations, application to practical aerodynamic analysis and design problems.

AE 5329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for additive manufacturing are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacturing. Offered as AE 5329 and ME 5329. Credit will be granted only once. Prerequisite: Graduate standing.

AE 5331. ANALYTIC METHODS IN ENGINEERING. 3 Hours.

Introduction to advanced analytic methods in engineering. Methods include multivariable calculus and field theory, Fourier series, Fourier and Laplace Transforms. Offered as AE 5331 and ME 5331. Credit will be granted only once. Prerequisite: Undergraduate degree in engineering, physics, or mathematics.

AE 5332. ENGINEERING ANALYSIS. 3 Hours.

Introduction to partial differential equations and complex variable theory with application to modeling of physical systems. Offered as AE 5332 and ME 5332. Credit will be granted only once.

AE 5333. THERMAL PHENOMENA IN MICROSYSTEMS. 3 Hours.

Introduction to experimental methods for microscale thermal transport, including experimental measurement techniques, design of experiments, data acquisition and analysis tools. Significant emphasis on carrying out mini-projects on related topics. Course learning outcomes are directly relevant for engineering jobs in semiconductors, energy conversion and other related industries. Offered as AE 5333 and ME 5333. Credit will be granted only once.

AE 5335. OPTIMAL CONTROL OF DYNAMIC SYS. 3 Hours.

Linear and nonlinear optimization methods; optimal control; continuous time Riccati equation; bang-bang control; singular arcs; differential inclusions; collocation techniques; design of optimal dynamic system trajectories. Offered as AE 5335 and ME 5335. Credit will be granted only once.

AE 5336. OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS. 3 Hours.

Kalman filter design and implementation. Optimal filtering for discrete-time and continuous-time dynamical systems with noise. Wiener filtering. State-space determination. Offered as EE 6327, AE 5336 and ME 5336. Credit will be granted only once. Prerequisite: Prior introductory systems or identification course is desirable.

AE 5337. INTRODUCTION TO ROBOTICS. 3 Hours.

An overview of industrial robots and their application to traditional and emerging applications. Coordinate systems and homogeneous transformations, kinematics of manipulators; motion characteristics and trajectories; dynamics and control of manipulators; actuation and design issues. Programming of industrial robotic manipulators in the laboratory. Offered as AE 5337 and ME 5337. Credit will be granted only once.

AE 5338. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Offered as AE 5338 and ME 5338. Credit will be granted only once.

AE 5339. STRUCTURAL ASPECTS OF DESIGN. 3 Hours.

Emphasis on determination of stresses and prediction of failure in machine and structural components; stress-strain relations in elastic and plastic regions; static failure and failure criteria; contact stress; notched sensitivity; strain-fatigue life relationship; characteristics of cracks in structural components. Offered as AE 5339 and ME 5339. Credit will be granted only once.

AE 5341. CONTROL SYSTEM COMPONENTS. 3 Hours.

The components and hardware used in electronic, hydraulic, and pneumatic control systems; techniques of amplification, computation, compensation, actuation, and sensing; modeling of multiport systems as well as servo systems analysis. Pulse modulated systems. Offered as AE 5341 and ME 5341. Credit will be granted only once. Prerequisite: Undergraduate introductory control course in Mechanical Engineering or equivalent or ME 5303 or equivalent.

AE 5342. GAS DYNAMICS. 3 Hours.

Review of fundamental compressible flow theory, method of characteristics for perfect gases, the Rankine-Hugoniot conditions, linearized flow theory. Offered as AE 5342 and ME 5342. Credit will be granted only once.

AE 5345. NUMERICAL HEAT TRANSFER AND FLUID FLOW. 3 Hours.

Introduction to numerical solutions for problems in heat transfer and fluid flow by the finite-volume method. The focus will be on numerical aspects pertaining to incompressible fluids. It provides the background training towards the use of commercial software. Offered as AE 5345 and ME 5345. Credit will be granted only once.

AE 5347. ROCKET PROPULSION. 3 Hours.

Thrust and efficiency relations, trajectory analysis, introduction to design and performance analysis of chemical (liquid and solid), electrical and nuclear rocket systems, combined cycle propulsion systems, and pulse detonation rockets.

AE 5348. HYPERSONIC PROPULSION. 3 Hours.

Design and performance analysis of propulsion systems for sustained flight at hypersonic speeds, airframe/propulsion system integration, supersonic combustion, finite-rate chemistry effects, radiative cooling.

AE 5350. CLASSICAL AERODYNAMICS. 3 Hours.

To present a classical treatment of incompressible and compressible aerodynamics. Kinematics of fluid flow. Potential flow theory applied to non-lifting and lifting wings and bodies. Subsonic and supersonic wings and bodies. Familiarity with advanced engineering mathematics is recommended.

AE 5360. MULTIDISCIPLINARY INVERSE DESIGN AND OPTIMIZATION. 3 Hours.

For a new design of any realistic device to be competitive, it must satisfy a number of often conflicting requirements, objectives, and constraints. This course offers a variety of basic concepts and methodologies for inverse design and optimization with practical applications in fluid mechanics, heat transfer, elasticity, and electromagnetism. Offered as AE 5360 and ME 5360. Credit will be granted only once.

AE 5362. GUIDANCE, NAVIGATION, AND CONTROL OF AEROSPACE VEHICLES. 3 Hours.

Basics of flight dynamics and control. Autopilot structures for aerospace vehicles (aircraft, missiles, launch vehicles). Equilibrium glide trajectories for atmospheric flight. Discussion of the various guidance algorithms used in aircraft/missiles/launch vehicles. Basics of Kalman filtering, sensor and data fusion. Selection and trade-off between various navigation components such as the IMU, GPS and other navigation components. Integration of the guidance, navigation and control components in aerospace vehicles.

AE 5363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects. Offered as AE 5363 and ME 5363. Credit will be granted only once.

AE 5364. INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT. 3 Hours.

Practical aerodynamics of rotors and other components of rotorcraft. Introduction to performance, handling qualities, and general flight mechanics related to rotorcraft design, test, and certification requirements. Emphasis is on real rotorcraft mission capabilities as defined by the customer. Offered as AE 5364 and ME 5364. Credit will be granted only once.

AE 5365. INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION. 3 Hours.

Dynamic and aerodynamic modeling of rotorcraft elements using vector mechanics, linear algebra, calculus and numerical methods. Special emphasis on rotors, aerodynamic interference, proper axis system representation, model assembly methods and trimming. Offered as AE 5365 and ME 5365. Credit will be granted only once.

AE 5367. HIGH-SPEED AIRCRAFT AND SPACE ACCESS VEHICLE DESIGN. 3 Hours.

An introductory course on high-speed aircraft and space access vehicle design. The course concentrates on reusable flight vehicles. Topics covered are historical case studies, design disciplines, design space visualization and proof of design convergence. Prerequisite: consent of the instructor.

AE 5368. FLIGHT VEHICLE SYNTHESIS AND SYSTEMS ENGINEERING. 3 Hours.

An introductory course on multi-disciplinary design decision-making applied to flight vehicle design. The course introduces decision-making techniques leading to efficient aerospace product design. The following main topics are covered: a) management domain, b) operational domain, c) engineering domain. Prerequisite: MAE 4350, MAE 4351 or equivalent.

AE 5372. PARAMETRIC SIZING OF HIGH-SPEED AIRCRAFT. 3 Hours.

An introductory course on high-speed aircraft design. Aimed to develop insight into basic concepts underlining the analysis and design of supersonic and hypersonic aircraft. Topics covered are historical case studies, design disciplines, and design methodologies. Prerequisite: MAE 4350, MAE 4351 or equivalent.

AE 5374. NONLINEAR SYSTEMS ANALYSIS AND CONTROLS. 3 Hours.

Nonlinear systems; phase plane analysis; Poincare-Bendixon theorems; nonlinear system stability; limit cycles and oscillations; center manifold theorem, Lyapunov methods in control; variable structure control; feedback linearization; backstepping techniques. Offered as AE 5374 and ME 5374. Credit will be granted only once.

AE 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Offered as AE 5378 and ME 5378. Credit will be granted only once.

AE 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Offered as AE 5379 and ME 5379. Credit will be granted only once. Prerequisite: B or better in MAE 4378 or AE 5378 or ME 5378 and admission to the UVS certificate program.

AE 5380. DESIGN OF DIGITAL CONTROL SYSTEMS. 3 Hours.

Difference equations, Z- and w-transforms, discrete TF (Transfer Function). Discrete equivalence (DE) to continuous TF. Aliasing & Nyquist sampling theorem. Design by DE, root locus in z-plane & Youla parameterization. Discrete state-space model, minimality after sampling, pole placement, Moore-Kimura method, linear quadratic regulator, asymptotic observer. Computer simulation and/or lab implementation. Offered as EE 5324, AE 5380 and ME 5380. Credit will be granted only once. Prerequisite: MAE 4310 or equivalent.

AE 5381. BOUNDARY LAYERS. 3 Hours.

An introductory course on boundary layers. The coverage emphasizes the physical understanding and the mathematical foundations of boundary layers, including applications. Topics covered include laminar and turbulent incompressible and compressible layers, and an introduction to boundary layer transition. Offered as AE 5381 and ME 5381. Credit will be granted only once.

AE 5382. ADVANCED ASTRONAUTICS. 3 Hours.

Topics include orbital mechanics, orbital maneuvering, relative motion, orbit determination and estimation, three body problem, perturbations and numerical techniques.

AE 5383. HYPERSONIC FLOW. 3 Hours.

A study of the basic principles of hypersonic flows. Inviscid and viscous hypersonic flows. The course focuses on the effects of high temperature on the gas properties and associated effects on canonical gasdynamics processes. Applications in aerodynamic heating and atmospheric entry. Application of numerical methods.

AE 5385. HIGH TEMPERATURE GASDYNAMICS. 3 Hours.

Surveys kinetic theory, statistical mechanics, and chemical reaction rate theory. Application to the prediction of thermodynamic properties of gasses and the analysis of problems in high-temperature gasdynamics.

AE 5386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses.

AE 5391. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 3 Hours.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5397. RESEARCH IN AEROSPACE ENGINEERING. 3 Hours.

Research in masters programs.

AE 5398. THESIS. 3 Hours.

Thesis.

AE 5400. PREPARATORY COURSE FOR AEROSPACE ENGINEERING. 4 Hours.

The course may be offered with multiple sections, wherein each section is paired with a corresponding UG course being offered that semester. The purpose of this course is to strengthen academic preparation of students who were found inadequately prepared for a graduate degree in Aerospace Engineering. Students can concurrently enroll in multiple sections and may need to enroll in this course multiple times until their academic preparation is deemed complete. In order to pass this class, the students has to earn at least a B grade in aggregate based all the assignments and exams. The student will earn an R grade if the class aggregate is a C/D and will need to repeat the course until the student passes the class. The student will Fail the class if the aggregate is an F. The course may be repeated as often as required.

AE 5698. THESIS. 6 Hours.

Thesis.

AE 6196. AEROSPACE ENGINEERING INTERNSHIP. 1 Hour.

For students participating in internship programs. Requires prior approval of Graduate Advisor.

AE 6197. RESEARCH IN AEROSPACE ENGINEERING. 1 Hour.

Research in doctoral programs.

AE 6297. RESEARCH IN AEROSPACE ENGINEERING. 2 Hours.

Research in doctoral programs.

AE 6299. DISSERTATION. 2 Hours.

Dissertation Prerequisite: Admission to candidacy for the Doctoral of Philosophy degree.

AE 6310. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Also offered as ME 6310.

AE 6311. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Offered as AE 6311 and ME 6311. Credit will be granted only once. Prerequisite: ME 5311, AE 5311 or equivalent.

AE 6315. ADVANCED COMPOSITES. 3 Hours.

Review of current state-of-the-art applications of composites: composite structural analysis; structural properties, damage characterization and failure mechanism; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints. Offered as AE 6315, ME 6315 and MSE 5349. Credit will be granted only once. Prerequisite: ME 5315, AE 5315 or MSE 5348 or equivalent.

AE 6337. ADVANCED ROBOTICS. 3 Hours.

Advanced robotic design concepts considering structural statics, dynamics and control strategies for both rigid and flexible manipulators will be studied using optimization techniques and analytical approaches and introduction to micro- and mobile robotic devices. Study of emerging applications of robotics will be explored. Digital simulation of robotic devices and programming and demonstration of robotic devices in the laboratory. Prerequisites: AE 5337 or ME 5337 or equivalent.

AE 6397. RESEARCH IN AEROSPACE ENGINEERING. 3 Hours.

Research in doctoral programs.

AE 6399. DISSERTATION. 3 Hours.

Dissertation Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

AE 6697. RESEARCH IN AEROSPACE ENGINEERING. 6 Hours.

Research in doctoral programs.

AE 6699. DISSERTATION. 6 Hours.

Dissertation. Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

AE 6999. DISSERTATION. 9 Hours.

Dissertation. Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

AE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

COURSES

MAE 1104. INTRODUCTION TO ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Students will become familiar with engineering and its many sub-fields, ethical responsibilities, creativity, and design.

MAE 1105. INTRODUCTION TO MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Opportunities are provided to develop skills in oral and written communication and department specific material. Case studies are presented and analyzed. Prerequisite: C or better in ENGR 1250 (or concurrent enrollment), or C or better in ENGR 1300 or MAE 1104.

MAE 1106. INTRODUCTION TO AEROSPACE ENGINEERING. 1 Hour.

An introduction to human flight and to the field of aerospace engineering through a combined theoretical and hands-on approach. Topics covered include history of flight and aerospace engineering and introductions to aerostatics and aerodynamics, aerospace structures, stability and control, and propulsion. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment).

MAE 1107. INTRODUCTION TO MECHANICAL ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Opportunities are provided to develop skills in oral and written communication, in engineering design teamwork, as well as in department-specific material. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment).

MAE 1140. PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Preparation for advanced study in mechanical and aerospace engineering curricula. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment); or student group.

MAE 1312. ENGINEERING STATICS. 3 Hours. (TCCN = ENGR 2301)

A study of forces and force systems, resultants and components of force systems, forces due to friction, conditions of equilibrium, forces acting on members of trusses and frame structures, centroids and moments of inertia. Vector and index notation introduced. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250), MATH 1426 (or HONR-SC 1426), and PHYS 1443; or student group.

MAE 1351. INTRODUCTION TO ENGINEERING DESIGN. 3 Hours.

Foundational course in product design and manufacturing using computer-based methodologies. 3D parametric solid modeling of parts and assemblies. Technical sketching, and ASME Y14 engineering drawing standards. Industrial practices for product design and fabrication. Introduction to 3D product analysis tools. Prerequisite: C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment) or HONR-SC 1426 (or concurrent enrollment); or student group.

MAE 2000. UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

MAE 2010. AUTOMOTIVE ENGINEERING PRACTICUM I. 0 Hours.

Practical design experience as full team member of automotive design competition team. Prerequisite: Permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

MAE 2312. SOLID MECHANICS. 3 Hours.

The relationship between stresses and strains in elastic bodies and the tension, compression, shear, bending, torsion, and combined loadings which produce them. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250) and MAE 1312; or student group.

MAE 2315. FLUID DYNAMICS. 3 Hours.

Introduction to Fluid Dynamics and low speed aerodynamics; fluid properties; dimensional analysis; conservation equations in integral and differential form; potential flow theory and viscous flow. Prerequisites: C or better in each of the following, MAE 1106, MAE 2323 (or concurrent enrollment), MAE 3309 (or concurrent enrollment) or MAE 3310 (or concurrent enrollment), and MAE 3360 (or concurrent enrollment); or student group.

MAE 2323. DYNAMICS. 3 Hours. (TCCN = ENGR 2302)

The relation between forces acting on particles, systems of particles and rigid bodies, and the changes in motion produced. Review of kinematics and vector analysis, Newton's Laws, energy methods, methods of momentum, inertia tensor and Euler's equations of motion. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250), MAE 1312 and MATH 2425 (or HONR-SC 2425); or student group.

MAE 2360. NUMERICAL ANALYSIS & PROGRAMMING. 3 Hours.

Utilization of digital computers in mechanical and aerospace engineering. Computational algorithms and their representation in FORTRAN, C, and Matlab. Introduction to linear algebra and numerical methods. Prerequisite: C or better in MATH 2425 (or HONR-SC 2425) (or concurrent enrollment); or student group.

MAE 2381. EXPERIMENTAL METHODS AND MEASUREMENTS. 3 Hours.

Introduction to data analysis, incorporating statistics and probability, design and planning of engineering experiments for error prediction and control. Measurement and instrumentation, basic instruments, their calibration and use. Prerequisite: C or better in each of the following, MAE 1351 and MATH 2425 (or HONR-SC 2425) and PHYS 1443 (or HONR-SC 1443); or student group.

MAE 2391. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Special problems in mechanical and aerospace engineering for preprofessional students in mechanical or aerospace engineering. Prerequisite: Instructor permission.

MAE 3000. UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good academic standing and permission of instructor. May be taken a maximum of 3 times.

MAE 3181. MATERIALS AND STRUCTURES LAB. 1 Hour.

Experiments to study materials behavior and deformation of structural elements. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2381 and C or better in MAE 3315 (or concurrent enrollment) or MAE 3242 (or concurrent enrollment); or student group.

MAE 3182. AERODYNAMICS AND FLUIDS LAB. 1 Hour.

Wind tunnel experiments to study flow phenomena of aerodynamics interest, including scale testing of airfoils, wings, and aircraft. Prerequisite: C or better in each of the following, MAE 2381, MAE 3302 (or concurrent enrollment), and MAE 3303 (or concurrent enrollment); or student group.

MAE 3183. MEASUREMENTS LABORATORY II. 1 Hour.

Fundamental measurement techniques and experimental data analysis in mechanical engineering in the fields of thermal, fluid, structures, design, and dynamic systems. Introduction to sensor calibration, digital data acquisition, uncertainty analysis, and report writing. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2381, MAE 3314, and MAE 3319; or student group.

MAE 3185. INTRODUCTION TO MECHATRONICS. 1 Hour.

Project based introduction to the application of software and hardware required to build functioning electromechanical systems. Integrates the theory of electrical circuits, electromechanics, electronics, mechanics, and mechanical devices, along with computer and microprocessor programming and the software-hardware interface, for practical applications. Prerequisite: Professional AE or ME program and C or better in each of MAE 2360, MAE 2381, MAE 3360 and EE 2320; or student group.

MAE 3242. MECHANICAL DESIGN I. 2 Hours.

The overall nature of design as a process is presented along with various models, methods, techniques, and tools for the various phases of the process provide the student with an excellent understanding of how to design. Students learn to design mechanical components based on stress/deflection and the associated failure theories. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, and MAE 3324; or student group.

MAE 3302. INCOMPRESSIBLE AERODYNAMICS. 3 Hours.

Introduction to and application of the methods used to determine the low speed aerodynamic forces on aerodynamic components such as wings and airfoils. Topics include potential flow theory for lifting flows; airfoil and finite wing theory; panel and vortex-lattice methods. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2315, MAE 2323, MAE 3309 (or MAE 3310), and MAE 3360; or student group.

MAE 3303. COMPRESSIBLE FLOW. 3 Hours.

Fundamental thermodynamic concepts of compressible flow, isentropic flow, normal and oblique shock waves; expansion waves; quasi-one dimensional flows within nozzles and diffusers, linearized compressible flow theory, the method of characteristics and supersonic nozzle design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following MAE 2315, MAE 2323, MAE 3309 (or MAE 3310), and MAE 3360; or student group.

MAE 3304. ASTRONAUTICS I. 3 Hours.

Introduction to astronautics, the solar system, and the two-body problem. Orbit shaping and orbit transfers. Patched conic approximations for interplanetary transfers. Introduction to the three-body problem and relative motion. Rigid spacecraft equation of motion. Active and passive attitude stabilization techniques for spacecraft. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 2323, MAE 2360, and MAE 3360; or student group.

MAE 3306. FLIGHT PERFORMANCE, STABILITY & CONTROL. 3 Hours.

Review of aerodynamics. Introduction to aircraft performance and the assessment of aircraft static stability and control characteristics. Performance topics covered include cruise, climb, gliding flight, turns, range and endurance. Static stability and control topics covered include longitudinal, lateral and directional stability and control power calculations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 3302 and MAE 3303.

MAE 3309. THERMAL ENGINEERING. 3 Hours.

Basic concepts and definitions, properties of pure substances, work and heat, first law of thermodynamics, second law of thermodynamics, entropy, and introduction to conductive, convective, and radiative transfer. Prerequisite: Must be in an EE or MAE department degree program and C or better in each of the following, CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment); MATH 2425 (or HONR-SC 2425) and PHYS 1444; or student group.

MAE 3310. THERMODYNAMICS I. 3 Hours.

Basic concepts and definitions, properties of pure substances, work and heat, first law of thermodynamics, second law of thermodynamics, entropy, thermodynamics of gases, vapors, and liquids in various nonflow and flow processes, and irreversibility and availability. Prerequisite: Must be in an MAE department degree plan and C or better in each of the following, CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment); MAE 1312 (or concurrent enrollment), MATH 2425 (or HONR-SC 2425), and PHYS 1444; or student group.

MAE 3311. THERMODYNAMICS II. 3 Hours.

Availability, power, refrigeration and heat pump cycles (both gas and vapor), property relations and equations of state, ideal gas mixtures, mixtures of gases and vapors, psychrometrics, adiabatic flame temperature, thermochemical equilibrium, and compressible flow. Emphasis is on applying these topics to thermal systems design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3313 (or concurrent enrollment) and MAE 3310; or student group.

MAE 3313. FLUID MECHANICS. 3 Hours.

Fundamental concepts of fluid mechanics leading to the development of both the integral and differential forms of the basic conservation equations. Application of the integral conservation equations to engineering problems in fluid dynamics including buoyancy and other hydrostatics problems. Dimensional analysis and similitude are also discussed. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2323, MAE 2360, MAE 3360, and MAE 3310 (or concurrent enrollment); or student group.

MAE 3314. HEAT TRANSFER. 3 Hours.

Topics cover the fundamental laws of heat and mass transfer, including steady and unsteady conduction, forced and free convection, and radiation as well as heat transfer in phase change. Applications of heat transfer to thermal systems design are included. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313 or C or better in MAE 3302.

MAE 3315. AEROSPACE STRUCTURAL STATICS. 3 Hours.

Overview of aircraft basic structural elements and materials; introduction to elasticity; equations of equilibrium; constitutive equations of isotropic solids; bending and torsion analysis of thin-walled beams; flexure shear of thin-walled beams with stringer reinforcement; introduction to fatigue and fracture analysis; failure criteria; energy method to find strain energy release rate; elastic column buckling. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2312; or student group.

MAE 3316. AEROSPACE STRUCTURAL DYNAMICS. 3 Hours.

Harmonic and periodic motion including both damped and undamped free and forced vibration. Single-and multi-degree-of-freedom discrete systems. Vibration of continuous systems. Introduction of finite element method for structural dynamics. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, MAE 3360, and MATH 3330; or student group.

MAE 3318. KINEMATICS AND DYNAMICS OF MACHINES. 3 Hours.

The motion and interaction of linkage and mechanisms. Fundamental concepts of kinematics and dynamics applied to the determination of degree of freedom mechanisms and forces acting on joints of mechanisms. Specific mechanisms and applications such as multi-body mechanisms, linkage synthesis, cam design, and balancing. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2323, or student group.

MAE 3319. DYNAMIC SYSTEMS MODELING AND SIMULATION. 3 Hours.

Introduction to modeling and prediction of behavior of engineering systems. Analytic and numerical simulation, state-space differential equations, and Laplace transform methods. Effects of physical characteristics of system elements on system design and dynamic performance. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3314 (or concurrent enrollment), EE 2320, and MATH 3330; or student group.

MAE 3324. STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Crystal structure and defects in materials. Diffusion, phase diagrams and phase transformations in metallic systems. The inter relationships between processing, structure, and properties of engineering materials with emphasis on the mechanical behavior of metals, polymers, and composite materials. Prerequisites: Must be in an MAE department degree program and C or better in each of the following, CHEM 1465 (or CHEM 1441 and CHEM 1442), MAE 2312 (or concurrent enrollment), and PHYS 1444; or student group.

MAE 3344. INTRODUCTION TO MANUFACTURING ENGINEERING. 3 Hours.

Introduction to casting, forming, machining, and joining processes for metals and nonmetals. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 3360. ENGINEERING ANALYSIS. 3 Hours.

Mathematical analysis with emphasis on solution techniques and engineering applications. Topics include: ordinary differential equations (ODE), Laplace Transform, numerical solutions of ODE, boundary value problems, Fourier series, Sturm-Liouville problem and vector calculus. Prerequisite: Must be in an MAE department degree program and C or better in each of the following, MATH 2326 and MAE 2360 (or concurrent enrollment); or student group.

MAE 3405. FLIGHT DYNAMICS. 4 Hours.

Derivation of equation of motion (EOM) of a flight vehicle. Trimmed flight condition analysis based on the nonlinear EOM. Linearization of EOM for a given trimmed flight condition. State-space and transfer-function representations of the linear EOM. Aircraft stability and dynamic performance analysis based on the linear EOM. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3406 (or concurrent enrollment) or MAE 3306 (or concurrent enrollment) and MATH 3330; or student group.

MAE 3406. FLIGHT PERFORMANCE & STABILITY. 4 Hours.

Classical Aerodynamics including potential flow theory for lifting flows; airfoil and finite wing theory; panel and vortex-lattice methods. Lift and drag buildup for aircraft. Aircraft performance analysis including cruise, climbing, gliding and turning flight, range and endurance. Aircraft longitudinal, lateral and roll stability and control. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 (or concurrent enrollment).

MAE 4000. UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good academic standing and permission of instructor. May be taken a maximum of 3 times.

MAE 4010. AUTOMOTIVE ENGINEERING PRACTICUM II. 0 Hours.

Practical design experience as full team member of automotive design competition team. Prerequisite: Permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

MAE 4151. AEROSPACE VEHICLE DESIGN II. 1 Hour.

Analysis and design of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, harmonization of individual design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Prerequisite: Must be in the professional ME or AE program and C or better in MAE 4350.

MAE 4188. DESIGN PROJECT LABORATORY II. 1 Hour.

The design project from MAE 4287 continued. The design is finalized, a physical model (prototype) is manufactured and tested. Redesign and retest is accomplished as desired. The final design is documented by written report and oral presentation. Exit survey forms and exit essays must be submitted to complete the requirements of this course. Prerequisite: Must be in the professional ME program and C or better in MAE 4287.

MAE 4191. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

MAE 4287. DESIGN PROJECT I. 2 Hours.

Team engineering approach to a design project that integrates engineering knowledge from several courses. Problem definition and creative synthesis of prospective design solutions. Engineering proposals, feasibility studies, trade-off studies, systems models and analysis, decision making, and engineering reports and presentations. Professionalism, ethics, and societal impact issues. Prerequisite: Must be in the professional ME program and C or better in MAE 4344 (or concurrent enrollment) and must be within two calendar semesters of graduation (possibly including an 11-week summer session). MAE 4287 and MAE 4188 must be taken in consecutive semesters.

MAE 4291. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 2 Hours.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

MAE 4301. SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Topics will vary from semester to semester depending on student interest and the availability of faculty. May be repeated, provided topics are different. Prior approval by the student's advisor required. Prerequisite: Must be in the professional ME or AE program and others that vary by topic.

MAE 4302. INTRODUCTION TO BEARING DESIGN AND LUBRICATION. 3 Hours.

The course introduces 1) selection principles and design guidelines for various rolling element bearings, 2) theory of liquid and gas lubrication, 3) various novel fluid film bearings used in modern high speed turbomachinery and energy systems, and 4) fundamental principles of rotordynamics. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313.

MAE 4304. ASTRONAUTICS II. 3 Hours.

The restricted three-body problem, the n-body problem, and approximations. Interplanetary transfers. Design considerations for both manned and unmanned interplanetary vehicles. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3304.

MAE 4305. FUNDAMENTALS OF ELECTRONIC PACKAGING. 3 Hours.

An introductory treatment of electronic packaging, from single chip to multichip, including materials, electrical design, thermal design, mechanical design, package modeling and simulation, processing considerations, reliability, and testing. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3309; or student group.

MAE 4306. COMPUTATIONAL TECHNIQUES FOR ELECTRONIC PACKAGING. 3 Hours.

Characterization of the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3309; or student group.

MAE 4307. FINITE ELEMENT METHODS. 3 Hours.

Static response of complex structures and continua; application to field problems; mesh generation; error estimation and adaptive refinement. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3242.

MAE 4310. INTRODUCTION TO AUTOMATIC CONTROL. 3 Hours.

Block diagram algebra, transfer functions, and stability criteria. The use of transient response, frequency response, and root locus techniques in the performance analysis, evaluation, and design of dynamic systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, (MAE 3314 and MAE 3319) or (MAE 3405 and EE 2320); or student group.

MAE 4312. CONTROL SYSTEMS COMPONENTS. 3 Hours.

The components used in mechanical, electronic, and fluid power control systems are studied. Modeling and performance analysis are used to help in the understanding of system behavior. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 4310.

MAE 4314. MECHANICAL VIBRATIONS. 3 Hours.

Harmonic and periodic motion including both damped and undamped free and forced vibration. Single and multi-degree-of-freedom discrete systems. Vibration of continuous systems. Introduction of finite element method for structural dynamics. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, MAE 3360, and MATH 3330; or student group.

MAE 4315. INTRODUCTION TO COMPOSITES. 3 Hours.

Composite classification, laminate coding, fiber and weight fractions of composite lamina; lamina constitutive equations; structural characteristics of [A], [B], [D] matrices; lamination theory; thermal and moisture induced load and moment; lamina stress analysis and failure prediction; issues in composite structural design. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2312 (or CE 2313); or student group.

MAE 4320. HYDRAULIC AND PNEUMATIC SYSTEMS. 3 Hours.

The fundamentals of fluid mechanics as applied to hydraulic and pneumatic hardware. Mathematical models of pumps, motors, pistons, accumulators, valves, and transmission lines. Design and analysis procedures for implementing total fluid power systems with high operating efficiencies and adequate dynamic response characteristics. Theory is supported by laboratory demonstrations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3313, MAE 4310, and MAE 3310; or student group.

MAE 4321. AEROSPACE PROPULSION. 3 Hours.

Introduction to rocket and air-breathing propulsion systems. Development of thrust and efficiency relations, mission requirements, rocket and gas turbine engine cycle analysis, off-design performance, component design and performance analysis, advanced propulsion system concepts. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 or C or better in each of MAE 3313 and MAE 3311.

MAE 4322. ROCKET PROPULSION. 3 Hours.

Examines chemical, nuclear, and electrical propulsion concepts. Development of design and performance analysis methods. Flight performance of rocket powered vehicles. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 (or MAE 3311).

MAE 4323. ENERGY CONVERSION. 3 Hours.

Thermodynamics as applied to thermo-mechanical systems such as power cycles, engines, turbines, refrigeration, and air-conditioning systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3311 and MAE 3314.

MAE 4324. POWER PLANT ENGINEERING. 3 Hours.

Fundamental thermodynamics and heat transfer principles behind design and optimization of power generation systems with significant emphasis on component and system design. This class will cover a number of power plant types, including coal/gas fired, hydroelectric, nuclear, and solar. Concepts learnt in this class prepare students for an engineering career in power plants, oil, gas and related industries. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3310 (or MAE 3309); or student group.

MAE 4325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3311 or MAE 3303.

MAE 4326. COMPUTATIONAL AERODYNAMICS I. 3 Hours.

Solution of engineering problems by finite-difference methods, emphasis on aerodynamic problems characterized by single linear and non-linear equations, introduction to and application of major algorithms used in solving aerodynamics problems by computational methods. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3303.

MAE 4327. HEATING, VENTILATION, AND AIR CONDITIONING. 3 Hours.

Application of engineering sciences to design of heating, venting, and air conditioning (HVAC) systems. Humidification and dehumidification, psychrometric charts, heat load, cooling load, degree-days, comfort zones, and air distribution systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3311 and MAE 3314.

MAE 4329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing (AM) are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for AM are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacture. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 1351 and MAE 3324; or student group.

MAE 4331. DESIGN FOR MANUFACTURING. 3 Hours.

The interaction between design and manufacturing stressed in terms of the design process, customer-focused quality, design specifications versus process capability and tolerances, and redesign for producibility. Topics include material and manufacturing process selection, tolerancing, quality function deployment (QFD), design for assembly (DFA), quality control techniques, reliability, and robust design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242 and MAE 3344.

MAE 4335. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include: kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3318.

MAE 4336. ADVANCED MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Concept of stress and strain; elementary dislocation theory. Deformation of single crystals; strengthening mechanisms including solid solution strengthening, and precipitation hardening. Fracture mechanics; microscopic aspects of fracture, fatigue, and creep of materials; design and processing of materials for improved mechanical properties. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 4338. FAILURE ANALYSIS. 3 Hours.

Theory and practice of techniques for determining modes of failure and fracture of engineering materials. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 4339. FRACTURE MECHANICS. 3 Hours.

Theory and applications of fracture mechanics. Stress analysis of cracks, crack-tip plasticity, fatigue crack growth, and stress corrosion cracking. Applicability to materials selection, structural design, failure analysis, and structural reliability. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3242.

MAE 4342. MECHANICAL DESIGN II. 3 Hours.

Analysis for the design and manufacture of basic mechanical elements, and their role in the design of machines. A brief review of relevant topics including stress/deflection, failure theories, and contact stress is initially conducted. It is then extended to the design of fundamental mechanical components including shafts, gears, springs, bearings, fasteners, and clutches/brakes. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242 and MAE 3318 (or concurrent enrollment).

MAE 4344. COMPUTER-AIDED ENGINEERING. 3 Hours.

A study of the principles of computer-aided engineering in mechanical and aerospace engineering. Applications in mechanical, structural, and thermal systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242, MAE 3314 (or concurrent enrollment), and MAE 3318.

MAE 4345. INTRODUCTION TO ROBOTICS. 3 Hours.

Overview of industrial robots. Study of principles of kinematics, dynamics, and control as applied to industrial robotic systems; robotic sensors and actuators; path planning; guidelines to robot arm design and selection; introduction to mechatronics; laboratory exercise in designing, building, and controlling a 3D-printed robotic manipulator. Prerequisite: Must be in the professional ME or AE program.

MAE 4347. HEAT EXCHANGER DESIGN. 3 Hours.

Design procedure system evaluation; design parameters in heat exchangers. The course considers various heat exchanger configurations and includes student design projects. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314.

MAE 4348. COOLING OF ELECTRONIC PACKAGES. 3 Hours.

The calculation of heat loads and temperature fields using different cooling techniques. Includes parameter evaluation and design studies. Prerequisite: Must be in the professional ME or AE program and C or better in, MAE 3314 (or MAE 3309); or student group.

MAE 4350. AEROSPACE VEHICLE DESIGN I. 3 Hours.

Analysis and design of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, integration of design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 3306 or MAE 3406 and MAE 3405.

MAE 4351. AEROSPACE VEHICLE DESIGN II. 3 Hours.

Analysis, design, and synthesis of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, integration of individual design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Also included will be economic, environmental, sustainability, manufacturability, safety, social and political considerations. Formal written and oral reports are required. Exit survey forms and exit essays must be submitted to complete the requirements of this course. Prerequisite: Must be in the professional AE program and C or better in MAE 4350.

MAE 4352. SPACE VEHICLE AND MISSION DESIGN. 3 Hours.

Space vehicle design; influence of space environment, astrodynamics, and atmospheric reentry. Space vehicle sub system design; propulsion, attitude determination and control, structural design, thermal control, power and telecommunications. Investigation into mission design concepts and considerations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2323 and MATH 2326; or student group.

MAE 4357. AUTOMOTIVE ENGINEERING. 3 Hours.

Introduction to automotive engine types and performance, drive train modeling and vehicle loading characteristics, fueling requirements, fuel injection systems, tire characteristics and modeling, suspension characteristics and handling, braking systems and requirements. Course taught through lecture, student presentations and student design projects. Prerequisite: Must be in the professional ME, AE or EE program and C or better in each of the following, MAE 3360 (or MATH 3319) and MAE 2312 (or EE 3446); or student group.

MAE 4358. RACECAR ENGINEERING. 3 Hours.

This course is intended for Formula SAE team members and other interested students to develop new systems or analyze concepts for the Formula SAE or Formula Electric racecar and related equipment. The students will form teams and perform research and development on projects related to automotive or racecar engineering. Prerequisites: Must be in the professional ME, AE or EE program and C or better in each of the following, MAE 3360 (or Math 3319) and MAE 2312 (or EE 3446); or student group.

MAE 4362. INTRODUCTION TO MICRO AND NANOFLUIDICS. 3 Hours.

As going down to micro scales, the basic hypothesis in the macro scale fluid mechanics may not be applicable in such scales. The objectives of this course are: to identify dominant forces and their effects in micro scale fluid systems that are different from those in the macro scales; to understand the fundamentals of micro fluidic phenomena; to discuss various microfluidic applications in research and commercial levels; and to explore new possible microfluidic applications in the emerging fields. Topics include overview of microfluidics, scaling laws, violation limit of the Navier-Stokes equations, surface force, surface tension, electrowetting, electrokinetics, dielectrophoresis, and soft lithography. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313 and MAE 3310; or student group.

MAE 4363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects.

MAE 4378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

MAE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in MAE 4378 and admission to the UVS certificate program.

MAE 4382. RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES. 3 Hours.

This course is offered to graduate and senior level undergraduate students with engineering and science background to introduce them to micro/nano research and development for energy conversion and storage. This course will include: Scaling laws, MEMS fabrication, Nanomaterial synthesis, Electrochemical energy storage/conversion (Batteries, Fuel Cells & Supercapacitors), Solar energy (photovoltaics and solar thermal energy), Energy harvesting and Solar water splitting and electrocatalysis. Prerequisite: Must be in the professional ME or AE program.

MAE 4386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses. Prerequisite: Must be in the professional ME or AE program and C or better in EE 2320 and C or better in either MAE 3313 or MAE 2315, or student group.

MAE 4391. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

COURSES

ME 5010. AUTOMOTIVE ENGINEERING PRACTICUM. 0 Hours.

Practical design experience as full member of automotive design competition team. Prerequisite: Permission of Director for the Arnold E. Petsche Center for Automotive Engineering.

ME 5101. GRADUATE SEMINAR. 1 Hour.

The purpose is to acquaint graduate students with ongoing research at UTA, and outside in academia and industry. Seminars are given by graduate students of the department based on their ongoing research. Seminars are also given by external speakers from academia, industry and government.

ME 5191. PROJECT STUDIES IN MECHANICAL ENGINEERING. 1 Hour.

May be repeated for credit as topics change. Project work performed under a non-thesis degree will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies. May be graded pass/fail.

ME 5197. RESEARCH IN MECHANICAL ENGINEERING. 1 Hour.

Research in master's programs.

ME 5291. PROJECT STUDIES IN MECHANICAL ENGINEERING. 2 Hours.

May be repeated for credit as topics change. Work performed as a thesis substitute will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies. May be graded P/F.

ME 5297. RESEARCH IN MECHANICAL ENGINEERING. 2 Hours.

Research in master's programs.

ME 5302. INTRODUCTION TO BEARING DESIGN AND LUBRICATION. 3 Hours.

The course introduces 1) selection principles and design guidelines for various rolling element bearings, 2) theory of liquid and gas lubrication, 3) various novel fluid film bearings used in modern high speed turbomachinery and energy systems, and 4) fundamental principles of rotordynamics.

ME 5303. CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS. 3 Hours.

Equip the student with familiarity of significant tools of the control engineer. Topics covered include controllers and their effect on system performance and stability, block diagram algebra, stability and analysis, system performance definition, root locus, frequency techniques, and state variable methods. Digital simulation tools for design and simulation of control systems. Demonstration of controller design and performance in the laboratory. Also offered as AE 5303. Credit will be granted only once.

ME 5304. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

This graduate level course will cover the calculation of stresses and strains in a body that experiences elastic, plastic and/or viscoelastic deformation. This course will also highlight nanoelasticity to show the size-dependent structure-property relations of nanomaterials and piezoelectricity to demonstrate the voltage-displacement relations of piezoelectric materials. Offered as AE 5304 and ME 5304. Credit will be granted only once. Prerequisite: MAE 2312 or equivalent.

ME 5305. DYNAMIC SYSTEMS MODELING. 3 Hours.

To equip the student with the capability of determining the necessary equations for distributed and lumped parameter modeling of mixed physical system types including mechanical, fluid, electrical, and thermal components. Models are formulated for computer simulation and analysis for systems with deterministic and stochastic inputs. Topics of random vibration and system identification are included. Offered as AE 5305 and ME 5305. Credit will be granted only once.

ME 5306. FLUID POWER CONTROL. 3 Hours.

Mathematical models for hydraulic and pneumatic control components and systems including hydraulic pumps, motors, and spool valves. The application of electrohydraulic and hydromechanical servomechanisms for position and velocity control are treated. Theory supported by laboratory demonstrations and experiments.

ME 5310. FINITE ELEMENT METHODS. 3 Hours.

Finite element method in the study of the static response of complex structures and of continua; applications to field problems; analytical methods emphasized, and digital computer application undertaken. Offered as AE 5310 and ME 5310. Credit will be granted only once.

ME 5311. STRUCTURAL DYNAMICS. 3 Hours.

Natural frequencies; forced response of complex structural systems studied through the use of the finite element method; computational aspects of these problems discussed, and digital computer applications undertaken. Offered as AE 5311 and ME 5311. Credit will be granted only once.

ME 5312. CONTINUUM MECHANICS. 3 Hours.

Study of the underlying physical and mathematical principles relating to the behavior of continuous media; interrelationships between fluid and solid mechanics. Offered as AE 5312 and ME 5312. Credit will be granted only once.

ME 5313. FLUID DYNAMICS. 3 Hours.

Basic conservation laws, flow kinematics, special forms of the governing equations, two-dimensional potential flows, surface waves and some exact solutions of viscous incompressible flows. Offered as AE 5313 and ME 5313. Credit will be granted only once.

ME 5314. FRACTURE MECHANICS IN STRUCTURAL DESIGN. 3 Hours.

Linear elastic fracture mechanics, general yielding fracture mechanics, damage tolerance and durability design, fail safe and safe life design criteria, analysis of fatigue crack growth, residual strength analysis. Offered as AE 5314 and ME 5314. Credit will be granted only once.

ME 5315. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Fundamental relationships between the mechanical and hygrothermal behavior and the composition of multiphase media; failure criteria. Offered as AE 5315 and ME 5315. Credit will be granted only once.

ME 5316. THERMAL CONDUCTION. 3 Hours.

Fundamental laws, initial and boundary conditions, basic equations for isotropic and anisotropic media, related physical problems and steady and transient temperature distributions in solid structures.

ME 5317. CONVECTION HEAT TRANSFER. 3 Hours.

Equations of motion of viscous fluids are reviewed and the energy equations are introduced. Exact and approximate solutions are made for forced convective problems with non-isothermal and unsteady boundaries. Free convection and combined free- and forced-convection problems are solved.

ME 5318. RADIATIVE HEAT TRANSFER. 3 Hours.

General equations of radiative transfer derived and solved for special problems, and the elements of atomic, molecular, and continuum radiation are introduced.

ME 5319. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Continuation of ME 5310. Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Prerequisite: ME 5310 or equivalent.

ME 5320. DESIGN OPTIMIZATION. 3 Hours.

The purpose of this course is to present modern concepts of optimal design of structures. Basic ideas from optimization theory are developed with simple design examples. Analytical and numerical methods are developed and their applications discussed. Use of numerical simulation methods in the design process is described. Concepts of structural design sensitivity analysis and approximation methods will be discussed. The emphasis is made on the application of modern optimization techniques linked to the numerical methods of structural analysis, particularly, the finite element method. Prerequisite: AE 5310 or ME 5310.

ME 5321. ADVANCED CLASSICAL THERMODYNAMICS. 3 Hours.

Fundamentals of thermodynamics reviewed. Different treatments of principles studied, compared and formal relationships developed and applied to chemical, magnetic, electric and elastic systems.

ME 5322. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Prerequisite: ME 5311 or equivalent.

ME 5323. ENGINEERING RESEARCH METHODS. 3 Hours.

This hands-on course will teach the tools that are essential for conducting graduate research, with an aim to prepare the students for project-based graduate research. The course will be focused on the integration of engineering concepts to complete course projects that imitate mini research projects. Prerequisite: Undergraduate education in engineering or science.

ME 5324. POWER PLANT ENGINEERING. 3 Hours.

Fundamental thermodynamics and heat transfer principles behind design and optimization of power generation systems with significant emphasis on component and system design. This class will cover a number of power plant types, including coal/gas fired, hydroelectric, nuclear, and solar. Concepts learnt in this class prepare students for an engineering career in power plants, oil, gas and related industries.

ME 5325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Offered as AE 5325 and ME 5325. Credit will be granted only once.

ME 5326. MANUFACTURING PROCESSES AND SYSTEMS. 3 Hours.

Survey and modeling of manufacturing, assembly, surface treatment, automation, and integration processes. Prerequisite: Graduate standing.

ME 5327. DESIGN FOR MANUFACTURING. 3 Hours.

The interaction between design and manufacturing stressed in terms of the design process, customer-focused quality, design specifications versus process capability and tolerances, and redesign for producibility. Topics include material and manufacturing process selection, tolerancing, quality function deployment (QFD), design for assembly (DFA), quality control techniques, reliability, and robust design. Prerequisite: ME 5326.

ME 5328. COMPUTATIONAL TECHNIQUES IN ELECTRONIC SYSTEMS. 3 Hours.

To develop the capability to characterize the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepack, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes. Also offered as MAE 4328.

ME 5329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for additive manufacturing are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacturing. Offered as AE 5329 and ME 5329. Credit will be granted only once. Prerequisite: Graduate standing.

ME 5331. ANALYTIC METHODS IN ENGINEERING. 3 Hours.

Introduction to advanced analytic methods in engineering. Methods include multivariable calculus and field theory, Fourier series, Fourier and Laplace Transforms. Offered as AE 5331 and ME 5331. Credit will be granted only once. Prerequisite: Undergraduate degree in engineering, physics, or mathematics.

ME 5332. ENGINEERING ANALYSIS. 3 Hours.

Introduction to partial differential equations and complex variable theory with application to modeling of physical systems. Offered as AE 5332 and ME 5332. Credit will be granted only once.

ME 5333. THERMAL PHENOMENA IN MICROSYSTEMS. 3 Hours.

Introduction to experimental methods for microscale thermal transport, including experimental measurement techniques, design of experiments, data acquisition and analysis tools. Significant emphasis on carrying out mini-projects on related topics. Course learning outcomes are directly relevant for engineering jobs in semiconductors, energy conversion and other related industries. Offered as AE 5333 and ME 5333. Credit will be granted only once.

ME 5335. OPTIMAL CONTROL OF DYNAMIC SYSTEMS. 3 Hours.

Linear and nonlinear optimization methods; optimal control; continuous time Ricatti equation; bang-bang control; singular arcs; differential inclusions; collocation techniques; design of optimal dynamic system trajectories. Offered as AE 5335 and ME 5335. Credit will be granted only once.

ME 5336. OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS. 3 Hours.

Kalman filter design and implementation. Optimal filtering for discrete-time and continuous-time dynamical systems with noise. Wiener filtering. State-space determination. Offered as EE 6327, AE 5336 and ME 5336. Credit will be granted only once. Prerequisite: introductory systems or identification course is desirable. Also offered as AE 5336 and EE 6327. Credit will be granted only once.

ME 5337. INTRODUCTION TO ROBOTICS. 3 Hours.

An overview of industrial robots and applications to traditional and emerging applications. Coordinate systems and homogeneous transformations, kinematics of manipulators; motion characteristics and trajectories; dynamics and control of manipulators; actuation and design issues. Programming of industrial robotic manipulators in the laboratory. Offered as AE 5337 and ME 5337. Credit will be granted only once.

ME 5338. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include: kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Offered as AE 5338 and ME 5338. Credit will be granted only once.

ME 5339. STRUCTURAL ASPECTS OF DESIGN. 3 Hours.

Emphasis on determination of stresses and prediction of failure in machine and structural components; stress-strain relations in elastic and plastic regions; static failure and failure criteria; contact stress; notched sensitivity, strain-fatigue life relationship' characteristics of cracks in structural components. Offered as AE 5339 and ME 5339. Credit will be granted only once.

ME 5340. AUTOMOTIVE ENGINEERING. 3 Hours.

Introduction to automotive engine types and performance, drive train modeling and vehicle loading characteristics, fueling requirements, fuel injection systems, tire characteristics and modeling, suspension characteristics and handling, braking systems and requirements. Course taught through lecture, student presentations and student design projects.

ME 5341. CONTROL SYSTEM COMPONENTS. 3 Hours.

The components and hardware used in electronic, hydraulic, and pneumatic control systems; techniques of amplification, computation, compensation, actuation, and sensing; modeling of multiport systems as well as servo systems analysis. Pulse modulated systems. Offered as AE 5341 and ME 5341. Credit will be granted only once. Prerequisite: Undergraduate introductory control course in Mechanical Engineering or equivalent or ME 5303 or equivalent.

ME 5342. GAS DYNAMICS. 3 Hours.

Review of fundamental compressible flow theory, method of characteristics for perfect gases, the Rankine-Hugoniot conditions, linearized flow theory. Offered as AE 5342 and ME 5342. Credit will be granted only once.

ME 5343. TWO-PHASE FLOW AND BOILING HEAT TRANSFER. 3 Hours.

This is to introduce significant progress in phase change heat transfer and two-phase flow. Boiling heat transfer will be followed by the study of pressure drop and heat transfer in the pipes of two-phase flow. Boiling heat transfer includes pool boiling, forced convection boiling, and critical heat flux. Also selected topics by the instructor (heat pipe, condensation, Helmholtz wave instability, etc.) Also offered as AE 5343. Credit will be granted only once.

ME 5344. VISCOUS FLOWS. 3 Hours.

Navier-Stokes equations and Prandtl's boundary layer approximations; laminar and turbulent boundary layers including internal and external flows.

ME 5345. NUMERICAL HEAT TRANSFER AND FLUID FLOW. 3 Hours.

Introduction to numerical solutions for problems in heat transfer and fluid flow by the finite-volume method. The focus will be on numerical aspects pertaining to incompressible fluids. It provides the background training towards the use of commercial software. Offered as AE 5345 and ME 5345. Credit will be granted only once.

ME 5346. COOLING OF ELECTRONIC PACKAGES. 3 Hours.

This course deals with the development and application of analytical models of thermal phenomena occurring in electronic equipment. The calculation of heat loads and temperature fields using different cooling techniques. Includes parameter evaluation and design studies.

ME 5347. HEAT EXCHANGER DESIGN. 3 Hours.

Design procedures, system evaluations and design parameters in heat exchangers. Heat exchanger configurations; student design projects.

ME 5352. FUNDAMENTALS IN ELECTRONIC PACKAGING. 3 Hours.

An introductory treatment of electronic packaging, from single chip to multichip, including materials, electrical design, thermal design, mechanical design, package modeling and simulation, processing considerations, reliability, and testing.

ME 5353. COMPUTATIONAL TECHNIQUES FOR ELECTRONIC PACKAGING. 3 Hours.

Characterization of the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes.

ME 5354. FAILURES AND THEIR PREVENTION IN ELECTRONIC PACKAGES. 3 Hours.

A comprehensive overview of the fundamental causes for failures in electronic assemblies which include the printed wiring board, package, and second-level assemblies. Failure detection techniques and methodologies, key failure analysis techniques used will be discussed.

ME 5355. MECHANICAL FAILURE OF ELECTRONIC PACKAGES. 3 Hours.

Failure analysis, fatigue of electronic packages, fracture and creep behavior of solders. Mechanical properties of substrate materials. Electromigration and failure mechanisms.

ME 5356. CHIPSCALE PACKAGING. 3 Hours.

Overview of area array packaging with special emphasis on the maturing chip-scale packaging technology. Topics covered will include the design concepts of this technology, the materials related aspects, the manufacturing processes, and their reliability in a variety of applications.

ME 5358. Racecar Engineering. 3 Hours.

This course intended for Formula SAE team members and other interested students to develop new systems or analyze concepts for the Formula SAE or Formula Electric racecar and related equipment. The students will form teams and perform research and development on projects related to automotive or racecar engineering.

ME 5359. APPLIED AUTOMOTIVE ENGINEERING. 3 Hours.

The purpose of this course is to gain practical experience in the design and fabrication of parts or systems for automotive applications. The student must write a proposal, give a public oral presentation, and prepare a formal final report. The student must have attained full team member status in a student design competition team. Prerequisites: permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

ME 5360. MULTIDISCIPLINARY INVERSE DESIGN AND OPTIMIZATION. 3 Hours.

For a new design of any realistic device to be competitive, it must satisfy a number of often conflicting requirements, objectives, and constraints. This course offers a variety of basic concepts and methodologies for inverse design and optimization with practical applications in fluid mechanics, heat transfer, elasticity, and electromagnetism. Offered as AE 5360 and ME 5360. Credit will be granted only once.

ME 5362. INTRODUCTION TO MICRO AND NANOFLUIDICS. 3 Hours.

As going down to micro scales, the basic hypothesis in the macro scale fluid mechanics may not be applicable in such scales. The objectives of this course are: to identify dominant forces and their effects in micro scale fluid systems that are different from those in the macro scales; to understand the fundamentals of micro fluidic phenomena; to discuss various microfluidic applications in research and commercial levels; and to explore new possible microfluidic applications in the emerging fields. Topics include overview of microfluidics, scaling laws, violation limit of the Navier-Stokes equations, surface force, surface tension, electrowetting, electrokinetics, dielectrophoresis, and soft lithography. Prerequisite: MAE 2314 and MAE 3310 or equivalents.

ME 5363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects. Offered as AE 5363 and ME 5363. Credit will be granted only once.

ME 5364. INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT. 3 Hours.

Practical aerodynamics of rotors and other components of rotorcraft. Introduction to performance, handling qualities, and general flight mechanics related to rotorcraft design, test, and certification requirements. Emphasis is on rotorcraft mission capabilities as defined by the customer. Offered as AE 5364 and ME 5364. Credit will be granted only once.

ME 5365. INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION. 3 Hours.

Dynamic and aerodynamic modeling of rotorcraft elements using vector mechanics, linear algebra, calculus and numerical methods. Special emphasis on rotors, aerodynamic interference, proper axis system representation, model assembly methods and trimming. Offered as AE 5365 and ME 5365. Credit will be granted only once.

ME 5366. FUEL CELLS AND APPLICATIONS. 3 Hours.

The course introduces: Principles and thermodynamics applied to fuel cell-based power generation systems; materials and manufacturing methods of two common fuel cells and their stacks; modeling, analysis, and design of fuel cells and various reformers; and design issue of balance of plants such as steam management systems.

ME 5374. NONLINEAR SYSTEMS ANALYSIS AND CONTROLS. 3 Hours.

Nonlinear systems; phase plane analysis; Poincare-Bendixon theorems; nonlinear system stability; limit cycles and oscillations; center manifold theorem, Lyapunov methods in control; variable structure control; feedback linearization; backstepping techniques. Offered as AE 5374 and ME 5374. Credit will be granted only once.

ME 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Offered as AE 5378 and ME 5378. Credit will be granted only once.

ME 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Offered as AE 5379 and ME 5379. Credit will be granted only once. Prerequisite: B or better in MAE 4378 or AE 5378 or ME 5378 and admission to the UVS certificate program.

ME 5380. DESIGN OF DIGITAL CONTROL SYSTEMS. 3 Hours.

Difference equations, z- and w- transforms, discrete TF (Transfer Function). Discrete equivalence (DE) to continuous TF. Aliasing & Nyquist sampling theorem. Design by DE, root locus in z- plane & Youla parameterization. Discrete state- space model, minimality after sampling, pole placement, Moore-Kimura method, linear quadratic regulator, asymptotic observer. Computer simulation and/or laboratory implementation. Offered as EE 5324, AE 5380 and ME 5380. Credit will be granted only once. Prerequisite: undergraduate level controls course or equivalent. Also offered as AE 5380, EE 5324. Credit will be granted only once.

ME 5381. BOUNDARY LAYERS. 3 Hours.

An introductory course on boundary layers. The coverage emphasizes the physical understanding and the mathematical foundations of boundary layers, including applications. Topics covered include laminar and turbulent incompressible and compressible boundary layers, and an introduction to boundary layer transition. Offered as AE 5381 and ME 5381. Credit will be granted only once.

ME 5382. RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES. 3 Hours.

This course is offered to graduate and senior level undergraduate students with engineering and science background to introduce them to micro/nano research and development for energy conversion and storage. The course will cover topics such as Scaling laws, MEMS fabrication, Nanomaterial synthesis, Electrochemical energy storage/conversion (Batteries, Fuel Cells & Supercapacitors), Solar energy (photovoltaics and solar thermal energy), Energy harvesting and Solar water splitting and electrocatalysis.

ME 5386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses. (also taught as AE 5386).

ME 5390. SPECIAL TOPICS IN MECHANICAL ENGINEERING. 3 Hours.

To provide formal instruction in special topics pertinent to Mechanical Engineering from semester to semester depending on the availability of faculty. May be repeated provided topics differ.

ME 5391. ADVANCED STUDIES IN MECHANICAL ENGINEERING. 3 Hours.

May be repeated for credit as topics change. Project work performed under a non-thesis degree will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies.

ME 5397. RESEARCH IN MECHANICAL ENGINEERING. 3 Hours.

Research in master's programs.

ME 5398. THESIS. 3 Hours.

Thesis.

ME 5698. THESIS. 6 Hours.

Thesis Prerequisite: GRAD ME thesis major.

ME 5998. THESIS. 9 Hours.

Thesis Prerequisite: GRAD ME thesis major.

ME 6196. MECHANICAL ENGINEERING INTERNSHIP. 1 Hour.

For students participating in internship programs. May be repeated for credit. Requires prior approval of ME Graduate Advisor.

ME 6197. RESEARCH IN MECHANICAL ENGINEERING. 1 Hour.

May be repeated for credit.

ME 6297. RESEARCH IN MECHANICAL ENGINEERING. 2 Hours.

May be repeated for credit.

ME 6299. DISSERTATION. 2 Hours.

Prerequisite: Admission to candidacy for the Doctoral of Philosophy degree.

ME 6310. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Also offered as ME 6310.

ME 6311. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Offered as AE 6311 and ME 6311. Credit will be granted only once. Prerequisite: ME 5311, AE 5311 or equivalent.

ME 6315. ADVANCED COMPOSITES. 3 Hours.

Review of current state-of-the-art applications of composites: composite structural analysis; structural properties, damage characterization and failure mechanism; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints. Offered as AE 6315, ME 6315 and MSE 5349. Credit will be granted only once. Prerequisite: ME 5315, AE 5315 or MSE 5348 or equivalent.

ME 6316. COMPUTER AIDED DESIGN. 3 Hours.

Role of graphics; image representation, batch and interactive computing, methods of automated mathematical model generation in engineering design. Application in mechanical, structural, thermal, controls areas of mechanical engineering.

ME 6337. ADVANCED ROBOTICS. 3 Hours.

Advanced robotic design concepts considering structural statics, dynamics and control strategies for both rigid and flexible manipulators will be studied using optimization techniques and analytical approaches and introduction to micro- and mobile robotic devices. Study of emerging applications of robotics will be explored. Digital simulation of robotic devices and programming and demonstration of robotic devices in the laboratory. Prerequisites: AE 5337 or ME 5337 or equivalent.

ME 6344. HEAT TRANSFER IN TURBULENT FLOW. 3 Hours.

Introduction to heat transfer in turbulent boundary layers including internal and external flows, turbulence structure, the Reynolds analogy, van Driest hypothesis, high and low Prandtl number two equation model, effects of surface roughness on heat transfer. Also offered as AE 6344. Credit will be granted only once.

ME 6397. RESEARCH IN MECHANICAL ENGINEERING. 3 Hours.

May be repeated for credit.

ME 6399. DISSERTATION. 3 Hours.

May be repeated for credit.

ME 6697. RESEARCH IN MECHANICAL ENGINEERING. 6 Hours.

May be repeated for credit.

ME 6699. DISSERTATION. 6 Hours.

Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

ME 6997. RESEARCH IN MECHANICAL ENGINEERING. 9 Hours.

May be repeated for credit.

ME 6999. DISSERTATION. 9 Hours.

Admission to candidacy for the Doctor of Philosophy degree.

ME 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Mechanical and Aerospace Engineering - Graduate Programs

Objective - Aerospace Engineering

The overall objective of the graduate program in Aerospace Engineering is to develop in a student the ability to define a technical problem, establish an appropriate mathematical or experimental model based on a firm understanding of the physical nature of the problem, analyze the problem by theoretical, numerical, or experimental techniques, and evaluate the results. Although this ability is developed in the context of aerospace problems, it is applicable to the engineering of any physical system. The program is designed for a student with any of the following specific objectives:

1. A sound foundation in advanced mathematics, science, and engineering which will equip the student well for research and development work or for further advanced study toward a doctoral degree in engineering.
2. A program of advanced study which allows specialization in one of the following areas:
 - Fluid dynamics, aerodynamics and propulsion (theoretical and applied aerodynamics, gas dynamics, viscous fluid mechanics, turbulence, computational and experimental fluid dynamics, bio-fluidics, hypersonic flow theory, high-temperature gas dynamics, V/STOL and rotorcraft aerodynamics, air-breathing and rocket propulsion);
 - Structural mechanics and structures (solid mechanics, aerospace structures, structural dynamics, composite structures and material characterization, damage tolerance and durability, smart structures, structure optimization, sensor technology, high-temperature structures and materials, aeroelasticity);
 - Flight mechanics and controls (atmospheric and space flight mechanics, orbital mechanics, guidance, navigation and control);
 - Vehicle design (conceptual aircraft design, atmospheric flight vehicle design, spacecraft design, computer-aided engineering).
3. A balanced but non-specialized program of advanced study in aerodynamics, astronautics, flight dynamics, structural analysis, propulsion, and fluid mechanics, with emphasis on experimental techniques and modern mathematical analysis.

Objective - Mechanical Engineering

The graduate program provides opportunities for professional development in such forms as: instructional courses to enhance technical competence in areas of mechanical engineering practice; training through a variety of experiences in design, development, research, experimentation, and/or analysis in joint efforts with faculty and peers; specialized courses of study required for entry into career fields allied to the mechanical engineering discipline; guided individual study under faculty supervision; and supportive coursework for programs leading to careers that require interdisciplinary competence.

A student with aid from a faculty advisor plans a program that will be consistent with his or her technical interests and the available facilities and course offerings. Typically, programs are classified as:

- Thermal Science
- Fluid Science
- Mechanical Design and Manufacturing
- Solid Mechanics and Structures
- Controls and Systems

Admission Requirements for Master's Program in Aerospace Engineering

Applicants for the master's degrees must have a baccalaureate degree in engineering or science. Applicants who have completed a bachelor's degree and wish to pursue a doctoral degree without completing a master's degree may apply for admission in the Bachelor of Science (B.S.) to Ph.D. Track. The minimum admission requirements to this highly competitive track are the same as those for all doctoral applicants. All applicants must meet the general requirements of the Graduate School as stated in the section of this catalog entitled "Admission Requirements and Procedures". Applicants not meeting all criteria may be admitted on a provisional or probationary basis.

For applicants with no prior training in engineering or with insufficient undergraduate Aerospace Engineering coursework, the same minimum criteria will apply. Additionally, their records will be reviewed in relation to their mathematics, engineering, and science backgrounds, and probationary status may be a basis for acceptance of such applicants, with specific undergraduate remedial work required.

The UT Arlington Aerospace Engineering Program uses the following guidelines in the admission review process:

Unconditional Admission for Master's Program in Aerospace Engineering

Unconditional admission into the Aerospace Engineering Program requires the submission of items 1 through 5 below for each degree program. To be unconditionally admitted, an applicant must at least meet conditions 1, 2, and 3.

1. A GRE score of at least 146 (verbal) and 155 (quantitative). For those applicants whose GRE verbal score falls below 146, high TOEFL/IELTS scores may be considered to offset the GRE verbal score.
2. A Statement of Purpose detailing the applicant's background, education, professional goals, technical interests, and research interests.

3. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Probationary Admission for Master's Program in Aerospace Engineering

Probationary admission into the Aerospace Engineering Program may be permitted under the following conditions for each degree program:

1. If the applicant meets any two of the items 1, 2, and 3 above for the master's program.
2. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Provisional Admission For Master's Program in Aerospace Engineering

An applicant who is unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

Deferred for Master's Program in Aerospace Engineering

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

Denial of Admission for Master's Program in Aerospace Engineering

A candidate may be denied admission if he/she has less than satisfactory performance in two out of the first three admission criteria.

Waiver of the graduate record exam for master's program in Aerospace Engineering

A waiver of the Graduate Record Examination may be considered for applicants with a GPA of 3.2 or higher from U.S. universities with an ABET accredited engineering program or other select U.S. universities subject to graduate advisor's approval. The waiver of the GRE applies only to applicants for the MENG program. Interested applicants should contact the Aerospace Engineering Graduate Advisor. GRE is not waived for MS-Thesis and PhD programs.

Criteria for Award of Fellowships and Assistantships

Applicants who demonstrate skills, experience or interests that meet the needs of the AE Graduate Program will be considered for fellowships or assistantships.

Master's Degree Requirements

ALL GRADUATE DEGREES

- All entering students must be proficient in mathematics, engineering analysis, and computer programming. (*Students not meeting these requirements may be admitted on a probationary basis and given a plan of remedial undergraduate coursework*).
- No graduate credit will be granted for courses that are required in the undergraduate Aerospace Engineering curriculum.
- All Doctoral candidates in Aerospace Engineering shall enroll in AE 5101 GRADUATE SEMINAR course a minimum of three times.

All candidates are required to select a Supervising Professor and obtain an approved program of work in the second full semester or after 12 hours are completed.

Master of Science or Master of Engineering Degrees

The Department of Mechanical and Aerospace Engineering offers both the Master of Science and the Master of Engineering degrees in Aerospace Engineering.

Core Areas in the Aerospace Engineering Program

The four core areas in the Aerospace Engineering program along with the recommended courses in each core area are listed below:

Fluid Mechanics, Aerodynamics and Propulsion

AE 5326	AIR-BREATHING PROPULSION	3
AE 5342	GAS DYNAMICS	3
AE 5350	CLASSICAL AERODYNAMICS (This course is new for fall 2021)	3

Solid Mechanics and Structures

AE 5310	FINITE ELEMENT METHODS	3
AE 5311	STRUCTURAL DYNAMICS	3

AE 5339	STRUCTURAL ASPECTS OF DESIGN	3
Flight Mechanics and Controls		
AE 5302	ADVANCED FLIGHT MECHANICS	3
AE 5362	GUIDANCE, NAVIGATION, AND CONTROL OF AEROSPACE VEHICLES	3
Flight Vehicle Design		
AE 5368	FLIGHT VEHICLE SYNTHESIS AND SYSTEMS ENGINEERING	3

Requirements for the Master of Science Degree in Aerospace Engineering

The Master of Science (M.S.) Degree in Aerospace Engineering is a research-oriented program in which completion of a thesis is mandatory. A minimum of 30 credit hours is required as follows:

Two Core Courses (One course each from at least two core areas)	6
Two Math/Engineering Analysis courses	6
Four elective courses related to the student's areas of interest. At least 9-credit hours of coursework should be from Aerospace Engineering program.	12
Thesis	6
Total Hours	30

The student might enroll in AE 5398 or AE 5197, AE 5297 or AE 5397 every semester in which the student is actively involved in thesis preparation or research, respectively, except that the student must enroll in AE 5398 or AE 5698 in the semester of graduation.

Requirements for the Masters of Engineering Degree in Aerospace Engineering

The Master of Engineering (M.Engr.) Degree in Aerospace Engineering is an engineering practice-oriented program. A minimum of 30 credit hours is required as follows:

Three Core Courses (One course each from at least three core areas)	9
Two Math/Engineering Analysis courses	6
Five elective courses relating to the student's areas of interest. At least 12-credit hours of coursework should be from Aerospace Engineering program.	15
Total Hours	30

For both the M.S. and the M. Engr. degrees, the balance of the required coursework hours may be chosen in consultation with the Supervising Professor to meet the student's needs and interests. Courses taken outside the Aerospace Engineering program require approval of the student's Supervising Professor as well as the Graduate Advisor. The elective courses cannot include special project courses (for example, AE 5391 / 5291 / 5191 Advanced Studies in Aerospace Engineering) or research courses (for example, AE 5397 / 5297 / 5197 Research in Aerospace Engineering).

Admission Requirements for Master's Program in Mechanical Engineering

Admission to the graduate program in ME is based on equal weighting of the following five criteria:

1. An overall GPA, as calculated by the Graduate School, of 3.0 or higher in undergraduate coursework is required for admission to the M.S. program. (For some international applicants where GPA calculations based on a 4.0 system are not performed, a minimum performance level of 65 percentile. This minimum expectation may be higher for some countries, where less stringent grading criteria are used.) Performance in core Mechanical Engineering courses is of particular importance.
2. A GRE score of at least 146 (400 in old scaling) (verbal) and 155 (700 in old scaling) (quantitative) for M.S. applicants.
3. A written essay on the student's goals and reasons for pursuing graduate studies.
4. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.
5. Students who are currently enrolled in either the Master of Engineering or Master of Science in Mechanical Engineering program, may be admitted to the BS-Ph.D program in Mechanical Engineering after completing 15 hours of graduate mechanical engineering lecture coursework with a GPA of 3.6 or higher in addition to satisfying the same admission requirements as the BS-Ph.D. program.

Admission Status for Master's program in Mechanical Engineering

1. Unconditional Admission: To be unconditionally admitted, an applicant must at least meet conditions 1, 2, and 3.
2. Probationary Admission: M.S. applicants who fail to meet the conditions for unconditional admission, but satisfy any three of items 1, 2, and 3, will be considered for probationary admission.

3. Provisionary Admission: Applicants who are unable to supply all of the required documentation prior to the admission deadline, but who otherwise appear to meet the admission criteria, may be granted provisional admission.
4. Denial: Applicants who fail to meet at least two of the first four admission criteria will normally be denied admission.
5. Deferral: A deferred decision may be granted when an application file is incomplete or when a denied decision is not appropriate.

Probationary Admission for Master's Program in Mechanical Engineering

Probationary admission into the Mechanical Engineering Program may be permitted under the following conditions for each degree program:

1. If the applicant meets any two of the items 1, 2, and 3 above for the master's program.
2. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Provisional Admission for Master's Program in Mechanical Engineering

An applicant who is unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

Waiver of the Graduate Record Exam for Master's Program in Mechanical Engineering

A waiver of the Graduate Record Examination may be considered for a UT Arlington graduate who has completed a BSME degree within the past 3 years. The student's GPA must equal or exceed 3.0 in each of two calculations: (a) in the last 60 hours of study and (b) in all undergraduate coursework completed at UT Arlington. The GRE waiver may be extended to include non-UT Arlington candidates that have undergraduate degrees in mechanical engineering (with GPA of 3.25 or above) from U.S. universities with an ABET accredited engineering program or other select U.S. universities subject to graduate advisor's approval. The waiver of the GRE applies only to applicants for the master's degree programs. Interested applicants should contact the Mechanical Engineering Graduate Advisor.

CORE COURSES

Thermal Science

ME 5316	THERMAL CONDUCTION	3
ME 5317	CONVECTION HEAT TRANSFER	3
ME 5318	RADIATIVE HEAT TRANSFER	3
ME 5321	ADVANCED CLASSICAL THERMODYNAMICS	3

Fluid Science

ME 5313	FLUID DYNAMICS	3
ME 5342	GAS DYNAMICS	3
ME 5344	VISCOUS FLOWS	3

Design, Mechanics and Manufacturing

ME 5310	FINITE ELEMENT METHODS	3
ME 5337	INTRODUCTION TO ROBOTICS	3
ME 5339	STRUCTURAL ASPECTS OF DESIGN	3
ME 5311	STRUCTURAL DYNAMICS	3

Controls and Systems

ME 5303	CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS	3
ME 5305	DYNAMIC SYSTEMS MODELING	3
ME 5341	CONTROL SYSTEM COMPONENTS	3

Analysis Courses

ME 5331	ANALYTIC METHODS IN ENGINEERING	3
ME 5332	ENGINEERING ANALYSIS	3

Approved Mathematics courses

Requirements for the Master of Science Degree in Mechanical Engineering

The Master of Science degree is a research-oriented program in which completion of a thesis is mandatory. A minimum of 30 credit hours is required as follows: three core courses (one course each in three of the four areas) and the two analysis courses listed above; three graduate courses (nine credit hours) related to a specialty in mechanical engineering (registration in elective courses outside the ME department requires prior approval of the ME graduate advisor and the students committee chair otherwise they will not count towards graduation requirements); and six credit hours of thesis. In addition, all GTA/GRA Master of Science students are required to enroll in ME 5101 course. The student must enroll in ME 5398 or ME 5397 every

semester in which the student is actively involved in thesis preparation or research, except that the student must enroll in ME 5398 or ME 5698 in the semester of graduation.

Requirements for the Master of Engineering Degree in Mechanical Engineering

The Master of Engineering degree is an engineering practice-oriented program. A minimum of 30 credit hours is required as follows: three core courses (one in each area) and the two analysis courses listed above; five courses (15 credit hours) of elective graduate courses in engineering, mathematics, and/or science relating to the student's interest areas. The elective courses cannot include special project courses (for example, ME 5391 and ME 5359) or research courses (for example, ME 5397). Registration in elective courses outside the ME department requires prior approval of the ME graduate advisor; otherwise they will not count towards graduation requirements.

Admission Requirements for Ph.D. in Aerospace Engineering

Applicants for the doctoral degree must have either a baccalaureate or master's degree in engineering or science. Applicants who have completed a bachelor's degree and wish to pursue a doctoral degree without completing a master's degree may apply for admission in the Bachelor of Science (B.S.) to Ph.D. Track. The minimum admission requirements to this highly competitive track are the same as those for all doctoral applicants. Doctoral candidates shall also demonstrate through previous academic preparation the potential to carry out independent research in Aerospace Engineering. All applicants must meet the general requirements of the Graduate School as stated in the section of this catalog entitled "Admission Requirements and Procedures". Applicants not meeting all criteria may be admitted on a provisional or probationary basis.

For applicants with no prior training in engineering or with insufficient undergraduate Aerospace Engineering coursework, the same minimum criteria will apply. Additionally, their records will be reviewed in relation to their mathematics, engineering, and science backgrounds, and probationary status may be a basis for acceptance of such applicants, with specific undergraduate remedial work required.

The UT Arlington Aerospace Engineering Program uses the following guidelines in the admission review process:

Unconditional Admission for Ph.D. in Aerospace Engineering

Unconditional admission into the Aerospace Engineering Program requires the submission of items 1 through 5 below for each degree program. To be unconditionally admitted, an applicant must at least meet conditions 1, 2, 3, and 4.

1. Minimum GPA of 3.3 in the last 60 hours taken in the major field of study in an appropriate engineering or science discipline. (For some international applicants where GPA calculations based on a 4.0 system are not performed, a minimum performance level of 70 percentile is expected. This minimum expectation may be higher for some countries, where less stringent grading criteria are used.) Performance in core Aerospace Engineering courses is of particular importance.
2. A GRE score of at least 150 (verbal) and 159 (quantitative). For those applicants whose GRE verbal score falls below 150, high TOEFL/IELTS scores may be considered to offset the GRE verbal score.
3. Three favorable recommendations via the university's recommendation form or via recommendation letter.
4. A Statement of Purpose detailing the applicant's background, education, professional goals, technical interests, and research interests.
5. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Probationary Admission for Ph.D. in Aerospace Engineering

Probationary admission into the Aerospace Engineering Program may be permitted under the following conditions for each degree program:

1. If an applicant meets any three of the items 1, 2, 3, and 4 above for the doctoral program.
2. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Provisional Admission for Ph.D. in Aerospace Engineering

An applicant who is unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

Deferred for Ph.D. in Aerospace Engineering

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

Denial of Admission for Ph.D. in Aerospace Engineering

A candidate may be denied admission if he/she has less than satisfactory performance in two out of the first three admission criteria.

Criteria for Award of Fellowships and Assistantships

Applicants who demonstrate skills, experience or interests that meet the needs of the AE Graduate Program will be considered for fellowships or assistantships.

B.S. to Ph.D. Program

The B.S. to Ph.D. Program is an accelerated program in which the student bypasses the M.S. thesis and proceeds directly to the Ph.D. dissertation research. Requirements for unconditional admission to the B.S. to Ph.D. Degree Program include:

- An overall GPA, as calculated by the Graduate School, of 3.3 or higher in undergraduate coursework.
- Relevance of the student's previous degrees to the AE curriculum.
- Reputation of the universities or colleges the student has attended.
- A GRE score of at least 153 (verbal) and 159 (quantitative).
- Three satisfactory written recommendation forms from prior professors or supervisors.
- A written essay on the student's goals and reasons for pursuing graduate studies.

Doctoral Degree Requirements

ALL GRADUATE DEGREES

- All entering students must be proficient in mathematics, engineering analysis, and computer programming. *(Students not meeting these requirements may be admitted on a probationary basis and given a plan of remedial undergraduate coursework).*
- No graduate credit will be granted for courses that are required in the undergraduate Aerospace Engineering curriculum.
- All Doctoral candidates in Aerospace Engineering shall enroll in AE 5101 GRADUATE SEMINAR course a minimum of three times.

All candidates are required to select a Supervising Professor and obtain an approved program of work in the second full semester or after 12 hours are completed.

Degree Requirements for Ph.D. in Aerospace Engineering

Doctor of Philosophy

- The Ph.D. degree requires a minimum of 24 hours of graduate-level course work beyond the Master's degree, and will include a scholarly dissertation that provides a significant original contribution to Aerospace Engineering.
- The Ph.D. degree course requirement can be tailored to satisfy the individual student's aspirations in choice of the area of specialization. However, to meet the educational goals of a broad-based technical background in Aerospace Engineering, it is expected that each student will take sufficient course work to obtain in-depth knowledge in at least two core areas of Aerospace Engineering.
- Students whose background is in a field other than Aerospace Engineering must satisfy the Master's degree core requirements.
- There is no foreign language requirement for the Ph.D.
- **Qualifying Exam:** All students entering the Ph.D. program are required to take the Ph.D. Qualifying Exam. Students admitted into AE Ph.D. program with MS degree in Aerospace Engineering or equivalent must take the Qualifying Exam at the end of the 1st semester. This exam is offered twice per year, during the week preceding the start of classes for the fall and spring semesters. Possible outcomes of this evaluation are:
 - a. continuation in the doctoral program,
 - b. approval to continue with certain specified remedial work,
 - c. failure with approval to retake,
 - d. termination in the program.
- **Comprehensive Exam:** Students are eligible to take the comprehensive examination after satisfying all requirements stipulated by the Qualifying Exam Committee and giving evidence to their doctoral committee of adequate academic achievement by having completed all or most coursework requirements. The comprehensive examination is used to determine if the student has the necessary background and specialization required for the dissertation research and if the student can organize and conduct the research. *An applicant must pass this examination to be admitted to candidacy for the Ph.D. degree.*

B.S. to Ph.D. Track

- The Ph.D. degree requires a minimum of 42 credit hours of graduate-level course work beyond the bachelor's degree, and will include a scholarly dissertation that provides a significant original contribution to Aerospace Engineering
- A B.S.-Ph.D. Track student will be *required to enroll in at least three hours of research each semester during the student's first two years, receiving a pass/fail grade (no R grade) in these hours.*
- A student may be exempted from enrolling in research hours in the student's initial semester.

- A B.S.-Ph.D. Track student must have a faculty research (dissertation) advisor prior to the start of the student's second full semester.
- Students in the BS-Ph.D. program must take the Ph.D Qualifying Exam within the first year from the start of their Ph.D.

Admission Requirements for Ph.D. in Mechanical Engineering

Admission Status

1. Unconditional Admission: To be unconditionally admitted, an applicant must at least meet conditions 1, 2, 3, and 4.
2. Probationary Admission: Ph.D. applicants who fail to meet the conditions for unconditional admission, but satisfy any three of items 1, 2, 3 and 4, will be considered for probationary admission.
3. Provisional Admission: Applicants who are unable to supply all of the required documentation prior to the admission deadline, but who otherwise appear to meet the admission criteria, may be granted provisional admission.
4. Denial: Applicants who fail to meet at least two of the first four admission criteria will normally be denied admission.
5. Deferral: A deferred decision may be granted when an application file is incomplete or when a denied decision is not appropriate.

Admission Requirements for B.S. to Ph.D. Track

1. An overall GPA, as calculated by the Graduate School, of 3.3 or higher in undergraduate coursework.
2. A GRE score of at least 150 (450 in old scaling) (verbal) and 159 (750 in old scaling) (quantitative).
3. Three satisfactory written recommendation forms from prior professors or supervisors.
4. A written essay on the student's goals and reasons for pursuing graduate studies.
5. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Probationary Admission

Probationary admission into the Mechanical Engineering Program may be permitted under the following conditions for each degree program:

Doctoral Program and BS to PhD track

1. If an applicant meets any three of the items 1, 2, 3, and 4 above for the doctoral program or BS to PhD track.
2. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Provisional Admission

An applicant who is unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

Deferred Admission

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

Denial of Admission

A candidate may be denied admission if he/she has less than satisfactory performance in two out of the first three admission criteria.

Admission Requirements for B.S. to Ph.D. Track

The B.S. to Ph.D. program is an accelerated program in which a student proceeds directly to the Ph.D. dissertation research and bypasses the M.S. thesis. Requirements for unconditional admission to this program include the following:

1. Minimum GPA of 3.3 in the last 60 hours taken in the major field of study in an appropriate engineering or science discipline. (For some international applicants where GPA calculations based on a 4.0 system is not performed, a minimum performance level of 70 percentile is expected. This minimum expectation may be higher for some countries, where less stringent grading criteria are used.) Performance in core mechanical engineering courses is of particular importance.
2. A GRE score of at least 150 (450 in old scaling) (verbal) and 159 (750 in old scaling) (quantitative).
3. Three favorable, veracious recommendations, via the university's recommendation form or via recommendation letter.
4. A Statement of Purpose detailing the applicant's background, education, professional goals, technical interests, and research interests.
5. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

Waiver of the Graduate Record Exam

There is no GRE waiver for Ph.D. applicants.

Criteria for Award of Fellowships and Assistantships

Applicants who demonstrate skills, experience or interests that meet the needs of the ME Graduate Program will be considered for fellowships or assistantships.

Degree Requirements for Ph.D. in Mechanical Engineering

Doctor of Philosophy

There is no foreign language requirement for the Ph.D. degree.

B.S.-Ph.D. Track Students

To meet the educational goal of a broad-based technical background in Mechanical Engineering, it is expected that each student will take sufficient graduate coursework to obtain in-depth knowledge in at least two areas of Mechanical Engineering. Students whose background is in a field other than Mechanical Engineering must satisfy the BS core requirements. Note that registration in elective courses outside the ME department requires prior approval of the ME graduate advisor and student's committee chair. Otherwise they will not count towards the graduation requirements. The doctoral degree program consists of a minimum of 42 credit hours of coursework beyond the bachelor's degree level plus 9 hours of dissertation and 2 hours of seminar and requires the successful completion of the following requirements:

ME 5331	ANALYTIC METHODS IN ENGINEERING	3
ME 5332	ENGINEERING ANALYSIS	3

Or other approved mathematics courses

1. Three core courses (9 credit hours) from at least two different areas, as listed below:

Thermal Science

ME 5316	THERMAL CONDUCTION	3
ME 5317	CONVECTION HEAT TRANSFER	3
ME 5318	RADIATIVE HEAT TRANSFER	3
ME 5321	ADVANCED CLASSICAL THERMODYNAMICS	3

Fluid Science

ME 5313	FLUID DYNAMICS	3
ME 5342	GAS DYNAMICS	3
ME 5344	VISCOUS FLOWS	3

Design, Mechanics and Manufacturing

ME 5310	FINITE ELEMENT METHODS	3
ME 5337	INTRODUCTION TO ROBOTICS	3
ME 5339	STRUCTURAL ASPECTS OF DESIGN	3
ME 5311	STRUCTURAL DYNAMICS	3

Controls and Systems

ME 5303	CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS	3
ME 5305	DYNAMIC SYSTEMS MODELING	3
ME 5341	CONTROL SYSTEM COMPONENTS	3

2. One additional course (3 credit hours) at the graduate level in one of the broad areas of Mechanical Engineering outside the student's major area of specialization. A core course is also acceptable for meeting this requirement.
3. Eight additional courses (24 credit hours) in the student's major area of research
4. Two courses (6 credit hours) of engineering analysis:
5. Two credit hours of seminar
6. Nine credit hours for Dissertation

ME 6299	DISSERTATION	2
ME 6399	DISSERTATION	3

ME 6699	DISSERTATION	6
ME 6999	DISSERTATION	9

- Doctoral students must register for a minimum total of 9 hours of dissertation research over the course of their programs of work. These hours may be accumulated over several terms or completed in a single term. The course hours of ME 6299, ME 6399, ME 6699, ME 6999, and/or ME 7399 are all counted towards this nine-hour requirement.
- Doctoral students must be enrolled in 9 hours while completing organized coursework and 6 hours while exclusively enrolled in dissertation research in order to be considered full time except in the term they designate as their "completion term." The completion term is typically the term in which a student successfully defends his or her dissertation, fully completes all degree requirements and graduates. Students may designate only one term as the completion term.
- Doctoral students must enroll in a minimum of 3 dissertation hours (ME 7399) in the term designated as their completion term. Alternatively, students may complete and defend their dissertation while enrolled in 6 or 9-hour dissertation courses:
- Doctoral students who do not graduate at the end of their completion term will receive a grade of R, W, or F and must enroll in a minimum of 6 hours of dissertation research (ME 6299, ME 6399, ME 6699 or ME 6999) every term until graduation.
- Students enrolled in the completion term meet enrollment requirements for holding fellowships awarded by the Office of Graduate Studies and GTA or GRA positions by enrolling in the required 3-hour completion term dissertation course.
- Students who wish to remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours each term as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Students should consult with the Office of Financial Aid and other funding agencies to be certain they enroll in sufficient hours to retain support.

Final course requirements are determined by the student's supervising committee.

M.S.-Ph.D. Track Mechanical Students

To meet the educational goal of a broad-based technical background in Mechanical Engineering, it is expected that each student will take sufficient graduate coursework to obtain in-depth knowledge in at least two areas of Mechanical Engineering. Students whose background is in a field other than Mechanical Engineering must satisfy the Masters of Science core requirements. Note that registration in elective courses outside the ME department requires prior approval of the ME graduate advisor and student's committee chair. Otherwise they will not count towards the graduation requirements. The doctoral degree program consists of a minimum of 24 credit hours of coursework beyond the Master's degree level plus 9 hours of dissertation and 2 hours of seminar and requires the successful completion of the following requirements:

ME 5331	ANALYTIC METHODS IN ENGINEERING	3
ME 5332	ENGINEERING ANALYSIS	3

Or other approved mathematics courses

- Three core courses (9 credit hours) from at least two different areas, as listed below:

Thermal Science

ME 5316	THERMAL CONDUCTION	3
ME 5317	CONVECTION HEAT TRANSFER	3
ME 5318	RADIATIVE HEAT TRANSFER	3
ME 5321	ADVANCED CLASSICAL THERMODYNAMICS	3

Fluid Science

ME 5313	FLUID DYNAMICS	3
ME 5342	GAS DYNAMICS	3
ME 5344	VISCOUS FLOWS	3

Design, Mechanics and Manufacturing

ME 5310	FINITE ELEMENT METHODS	3
ME 5337	INTRODUCTION TO ROBOTICS	3
ME 5339	STRUCTURAL ASPECTS OF DESIGN	3
ME 5311	STRUCTURAL DYNAMICS	3

Controls and Systems

ME 5303	CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS	3
ME 5305	DYNAMIC SYSTEMS MODELING	3
ME 5341	CONTROL SYSTEM COMPONENTS	3

2. One additional course (3 credit hours) at the graduate level in one of the broad areas of Mechanical Engineering outside the student's major area of specialization. A core course is also acceptable for meeting this requirement.
3. Three additional courses (9 credit hours) in the student's major area of research
4. One course (3 credit hours) of engineering analysis:
5. Two credit hours of seminar
6. Nine credit hours (ME 6999) for Dissertation.

ME 6299	DISSERTATION	2
ME 6399	DISSERTATION	3
ME 6699	DISSERTATION	6
ME 6999	DISSERTATION	9

- a. Doctoral students must register for a minimum total of 9 hours of dissertation research over the course of their programs of work. These hours may be accumulated over several terms or completed in a single term. The course hours of ME 6299, ME 6399, ME 6699, ME 6999, and/or ME 7399 are all counted towards this nine-hour requirement.
- b. Doctoral students must be enrolled in 9 hours while completing organized coursework and 6 hours while exclusively enrolled in dissertation research in order to be considered full time except in the term they designate as their "completion term." The completion term is typically the term in which a student successfully defends his or her dissertation, fully completes all degree requirements and graduates. Students may designate only one term as the completion term.
- c. Doctoral students must enroll in a minimum of 3 dissertation hours (ME 7399) in the term designated as their completion term. Alternatively, students may complete and defend their dissertation while enrolled in 6 or 9-hour dissertation courses:
- d. Doctoral students who do not graduate at the end of their completion term will receive a grade of R, W, or F and must enroll in a minimum of 6 hours of dissertation research (ME 6299, ME 6399, ME 6699 or ME 6999) every term until graduation.
- e. Students enrolled in the completion term meet enrollment requirements for holding fellowships awarded by the Office of Graduate Studies and GTA or GRA positions by enrolling in the required 3-hour completion term dissertation course.
- f. Students who wish to remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours each term as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Students should consult with the Office of Financial Aid and other funding agencies to be certain they enroll in sufficient hours to retain support

Final course requirements are determined by the student's supervising committee. In addition, a student must pass three examinations before being awarded the Ph.D. degree: the Qualifying Exam, the Comprehensive Exam, and the Final Exam (or Dissertation Examination).

A Qualifying Examination will be administered to the student prior to the start of the student's second long semester. The Qualifying Exam is a written test of the student's capability to pursue successfully the doctorate degree, and it aids in developing the program of study for the student. The Qualifying Examination tests fundamental knowledge in two technical areas of mechanical engineering. The student and the student's research advisor jointly choose the technical areas from the following five:

1. thermal science,
2. fluid science,
3. mechanical design and manufacturing,
4. solid mechanics and structures, and
5. controls and systems.

The exam topics for the technical areas are given in the ME Ph.D. Qualifying Exam handout. The Qualifying examination is normally offered twice a year the week prior to the beginning of the Fall and/or Spring semesters. A student should inform the ME graduate advisor in advance and no later than the middle of the long semester prior to the planned time of taking the exam and consult with the ME graduate advisor for the time and place of the Qualifying examination.

A comprehensive examination will be administered to the student after the successful completion of all phases of the Qualifying examination and before the student's research work for the dissertation. The comprehensive examination is used to determine if the student has the necessary background and specialization required for the dissertation research and if the student can organize and conduct the research. An applicant must pass this examination to be admitted to candidacy for the Ph.D. degree.

The student must enroll in at least three hours of dissertation courses (ME 6399 - ME 6999) or research courses (ME 6397 - ME 6999) every semester in which the student is actively involved in dissertation preparation or research, except that the student must enroll in ME 6999 in the semester of graduation.

The student must submit the Application for Candidacy and Final Program of Work to the Mechanical Engineering Committee on Graduate Studies immediately after completion of the Comprehensive Examination. Coursework taken for the Master's degree at this institution may be used to meet these requirements; however, courses listed for the Master's degree or any other degree cannot be listed as the actual course requirement on the

Final Program of Work. Transfer work is not accepted in doctoral programs; however, such courses may provide a basis for waiving some course requirements.

The student must file the Request for Dissertation Defense form with the Graduate School at least two weeks prior to the defense. At the same time of requesting the exam, the student must also announce the exam to the members of the university community by posting fliers on the departmental bulletin boards and by providing an electronic statement to the ME graduate advisor to be posted on the departmental web page indicating details (title, abstract, advisor, time and place) of the exam. Approval of the dissertation by the members of the Dissertation Committee is required.

Please see the section entitled General Graduate School Regulations and Information in this Catalog for further details.

The grade of R (research in progress) is a permanent grade; completing course requirements in a later semester cannot change it. To receive credit for an R-graded course, the student must continue to enroll in the course until a passing grade is received.

An incomplete grade (the grade of I) cannot be given in a course that is graded R, nor can the grade of R be given in a course that is graded I. To receive credit for a course in which the student earned an I, the student must complete the course requirements. Enrolling again in the course in which an I was earned cannot change a grade of I. At the discretion of the instructor, a final grade can be assigned through a change of grade form.

Three-hour thesis courses and three- and six-hour dissertation courses are graded R/F/W only. The grade of P (required for degree completion for students enrolled in thesis or dissertation programs) can be earned only in six-hour thesis or nine-hour dissertation courses. In the course listings below, R-graded courses are designated either "Graded P/F/R" or "Graded R." Occasionally, the valid grades for a course change. Students should consult the appropriate Graduate Advisor or instructor for valid grade information for particular courses. (See also the sections titled "R" Grade, Credit for Research, Internship, Thesis or Dissertation Courses and Incomplete Grade in this catalog.)

B.S. to Ph.D. Track

In addition to the requirements listed below for the Ph.D. degree, a B.S.-Ph.D. Track student will be required to enroll in at least three hours of research each semester during the student's first two years, receiving a pass/fail grade (no R grade) in these hours. A B.S.-Ph.D. student must have a faculty research (dissertation) advisor prior to the start of the student's second full semester. A B.S.-Ph.D. student must take the Ph.D. Qualifying examination prior to the start of the student's third long semester.

Fast Track Program for Master's Degree in Aerospace Engineering

The Fast Track Program enables outstanding UT Arlington senior undergraduate students in Aerospace Engineering to satisfy degree requirements leading to a master's degree in Aerospace Engineering while completing their undergraduate studies.

For additional information, see Undergraduate Catalog. (<https://catalog.uta.edu/engineering/mechanical/undergraduate/#fasttracktext>)

Fast Track Program for Master's Degree in Mechanical Engineering

The Fast Track Program enables outstanding UT Arlington senior undergraduate students in Mechanical Engineering to satisfy degree requirements leading to a master's degree in Mechanical Engineering while completing their undergraduate studies.

For additional information, see Undergraduate Catalog. (<https://catalog.uta.edu/engineering/mechanical/undergraduate/#fasttracktext>)

Graduate Certificate in Automotive Engineering

Program Objective

The University of Texas at Arlington is pleased to offer a Graduate Certificate in Automotive Engineering through the Arnold E. Petsche Center for Automotive Engineering. This certificate confirms the student's commitment to automotive engineering and the learning experience gained from being a contributing team member of a student design competition. Students shall be awarded the Graduate Certificate for Automotive Engineering by the College of Engineering and the Graduate School upon satisfactory completion of the certificate requirements with an overall grade point average of 3.0.

Admission Requirements

Students wishing to enroll only in the Graduate Certificate in Automotive Engineering but NOT a graduate degree program may apply for admission to UT Arlington as a non-degree seeking student. The GRE is not necessary. Admission to the certificate program allows participants to take the specific courses approved for the certificate program. Student are not allowed to take courses in excess of those required for the certificate. A Bachelor's degree in engineering with a GPA of 2.8 is required for admission through the Graduate School. Students with GPAs lower than 2.8 may be recommended for admission as special student by the Director of the Arnold E. Petsche Center for Automotive Engineering, based on the following admission enhancing factors:

1. the applicant's work experience and level of responsibility;
2. two letters of recommendation.

Students already enrolled in a Master's degree program at TU Arlington may enroll by submitting the appropriate application form to the certificate program director and his or her academic graduate advisor. Students who have completed a Master's degree may apply for admission to UT Arlington as a non-degree seeking student. In either case, a minimum GPA of 3.0 in Master's degree work is required.

Academic Requirements

Participants must satisfactorily complete 12 hours of required courses according to the following criteria:

9 hours from the following list:		9
ME 5340	AUTOMOTIVE ENGINEERING	
ME 5358	Racecar Engineering	
ME 5359	APPLIED AUTOMOTIVE ENGINEERING ¹	
No more than 3 hours from the following list: ²		3
ME 5341	CONTROL SYSTEM COMPONENTS	
EE 5313	MICROPROCESSOR SYSTEMS	
Total Hours		12

¹ May be taken twice for credit toward the certificate.

² Or other graduate level engineering course approved by the Director of the Arnold E. Petsche Center for Automotive Engineering.

Students can take ME 5010 (no credit hours) to be recognized as full team members on a competition team such as Formula SAE.

Graduate Certificate in Electronic Packaging

Program Objective and Requirements

The Certificate in Electronic Packaging program provides graduate-level knowledge in the field of electronic packaging, with a concentration on numerical and experimental characterization of thermo/mechanical issues. Courses are taught by faculty of the departments of Mechanical and Aerospace Engineering and Materials Science and Engineering, plus other UT Arlington faculty and adjunct faculty as needed. Technical material covered in the classroom will be complemented by a number of seminars by industry leaders in the packaging field. Completion of the certificate program will provide a head start for UT Arlington students when joining industry and skills-enhancement opportunities for current industry employees.

There are two enrollment options: as a student pursuing a graduate degree or as a non-degree-seeking special student. The special student avenue is tailored for individuals currently employed in an electronics-related industry. Students will receive the certificate after completing 12 credit hours of packaging courses, as advised by the certificate program director, and must have a cumulative GPA of 3.0 in the four selected courses. The time limit for completion of the Certificate in Electronic Packaging program is six years.

Applicants on a degree track must be admitted to the Master's degree program. Non-degree students must have a BS degree and a minimum GPA of 2.5. Special students who decide that they want to pursue a graduate degree after starting as a special student may transfer up to 12 credit hours of graduate level courses.

ME 5314	FRACTURE MECHANICS IN STRUCTURAL DESIGN	3
ME 5317	CONVECTION HEAT TRANSFER	3
ME 5346	COOLING OF ELECTRONIC PACKAGES	3
ME 5352	FUNDAMENTALS IN ELECTRONIC PACKAGING	3
ME 5353	COMPUTATIONAL TECHNIQUES FOR ELECTRONIC PACKAGING	3
ME 5354	FAILURES AND THEIR PREVENTION IN ELECTRONIC PACKAGES	3
ME 5355	MECHANICAL FAILURE OF ELECTRONIC PACKAGES	3
ME 5356	CHIPSCALE PACKAGING	3
ME 5390	SPECIAL TOPICS IN MECHANICAL ENGINEERING	3
EE 5343	SILICON INTEGRATED CIRCUIT FABRICATION TECHNOLOGY	3
EE 5344	INTRODUCTION TO MICROELECTROMECHANICAL SYSTEMS (MEMS) AND DEVICES	3

Graduate Certificate in Manufacturing

Program Objective

The Graduate Certificate in Manufacturing provides students with advanced manufacturing knowledge and skills required for professional careers in manufacturing engineering while meeting the requirements for a master's degree in mechanical engineering. The program is accomplished by augmenting core engineering classes with classes and research in specific disciplines relevant to manufacturing. The certificate program recognizes the broad base of engineering sciences that supports manufacturing processes as well as specialized concepts, theories, and enabling technologies used

in modern manufacturing operations. Students completing this program will gain knowledge in key disciplines required in manufacturing engineering ranging from the unit process level up to the operational systems level.

Admission Requirements

(1) A Bachelor's degree in an engineering discipline with a minimum GPA of 3.0 or a current enrollment in an engineering Master's program at UTA with a minimum GPA of 3.0.

If enrolled in a UTA graduate degree program, complete requirement (2):

(2) Application to the certificate administrator

If not enrolled in a UTA graduate degree program, complete requirements (3)-(5):

(3) Those who desire to complete the certificate program without enrolling must be admitted to UTA as a non-degree seeking student.

(4) An essay detailing the applicant's background and skills as pertaining to manufacturing, his/her interest in a specific domain, and his/her expected benefit from completing this program.

(5) Two recommendation letters explaining how the applicant will contribute to the certificate program and how he/she will benefit by completing the program.

Academic Requirements

To earn the Graduate Certificate in Manufacturing, students must complete 12 hours with grades of B or better from the list below.

Required:		6
ME 5326	MANUFACTURING PROCESSES AND SYSTEMS	
ME 5327	DESIGN FOR MANUFACTURING	
At least 3 hours from the following:		6
ME 5329	ADDITIVE MANUFACTURING	
ME 5337	INTRODUCTION TO ROBOTICS	
ME 5339	STRUCTURAL ASPECTS OF DESIGN	
ME 5341	CONTROL SYSTEM COMPONENTS	
ME 6316	COMPUTER AIDED DESIGN	
ME 6337	ADVANCED ROBOTICS	
ME 5390	SPECIAL TOPICS IN MECHANICAL ENGINEERING	
With approval of the certificate director. Examples of acceptable topics are Robotics for Manufacturing, Micro/nano-scale manufacturing, Composite Structures: Manufacturing & Repair, Computer-aided Design and Manufacturing.		
No more than 3 hours from the following:		
IE 5301	INTRODUCTION TO OPERATIONS RESEARCH	
IE 5302	INTRODUCTION TO INDUSTRIAL ENGINEERING	
IE 5303	QUALITY SYSTEMS	
IE 5310	PRODUCTION SYSTEMS DESIGN	
IE 5317	INTRODUCTION TO PROBABILITY AND STATISTICS	
IE 5319	ADVANCED STATISTICAL PROCESS CONTROL AND TIME SERIES ANALYSIS	
IE 5329	PRODUCTION AND INVENTORY CONTROL SYSTEMS	
IE 5330	AUTOMATION AND ADVANCED MANUFACTURING	
IE 5342	METRICS AND MEASUREMENT	
Total Hours		12

Graduate Certificate in Unmanned Vehicle Systems

Program Objective

The Certificate in UVS (Unmanned Vehicle Systems) is offered through the Mechanical and Aerospace Engineering Department and will educate graduate students and train practicing engineers in selected areas required for the design, development and operation of UVS including UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground Systems) and UMS (Unmanned Maritime Systems). The certificate program will emphasize the common aspects of UVS including sensors, actuators, communications and more importantly decision-making capabilities (autonomy), while also covering development of domain-specific mobile platforms such as airplane, rotorcraft, Ackerman steering car and boat. A student after completing this program will be familiar with the UVS-related concepts, theories and enabling technologies, and their interrelations while at the same time gaining a focused experience in specific areas of his/her choice. This program will also give students the opportunity to gain practical experience contributing to

a larger system by working in a multidisciplinary environment. This program aims at the dual goal of providing the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants.

Admission Requirements

1. A Bachelor's degree in an engineering discipline with a minimum GPA of 3.0 or a current enrollment in an engineering graduate program at UTA with a minimum GPA of 3.0.
2. An essay detailing the applicant's background and skills as pertaining to UVS, his/her interest in a specific domain and his/her expected benefit from completing this program.
3. Two recommendation letters explaining how the applicant will contribute to the certificate program and how he/she will benefit by completing the program.

Those who desire to complete the certificate program without enrolling in graduate degree program must be admitted to UTA as a non-degree seeking student.

Academic Requirements

Students must complete 15 hours of coursework with a 3.0 grade point average or better. A grade of C or better is required in all courses counted towards the completion of the certificate.

The recommended progression in the program is (1) start with AE 5378 or ME 5378, which will raise awareness with UVS-related subjects in the following coursework, (2) take 9 credit hours of coursework and any prerequisite if applicable for the elective course selected, and (3) complete the certificate program with AE 5379 or ME 5379. Prerequisite to the elective courses will not be counted towards the 15 hour requirement.

3 credit hours from the following list: 3

AE 5378	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS ¹
ME 5378	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS ²

3 credit hours from the following list: 3

AE 5379	UNMANNED VEHICLE SYSTEM DEVELOPMENT
ME 5379	UNMANNED VEHICLE SYSTEM DEVELOPMENT

9 credit hours from the following lists: ³ 9

At least 6 credit hours from the following AE and ME lists:

AE (Aerospace Engineering) Courses:

AE 5301	ADVANCED TOPICS IN AEROSPACE ENGINEERING
AE 5302	ADVANCED FLIGHT MECHANICS
AE 5303	CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS
AE 5336	OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS
AE 5337	INTRODUCTION TO ROBOTICS
AE 5341	CONTROL SYSTEM COMPONENTS
AE 5362	GUIDANCE, NAVIGATION, AND CONTROL OF AEROSPACE VEHICLES
AE 5368	FLIGHT VEHICLE SYNTHESIS AND SYSTEMS ENGINEERING
AE 5374	NONLINEAR SYSTEMS ANALYSIS AND CONTROLS
AE 5380	DESIGN OF DIGITAL CONTROL SYSTEMS

ME (Mechanical Engineering) Courses:

ME 5303	CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS
ME 5305	DYNAMIC SYSTEMS MODELING
ME 5335	OPTIMAL CONTROL OF DYNAMIC SYSTEMS
ME 5336	OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS
ME 5337	INTRODUCTION TO ROBOTICS
ME 5341	CONTROL SYSTEM COMPONENTS
ME 5374	NONLINEAR SYSTEMS ANALYSIS AND CONTROLS
ME 5380	DESIGN OF DIGITAL CONTROL SYSTEMS
ME 5390	SPECIAL TOPICS IN MECHANICAL ENGINEERING

No more than 3 credit hours from the following EE, CSE, IE, ENGR lists:

EE (Electrical Engineering) Courses:

EE 5322	INTELLIGENT CONTROL SYSTEMS
EE 5313	MICROPROCESSOR SYSTEMS
EE 5314	EMBEDDED MICROCONTROLLER SYSTEMS

CSE (Computer Science and Engineering) Courses:

CSE 5326	REAL-TIME SOFTWARE DESIGN
CSE 5360	ARTIFICIAL INTELLIGENCE I
CSE 5361	ARTIFICIAL INTELLIGENCE II
CSE 5364	ROBOTICS

IE (Industrial Engineering) Courses:

IE 5330	AUTOMATION AND ADVANCED MANUFACTURING
IE 5339	PRODUCT DESIGN, DEVELOPMENT, PRODUCIBILITY, AND RELIABILITY DESIGN
IE 5351	INTRODUCTION TO SYSTEMS ENGINEERING

ENGR (Engineering) Courses:

ENGR 4302	ENGINEERING ENTREPRENEURSHIP
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Total Hours 15

- ¹ New Course.
- ² New Course.
- ³ Advanced and special topics courses must be approved by the certificate advisor.

Graduate Certificate in Vertical Lift/Rotorcraft

Program Objective

The Certificate in Vertical Lift/Rotorcraft is offered by the Mechanical and Aerospace Engineering Department to provide formal recognition to students who acquire knowledge and understanding required for the analysis, design, development, and operations of vertical lift air vehicles via 15 credit hours of focused, specialized coursework selected from a curriculum that emphasizes core aspects of vertical lift such as rotor aerodynamics, rotor dynamics, flying qualities, simulation and control law development, structures, structural dynamics, materials (i.e. composites), transmission and drive systems design, and most importantly the conceptual and preliminary design and synthesis of advanced concepts. The Certificate in Vertical Lift/Rotorcraft prepares students for careers in the rotorcraft industry.

Admission Requirements

1. A Bachelor's degree in an engineering discipline with a minimum GPA of 3.0, or current enrollment in an engineering graduate program at UTA with a minimum GPA of 3.0
2. Two recommendation letters describing the applicant's abilities as relevant and applicable to the Vertical Lift/Rotorcraft program of study

Those who desire to complete the certificate program without enrolling in graduate degree program must be admitted to UTA as a non-degree seeking student.

Academic Requirements

Students must complete 15 hours of coursework selected from the certificate program's courses listed below, with a grade of C or higher in each course, and a minimum 3.0 grade point average. All courses must be taken and completed within a time window of 6 consecutive years. With advisor approval, students may transfer up to nine hours toward a Master's Program. An overall 3.0 GPA is required to earn the Certificate.

3 Hours Required (entry point course):**3**

AE 5363	INTRODUCTION TO ROTORCRAFT ANALYSIS
ME 5363	INTRODUCTION TO ROTORCRAFT ANALYSIS

12 hours from the following list:**12**

AE 5322	AEROELASTICITY
AE 5364	INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT
ME 5364	INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT
AE 5365	INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION
ME 5365	INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION
AE 5301	ADVANCED TOPICS IN AEROSPACE ENGINEERING

With approval of the certificate director. Examples of acceptable topics are Rotor Aeromechanics, Performance/ S&C/ HQ of V/STOL Air Vehicles, Mechanical Systems of V/STOL Air Vehicles.

ME 5390	SPECIAL TOPICS IN MECHANICAL ENGINEERING
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With approval of the certificate director. Examples of acceptable topics are Rotor Aeromechanics, Performance/ S&C/ HQ of V/STOL Air Vehicles, Mechanical Systems of V/STOL Air Vehicles.

Total Hours

15

COURSES

AE 5101. GRADUATE SEMINAR. 1 Hour.

The purpose is to acquaint graduate students with ongoing research at UTA, and outside in academia and industry. Seminars are given by graduate students of the department based on their ongoing research. Seminars are also given by external speakers from academia, industry and government.

AE 5191. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 1 Hour.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5197. RESEARCH IN AEROSPACE ENGINEERING. 1 Hour.

Research in masters programs.

AE 5291. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 2 Hours.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5297. RESEARCH IN AEROSPACE ENGINEERING. 2 Hours.

Research in masters programs.

AE 5300. PREPARATORY COURSE FOR AEROSPACE ENGINEERING. 3 Hours.

The course may be offered with multiple sections, wherein each section is paired with a corresponding UG course being offered that semester. The purpose of this course is to strengthen academic preparation of students who were found inadequately prepared for a graduate degree in Aerospace Engineering. Students can concurrently enroll in multiple sections and may need to enroll in this course multiple times until their academic preparation is deemed complete. In order to pass this class, the student has to earn at least a B grade in aggregate based on all the assignments and exams. The student will earn an R grade if the class aggregate is a C/D and will need to repeat the course until the student passes the class. The student will Fail the class if the aggregate is an F. The course may be repeated as often as required.

AE 5301. ADVANCED TOPICS IN AEROSPACE ENGINEERING. 3 Hours.

To provide formal instruction in special topics pertinent to Aerospace Engineering from semester to semester depending on the availability of faculty. May be repeated for credit as provided topics change.

AE 5302. ADVANCED FLIGHT MECHANICS. 3 Hours.

Rigid body motion. Kinematics and dynamics of aerospace vehicles. Linear and nonlinear control of aircraft and spacecraft. Advanced aircraft and spacecraft modeling and control issues. Prerequisite: MAE 3405 and MAE 4310.

AE 5303. CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS. 3 Hours.

Equip the student with familiarity of significant tools of the control engineer. Topics covered include controllers and their effect on system performance and stability, block diagram algebra, stability and analysis, system performance definition, root locus, frequency techniques, and state variable methods. Digital simulation tools for design and simulation of control systems. Demonstration of controller design and performance in the laboratory. Also offered as ME 5303.

AE 5304. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

This graduate level course will cover the calculation of stresses and strains in a body that experiences elastic, plastic and/or viscoelastic deformation. This course will also highlight nanoelasticity to show the size-dependent structure-property relations of nanomaterials and piezoelectricity to demonstrate the voltage-displacement relations of piezoelectric materials. Offered as AE 5304 and ME 5304. Credit will be granted only once. Prerequisite: MAE 2312 or equivalent.

AE 5305. DYNAMIC SYSTEMS MODELING. 3 Hours.

To equip the student with the capability of determining the necessary equations for distributed and lumped parameter modeling of mixed physical system types including mechanical, fluid, electrical, and thermal components. Models are formulated for computer simulation and analysis for systems with deterministic and stochastic inputs. Topics of random vibration and system identification are included. Offered as AE 5305 and ME 5305. Credit will be granted only once.

AE 5310. FINITE ELEMENT METHODS. 3 Hours.

Finite element method in the study of the static response of complex structures and of continua applications to field problems; analytical methods emphasized and digital computer application undertaken. Offered as AE 5310 and ME 5310. Credit will be granted only once.

AE 5311. STRUCTURAL DYNAMICS. 3 Hours.

Natural frequencies; forced response of complex structural systems studied through the use of the finite element method; computational aspects of these problems discussed, and digital computer applications undertaken. Offered as AE 5311 and ME 5311. Credit will be granted only once.

AE 5312. CONTINUUM MECHANICS. 3 Hours.

Study of the underlying physical and mathematical principles relating to the behavior of continuous media; interrelationships between fluid and solid mechanics. Offered as AE 5312 and ME 5312. Credit will be granted only once.

AE 5313. FLUID DYNAMICS. 3 Hours.

Basic conservation laws, flow kinematics, special forms of the governing equations, two-dimensional potential flows, surface waves and some exact solutions of viscous incompressible flows. Offered as AE 5313 and ME 5313. Credit will be granted only once.

AE 5314. FRACTURE MECHANICS IN STRUCTURAL DESIGN. 3 Hours.

Linear elastic fracture mechanics, general yielding fracture mechanics, damage tolerance and durability design, fail safe and safe life design criteria, analysis of fatigue crack growth, residual strength analysis. Offered as AE 5314 and ME 5314. Credit will be granted only once.

AE 5315. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Fundamental relationships between the mechanical and hygrothermal behavior and the composition of multiphase media; failure criteria. Offered as AE 5315 and ME 5315. Credit will be granted only once.

AE 5320. DESIGN OPTIMIZATION. 3 Hours.

The purpose of this course is to present modern concepts of optimal design of structures. Basic ideas from optimization theory are developed with simple design examples. Analytical and numerical methods are developed and their applications discussed. Use of numerical simulation methods in the design process is described. Concepts of structural design sensitivity analysis and approximation methods will be discussed. The emphasis is made on the application of modern optimization techniques linked to the numerical methods of structural analysis, particularly, the finite element method.

Prerequisite: AE 5310 or ME 5310.

AE 5322. AEROELASTICITY. 3 Hours.

A fundamental course addressing phenomena related to the time-independent interactions between structural flexibility and aerodynamic loads as relevant to flying vehicles. Emphasis is placed upon the development and use of simple analytical and/or interactive computational models that capture the essential aspects of the static aeroelastic phenomena investigated and provide insight into the response, including i) aeroelastic divergence; ii) aeroelastic change in control effectiveness; iii) aeroelastic distribution of lift; and iv) aeroelastic change in longitudinal static stability.

AE 5323. ENGINEERING RESEARCH METHODS. 3 Hours.

This hands-on course will teach the tools that are essential for conducting graduate research, with an aim to prepare the students for project-based graduate research. The course will be focused on the integration of engineering concepts to complete course projects that imitate mini research projects.

Prerequisite: Undergraduate education in engineering or science.

AE 5325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Offered as AE 5325 and ME 5325. Credit will be granted only once.

AE 5326. AIR-BREATHING PROPULSION. 3 Hours.

Development of thrust and efficiency equations, thermodynamic cycle analysis, cycle design methods of aerospace propulsion systems, component performance analysis methods, component matching and dynamic interactions, and vehicle/propulsion-system integration.

AE 5327. COMPUTATIONAL AERODYNAMICS I. 3 Hours.

Solution of engineering problems by finite-difference methods, emphasis on aerodynamic problems characterized by single linear and non-linear equations, introduction to and application of major algorithms used in solving aerodynamics problems by computational methods.

AE 5328. COMPUTATIONAL AERODYNAMICS II. 3 Hours.

Review of the fundamental equations of aerodynamics, development of methods for solving Euler, boundary-layer, Navier-Stokes, and parabolized Navier-Stokes equations, application to practical aerodynamic analysis and design problems.

AE 5329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for additive manufacturing are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacturing.

Offered as AE 5329 and ME 5329. Credit will be granted only once. Prerequisite: Graduate standing.

AE 5331. ANALYTIC METHODS IN ENGINEERING. 3 Hours.

Introduction to advanced analytic methods in engineering. Methods include multivariable calculus and field theory, Fourier series, Fourier and Laplace Transforms. Offered as AE 5331 and ME 5331. Credit will be granted only once. Prerequisite: Undergraduate degree in engineering, physics, or mathematics.

AE 5332. ENGINEERING ANALYSIS. 3 Hours.

Introduction to partial differential equations and complex variable theory with application to modeling of physical systems. Offered as AE 5332 and ME 5332. Credit will be granted only once.

AE 5333. THERMAL PHENOMENA IN MICROSYSTEMS. 3 Hours.

Introduction to experimental methods for microscale thermal transport, including experimental measurement techniques, design of experiments, data acquisition and analysis tools. Significant emphasis on carrying out mini-projects on related topics. Course learning outcomes are directly relevant for engineering jobs in semiconductors, energy conversion and other related industries. Offered as AE 5333 and ME 5333. Credit will be granted only once.

AE 5335. OPTIMAL CONTROL OF DYNAMIC SYS. 3 Hours.

Linear and nonlinear optimization methods; optimal control; continuous time Ricatti equation; bang-bang control; singular arcs; differential inclusions; collocation techniques; design of optimal dynamic system trajectories. Offered as AE 5335 and ME 5335. Credit will be granted only once.

AE 5336. OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS. 3 Hours.

Kalman filter design and implementation. Optimal filtering for discrete-time and continuous-time dynamical systems with noise. Wiener filtering. State-space determination. Offered as EE 6327, AE 5336 and ME 5336. Credit will be granted only once. Prerequisite: Prior introductory systems or identification course is desirable.

AE 5337. INTRODUCTION TO ROBOTICS. 3 Hours.

An overview of industrial robots and their application to traditional and emerging applications. Coordinate systems and homogeneous transformations, kinematics of manipulators; motion characteristics and trajectories; dynamics and control of manipulators; actuation and design issues. Programming of industrial robotic manipulators in the laboratory. Offered as AE 5337 and ME 5337. Credit will be granted only once.

AE 5338. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Offered as AE 5338 and ME 5338. Credit will be granted only once.

AE 5339. STRUCTURAL ASPECTS OF DESIGN. 3 Hours.

Emphasis on determination of stresses and prediction of failure in machine and structural components; stress-strain relations in elastic and plastic regions; static failure and failure criteria; contact stress; notched sensitivity; strain-fatigue life relationship; characteristics of cracks in structural components. Offered as AE 5339 and ME 5339. Credit will be granted only once.

AE 5341. CONTROL SYSTEM COMPONENTS. 3 Hours.

The components and hardware used in electronic, hydraulic, and pneumatic control systems; techniques of amplification, computation, compensation, actuation, and sensing; modeling of multiport systems as well as servo systems analysis. Pulse modulated systems. Offered as AE 5341 and ME 5341. Credit will be granted only once. Prerequisite: Undergraduate introductory control course in Mechanical Engineering or equivalent or ME 5303 or equivalent.

AE 5342. GAS DYNAMICS. 3 Hours.

Review of fundamental compressible flow theory, method of characteristics for perfect gases, the Rankine-Hugoniot conditions, linearized flow theory. Offered as AE 5342 and ME 5342. Credit will be granted only once.

AE 5345. NUMERICAL HEAT TRANSFER AND FLUID FLOW. 3 Hours.

Introduction to numerical solutions for problems in heat transfer and fluid flow by the finite-volume method. The focus will be on numerical aspects pertaining to incompressible fluids. It provides the background training towards the use of commercial software. Offered as AE 5345 and ME 5345. Credit will be granted only once.

AE 5347. ROCKET PROPULSION. 3 Hours.

Thrust and efficiency relations, trajectory analysis, introduction to design and performance analysis of chemical (liquid and solid), electrical and nuclear rocket systems, combined cycle propulsion systems, and pulse detonation rockets.

AE 5348. HYPERSONIC PROPULSION. 3 Hours.

Design and performance analysis of propulsion systems for sustained flight at hypersonic speeds, airframe/propulsion system integration, supersonic combustion, finite-rate chemistry effects, radiative cooling.

AE 5350. CLASSICAL AERODYNAMICS. 3 Hours.

To present a classical treatment of incompressible and compressible aerodynamics. Kinematics of fluid flow. Potential flow theory applied to non-lifting and lifting wings and bodies. Subsonic and supersonic wings and bodies. Familiarity with advanced engineering mathematics is recommended.

AE 5360. MULTIDISCIPLINARY INVERSE DESIGN AND OPTIMIZATION. 3 Hours.

For a new design of any realistic device to be competitive, it must satisfy a number of often conflicting requirements, objectives, and constraints. This course offers a variety of basic concepts and methodologies for inverse design and optimization with practical applications in fluid mechanics, heat transfer, elasticity, and electromagnetism. Offered as AE 5360 and ME 5360. Credit will be granted only once.

AE 5362. GUIDANCE, NAVIGATION, AND CONTROL OF AEROSPACE VEHICLES. 3 Hours.

Basics of flight dynamics and control. Autopilot structures for aerospace vehicles (aircraft, missiles, launch vehicles). Equilibrium glide trajectories for atmospheric flight. Discussion of the various guidance algorithms used in aircraft/missiles/launch vehicles. Basics of Kalman filtering, sensor and data fusion. Selection and trade-off between various navigation components such as the IMU, GPS and other navigation components. Integration of the guidance, navigation and control components in aerospace vehicles.

AE 5363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects. Offered as AE 5363 and ME 5363. Credit will be granted only once.

AE 5364. INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT. 3 Hours.

Practical aerodynamics of rotors and other components of rotorcraft. Introduction to performance, handling qualities, and general flight mechanics related to rotorcraft design, test, and certification requirements. Emphasis is on real rotorcraft mission capabilities as defined by the customer. Offered as AE 5364 and ME 5364. Credit will be granted only once.

AE 5365. INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION. 3 Hours.

Dynamic and aerodynamic modeling of rotorcraft elements using vector mechanics, linear algebra, calculus and numerical methods. Special emphasis on rotors, aerodynamic interference, proper axis system representation, model assembly methods and trimming. Offered as AE 5365 and ME 5365. Credit will be granted only once.

AE 5367. HIGH-SPEED AIRCRAFT AND SPACE ACCESS VEHICLE DESIGN. 3 Hours.

An introductory course on high-speed aircraft and space access vehicle design. The course concentrates on reusable flight vehicles. Topics covered are historical case studies, design disciplines, design space visualization and proof of design convergence. Prerequisite: consent of the instructor.

AE 5368. FLIGHT VEHICLE SYNTHESIS AND SYSTEMS ENGINEERING. 3 Hours.

An introductory course on multi-disciplinary design decision-making applied to flight vehicle design. The course introduces decision-making techniques leading to efficient aerospace product design. The following main topics are covered: a) management domain, b) operational domain, c) engineering domain. Prerequisite: MAE 4350, MAE 4351 or equivalent.

AE 5372. PARAMETRIC SIZING OF HIGH-SPEED AIRCRAFT. 3 Hours.

An introductory course on high-speed aircraft design. Aimed to develop insight into basic concepts underlining the analysis and design of supersonic and hypersonic aircraft. Topics covered are historical case studies, design disciplines, and design methodologies. Prerequisite: MAE 4350, MAE 4351 or equivalent.

AE 5374. NONLINEAR SYSTEMS ANALYSIS AND CONTROLS. 3 Hours.

Nonlinear systems; phase plane analysis; Poincare-Bendixon theorems; nonlinear system stability; limit cycles and oscillations; center manifold theorem, Lyapunov methods in control; variable structure control; feedback linearization; backstepping techniques. Offered as AE 5374 and ME 5374. Credit will be granted only once.

AE 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Offered as AE 5378 and ME 5378. Credit will be granted only once.

AE 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Offered as AE 5379 and ME 5379. Credit will be granted only once. Prerequisite: B or better in MAE 4378 or AE 5378 or ME 5378 and admission to the UVS certificate program.

AE 5380. DESIGN OF DIGITAL CONTROL SYSTEMS. 3 Hours.

Difference equations, Z- and w-transforms, discrete TF (Transfer Function). Discrete equivalence (DE) to continuous TF. Aliasing & Nyquist sampling theorem. Design by DE, root locus in z-plane & Youla parameterization. Discrete state-space model, minimality after sampling, pole placement, Moore-Kimura method, linear quadratic regulator, asymptotic observer. Computer simulation and/or lab implementation. Offered as EE 5324, AE 5380 and ME 5380. Credit will be granted only once. Prerequisite: MAE 4310 or equivalent.

AE 5381. BOUNDARY LAYERS. 3 Hours.

An introductory course on boundary layers. The coverage emphasizes the physical understanding and the mathematical foundations of boundary layers, including applications. Topics covered include laminar and turbulent incompressible and compressible layers, and an introduction to boundary layer transition. Offered as AE 5381 and ME 5381. Credit will be granted only once.

AE 5382. ADVANCED ASTRONAUTICS. 3 Hours.

Topics include orbital mechanics, orbital maneuvering, relative motion, orbit determination and estimation, three body problem, perturbations and numerical techniques.

AE 5383. HYPERSONIC FLOW. 3 Hours.

A study of the basic principles of hypersonic flows. Inviscid and viscous hypersonic flows. The course focuses on the effects of high temperature on the gas properties and associated effects on canonical gasdynamics processes. Applications in aerodynamic heating and atmospheric entry. Application of numerical methods.

AE 5385. HIGH TEMPERATURE GASDYNAMICS. 3 Hours.

Surveys kinetic theory, statistical mechanics, and chemical reaction rate theory. Application to the prediction of thermodynamic properties of gasses and the analysis of problems in high-temperature gasdynamics.

AE 5386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses.

AE 5391. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 3 Hours.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5397. RESEARCH IN AEROSPACE ENGINEERING. 3 Hours.

Research in masters programs.

AE 5398. THESIS. 3 Hours.

Thesis.

AE 5400. PREPARATORY COURSE FOR AEROSPACE ENGINEERING. 4 Hours.

The course may be offered with multiple sections, wherein each section is paired with a corresponding UG course being offered that semester. The purpose of this course is to strengthen academic preparation of students who were found inadequately prepared for a graduate degree in Aerospace Engineering. Students can concurrently enroll in multiple sections and may need to enroll in this course multiple times until their academic preparation is deemed complete. In order to pass this class, the students has to earn at least a B grade in aggregate based all the assignments and exams. The student will earn an R grade if the class aggregate is a C/D and will need to repeat the course until the student passes the class. The student will Fail the class if the aggregate is an F. The course may be repeated as often as required.

AE 5698. THESIS. 6 Hours.

Thesis.

AE 6196. AEROSPACE ENGINEERING INTERNSHIP. 1 Hour.

For students participating in internship programs. Requires prior approval of Graduate Advisor.

AE 6197. RESEARCH IN AEROSPACE ENGINEERING. 1 Hour.

Research in doctoral programs.

AE 6297. RESEARCH IN AEROSPACE ENGINEERING. 2 Hours.

Research in doctoral programs.

AE 6299. DISSERTATION. 2 Hours.

Dissertation Prerequisite: Admission to candidacy for the Doctoral of Philosophy degree.

AE 6310. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Also offered as ME 6310.

AE 6311. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Offered as AE 6311 and ME 6311. Credit will be granted only once. Prerequisite: ME 5311, AE 5311 or equivalent.

AE 6315. ADVANCED COMPOSITES. 3 Hours.

Review of current state-of-the-art applications of composites: composite structural analysis; structural properties, damage characterization and failure mechanism; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints. Offered as AE 6315, ME 6315 and MSE 5349. Credit will be granted only once. Prerequisite: ME 5315, AE 5315 or MSE 5348 or equivalent.

AE 6337. ADVANCED ROBOTICS. 3 Hours.

Advanced robotic design concepts considering structural statics, dynamics and control strategies for both rigid and flexible manipulators will be studied using optimization techniques and analytical approaches and introduction to micro- and mobile robotic devices. Study of emerging applications of robotics will be explored. Digital simulation of robotic devices and programming and demonstration of robotic devices in the laboratory. Prerequisites: AE 5337 or ME 5337 or equivalent.

AE 6397. RESEARCH IN AEROSPACE ENGINEERING. 3 Hours.

Research in doctoral programs.

AE 6399. DISSERTATION. 3 Hours.

Dissertation Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

AE 6697. RESEARCH IN AEROSPACE ENGINEERING. 6 Hours.

Research in doctoral programs.

AE 6699. DISSERTATION. 6 Hours.

Dissertation. Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

AE 6999. DISSERTATION. 9 Hours.

Dissertation. Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

AE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

COURSES**ME 5010. AUTOMOTIVE ENGINEERING PRACTICUM. 0 Hours.**

Practical design experience as full member of automotive design competition team. Prerequisite: Permission of Director for the Arnold E. Petsche Center for Automotive Engineering.

ME 5101. GRADUATE SEMINAR. 1 Hour.

The purpose is to acquaint graduate students with ongoing research at UTA, and outside in academia and industry. Seminars are given by graduate students of the department based on their ongoing research. Seminars are also given by external speakers from academia, industry and government.

ME 5191. PROJECT STUDIES IN MECHANICAL ENGINEERING. 1 Hour.

May be repeated for credit as topics change. Project work performed under a non-thesis degree will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies. May be graded pass/fail.

ME 5197. RESEARCH IN MECHANICAL ENGINEERING. 1 Hour.

Research in master's programs.

ME 5291. PROJECT STUDIES IN MECHANICAL ENGINEERING. 2 Hours.

May be repeated for credit as topics change. Work performed as a thesis substitute will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies. Maybe graded P/F.

ME 5297. RESEARCH IN MECHANICAL ENGINEERING. 2 Hours.

Research in master's programs.

ME 5302. INTRODUCTION TO BEARING DESIGN AND LUBRICATION. 3 Hours.

The course introduces 1) selection principles and design guidelines for various rolling element bearings, 2) theory of liquid and gas lubrication, 3) various novel fluid film bearings used in modern high speed turbomachinery and energy systems, and 4) fundamental principles of rotordynamics.

ME 5303. CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS. 3 Hours.

Equip the student with familiarity of significant tools of the control engineer. Topics covered include controllers and their effect on system performance and stability, block diagram algebra, stability and analysis, system performance definition, root locus, frequency techniques, and state variable methods. Digital simulation tools for design and simulation of control systems. Demonstration of controller design and performance in the laboratory. Also offered as AE 5303. Credit will be granted only once.

ME 5304. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

This graduate level course will cover the calculation of stresses and strains in a body that experiences elastic, plastic and/or viscoelastic deformation. This course will also highlight nanoelasticity to show the size-dependent structure-property relations of nanomaterials and piezoelectricity to demonstrate the voltage-displacement relations of piezoelectric materials. Offered as AE 5304 and ME 5304. Credit will be granted only once. Prerequisite: MAE 2312 or equivalent.

ME 5305. DYNAMIC SYSTEMS MODELING. 3 Hours.

To equip the student with the capability of determining the necessary equations for distributed and lumped parameter modeling of mixed physical system types including mechanical, fluid, electrical, and thermal components. Models are formulated for computer simulation and analysis for systems with deterministic and stochastic inputs. Topics of random vibration and system identification are included. Offered as AE 5305 and ME 5305. Credit will be granted only once.

ME 5306. FLUID POWER CONTROL. 3 Hours.

Mathematical models for hydraulic and pneumatic control components and systems including hydraulic pumps, motors, and spool valves. The application of electrohydraulic and hydromechanical servomechanisms for position and velocity control are treated. Theory supported by laboratory demonstrations and experiments.

ME 5310. FINITE ELEMENT METHODS. 3 Hours.

Finite element method in the study of the static response of complex structures and of continua; applications to field problems; analytical methods emphasized, and digital computer application undertaken. Offered as AE 5310 and ME 5310. Credit will be granted only once.

ME 5311. STRUCTURAL DYNAMICS. 3 Hours.

Natural frequencies; forced response of complex structural systems studied through the use of the finite element method; computational aspects of these problems discussed, and digital computer applications undertaken. Offered as AE 5311 and ME 5311. Credit will be granted only once.

ME 5312. CONTINUUM MECHANICS. 3 Hours.

Study of the underlying physical and mathematical principles relating to the behavior of continuous media; interrelationships between fluid and solid mechanics. Offered as AE 5312 and ME 5312. Credit will be granted only once.

ME 5313. FLUID DYNAMICS. 3 Hours.

Basic conservation laws, flow kinematics, special forms of the governing equations, two-dimensional potential flows, surface waves and some exact solutions of viscous incompressible flows. Offered as AE 5313 and ME 5313. Credit will be granted only once.

ME 5314. FRACTURE MECHANICS IN STRUCTURAL DESIGN. 3 Hours.

Linear elastic fracture mechanics, general yielding fracture mechanics, damage tolerance and durability design, fail safe and safe life design criteria, analysis of fatigue crack growth, residual strength analysis. Offered as AE 5314 and ME 5314. Credit will be granted only once.

ME 5315. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Fundamental relationships between the mechanical and hygrothermal behavior and the composition of multiphase media; failure criteria. Offered as AE 5315 and ME 5315. Credit will be granted only once.

ME 5316. THERMAL CONDUCTION. 3 Hours.

Fundamental laws, initial and boundary conditions, basic equations for isotropic and anisotropic media, related physical problems and steady and transient temperature distributions in solid structures.

ME 5317. CONVECTION HEAT TRANSFER. 3 Hours.

Equations of motion of viscous fluids are reviewed and the energy equations are introduced. Exact and approximate solutions are made for forced convective problems with non-isothermal and unsteady boundaries. Free convection and combined free- and forced-convection problems are solved.

ME 5318. RADIATIVE HEAT TRANSFER. 3 Hours.

General equations of radiative transfer derived and solved for special problems, and the elements of atomic, molecular, and continuum radiation are introduced.

ME 5319. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Continuation of ME 5310. Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Prerequisite: ME 5310 or equivalent.

ME 5320. DESIGN OPTIMIZATION. 3 Hours.

The purpose of this course is to present modern concepts of optimal design of structures. Basic ideas from optimization theory are developed with simple design examples. Analytical and numerical methods are developed and their applications discussed. Use of numerical simulation methods in the design process is described. Concepts of structural design sensitivity analysis and approximation methods will be discussed. The emphasis is made on the application of modern optimization techniques linked to the numerical methods of structural analysis, particularly, the finite element method. Prerequisite: AE 5310 or ME 5310.

ME 5321. ADVANCED CLASSICAL THERMODYNAMICS. 3 Hours.

Fundamentals of thermodynamics reviewed. Different treatments of principles studied, compared and formal relationships developed and applied to chemical, magnetic, electric and elastic systems.

ME 5322. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Prerequisite: ME 5311 or equivalent.

ME 5323. ENGINEERING RESEARCH METHODS. 3 Hours.

This hands-on course will teach the tools that are essential for conducting graduate research, with an aim to prepare the students for project-based graduate research. The course will be focused on the integration of engineering concepts to complete course projects that imitate mini research projects. Prerequisite: Undergraduate education in engineering or science.

ME 5324. POWER PLANT ENGINEERING. 3 Hours.

Fundamental thermodynamics and heat transfer principles behind design and optimization of power generation systems with significant emphasis on component and system design. This class will cover a number of power plant types, including coal/gas fired, hydroelectric, nuclear, and solar. Concepts learnt in this class prepare students for an engineering career in power plants, oil, gas and related industries.

ME 5325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Offered as AE 5325 and ME 5325. Credit will be granted only once.

ME 5326. MANUFACTURING PROCESSES AND SYSTEMS. 3 Hours.

Survey and modeling of manufacturing, assembly, surface treatment, automation, and integration processes. Prerequisite: Graduate standing.

ME 5327. DESIGN FOR MANUFACTURING. 3 Hours.

The interaction between design and manufacturing stressed in terms of the design process, customer-focused quality, design specifications versus process capability and tolerances, and redesign for producibility. Topics include material and manufacturing process selection, tolerancing, quality function deployment (QFD), design for assembly (DFA), quality control techniques, reliability, and robust design. Prerequisite: ME 5326.

ME 5328. COMPUTATIONAL TECHNIQUES IN ELECTRONIC SYSTEMS. 3 Hours.

To develop the capability to characterize the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes. Also offered as MAE 4328.

ME 5329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for additive manufacturing are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacturing. Offered as AE 5329 and ME 5329. Credit will be granted only once. Prerequisite: Graduate standing.

ME 5331. ANALYTIC METHODS IN ENGINEERING. 3 Hours.

Introduction to advanced analytic methods in engineering. Methods include multivariable calculus and field theory, Fourier series, Fourier and Laplace Transforms. Offered as AE 5331 and ME 5331. Credit will be granted only once. Prerequisite: Undergraduate degree in engineering, physics, or mathematics.

ME 5332. ENGINEERING ANALYSIS. 3 Hours.

Introduction to partial differential equations and complex variable theory with application to modeling of physical systems. Offered as AE 5332 and ME 5332. Credit will be granted only once.

ME 5333. THERMAL PHENOMENA IN MICROSYSTEMS. 3 Hours.

Introduction to experimental methods for microscale thermal transport, including experimental measurement techniques, design of experiments, data acquisition and analysis tools. Significant emphasis on carrying out mini-projects on related topics. Course learning outcomes are directly relevant for engineering jobs in semiconductors, energy conversion and other related industries. Offered as AE 5333 and ME 5333. Credit will be granted only once.

ME 5335. OPTIMAL CONTROL OF DYNAMIC SYSTEMS. 3 Hours.

Linear and nonlinear optimization methods; optimal control; continuous time Ricatti equation; bang-bang control; singular arcs; differential inclusions; collocation techniques; design of optimal dynamic system trajectories. Offered as AE 5335 and ME 5335. Credit will be granted only once.

ME 5336. OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS. 3 Hours.

Kalman filter design and implementation. Optimal filtering for discrete-time and continuous-time dynamical systems with noise. Wiener filtering. State-space determination. Offered as EE 6327, AE 5336 and ME 5336. Credit will be granted only once. Prerequisite: introductory systems or identification course is desirable. Also offered as AE 5336 and EE 6327. Credit will be granted only once.

ME 5337. INTRODUCTION TO ROBOTICS. 3 Hours.

An overview of industrial robots and applications to traditional and emerging applications. Coordinate systems and homogeneous transformations, kinematics of manipulators; motion characteristics and trajectories; dynamics and control of manipulators; actuation and design issues. Programming of industrial robotic manipulators in the laboratory. Offered as AE 5337 and ME 5337. Credit will be granted only once.

ME 5338. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include: kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Offered as AE 5338 and ME 5338. Credit will be granted only once.

ME 5339. STRUCTURAL ASPECTS OF DESIGN. 3 Hours.

Emphasis on determination of stresses and prediction of failure in machine and structural components; stress-strain relations in elastic and plastic regions; static failure and failure criteria; contact stress; notched sensitivity, strain-fatigue life relationship' characteristics of cracks in structural components. Offered as AE 5339 and ME 5339. Credit will be granted only once.

ME 5340. AUTOMOTIVE ENGINEERING. 3 Hours.

Introduction to automotive engine types and performance, drive train modeling and vehicle loading characteristics, fueling requirements, fuel injection systems, tire characteristics and modeling, suspension characteristics and handling, braking systems and requirements. Course taught through lecture, student presentations and student design projects.

ME 5341. CONTROL SYSTEM COMPONENTS. 3 Hours.

The components and hardware used in electronic, hydraulic, and pneumatic control systems; techniques of amplification, computation, compensation, actuation, and sensing; modeling of multiport systems as well as servo systems analysis. Pulse modulated systems. Offered as AE 5341 and ME 5341. Credit will be granted only once. Prerequisite: Undergraduate introductory control course in Mechanical Engineering or equivalent or ME 5303 or equivalent.

ME 5342. GAS DYNAMICS. 3 Hours.

Review of fundamental compressible flow theory, method of characteristics for perfect gases, the Rankine-Hugoniot conditions, linearized flow theory. Offered as AE 5342 and ME 5342. Credit will be granted only once.

ME 5343. TWO-PHASE FLOW AND BOILING HEAT TRANSFER. 3 Hours.

This is to introduce significant progress in phase change heat transfer and two-phase flow. Boiling heat transfer will be followed by the study of pressure drop and heat transfer in the pipes of two-phase flow. Boiling heat transfer includes pool boiling, forced convection boiling, and critical heat flux. Also selected topics by the instructor (heat pipe, condensation, Helmholtz wave instability, etc.) Also offered as AE 5343. Credit will be granted only once.

ME 5344. VISCOUS FLOWS. 3 Hours.

Navier-Stokes equations and Prandtl's boundary layer approximations; laminar and turbulent boundary layers including internal and external flows.

ME 5345. NUMERICAL HEAT TRANSFER AND FLUID FLOW. 3 Hours.

Introduction to numerical solutions for problems in heat transfer and fluid flow by the finite-volume method. The focus will be on numerical aspects pertaining to incompressible fluids. It provides the background training towards the use of commercial software. Offered as AE 5345 and ME 5345. Credit will be granted only once.

ME 5346. COOLING OF ELECTRONIC PACKAGES. 3 Hours.

This course deals with the development and application of analytical models of thermal phenomena occurring in electronic equipment. The calculation of heat loads and temperature fields using different cooling techniques. Includes parameter evaluation and design studies.

ME 5347. HEAT EXCHANGER DESIGN. 3 Hours.

Design procedures, system evaluations and design parameters in heat exchangers. Heat exchanger configurations; student design projects.

ME 5352. FUNDAMENTALS IN ELECTRONIC PACKAGING. 3 Hours.

An introductory treatment of electronic packaging, from single chip to multichip, including materials, electrical design, thermal design, mechanical design, package modeling and simulation, processing considerations, reliability, and testing.

ME 5353. COMPUTATIONAL TECHNIQUES FOR ELECTRONIC PACKAGING. 3 Hours.

Characterization of the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes.

ME 5354. FAILURES AND THEIR PREVENTION IN ELECTRONIC PACKAGES. 3 Hours.

A comprehensive overview of the fundamental causes for failures in electronic assemblies which include the printed wiring board, package, and second-level assemblies. Failure detection techniques and methodologies, key failure analysis techniques used will be discussed.

ME 5355. MECHANICAL FAILURE OF ELECTRONIC PACKAGES. 3 Hours.

Failure analysis, fatigue of electronic packages, fracture and creep behavior of solders. Mechanical properties of substrate materials. Electromigration and failure mechanisms.

ME 5356. CHIPSCALE PACKAGING. 3 Hours.

Overview of area array packaging with special emphasis on the maturing chipscale packaging technology. Topics covered will include the design concepts of this technology, the materials related aspects, the manufacturing processes, and their reliability in a variety of applications.

ME 5358. Racecar Engineering. 3 Hours.

This course intended for Formula SAE team members and other interested students to develop new systems or analyze concepts for the Formula SAE or Formula Electric racecar and related equipment. The students will form teams and perform research and development on projects related to automotive or racecar engineering.

ME 5359. APPLIED AUTOMOTIVE ENGINEERING. 3 Hours.

The purpose of this course is to gain practical experience in the design and fabrication of parts or systems for automotive applications. The student must write a proposal, give a public oral presentation, and prepare a formal final report. The student must have attained full team member status in a student design competition team. Prerequisites: permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

ME 5360. MULTIDISCIPLINARY INVERSE DESIGN AND OPTIMIZATION. 3 Hours.

For a new design of any realistic device to be competitive, it must satisfy a number of often conflicting requirements, objectives, and constraints. This course offers a variety of basic concepts and methodologies for inverse design and optimization with practical applications in fluid mechanics, heat transfer, elasticity, and electromagnetism. Offered as AE 5360 and ME 5360. Credit will be granted only once.

ME 5362. INTRODUCTION TO MICRO AND NANOFUIDICS. 3 Hours.

As going down to micro scales, the basic hypothesis in the macro scale fluid mechanics may not be applicable in such scales. The objectives of this course are: to identify dominant forces and their effects in micro scale fluid systems that are different from those in the macro scales; to understand the fundamentals of micro fluidic phenomena; to discuss various microfluidic applications in research and commercial levels; and to explore new possible microfluidic applications in the emerging fields. Topics include overview of microfluidics, scaling laws, violation limit of the Navier-Stokes equations, surface force, surface tension, electrowetting, electrokinetics, dielectrophoresis, and soft lithography. Prerequisite: MAE 2314 and MAE 3310 or equivalents.

ME 5363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects. Offered as AE 5363 and ME 5363. Credit will be granted only once.

ME 5364. INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT. 3 Hours.

Practical aerodynamics of rotors and other components of rotorcraft. Introduction to performance, handling qualities, and general flight mechanics related to rotorcraft design, test, and certification requirements. Emphasis is on rotorcraft mission capabilities as defined by the customer. Offered as AE 5364 and ME 5364. Credit will be granted only once.

ME 5365. INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION. 3 Hours.

Dynamic and aerodynamic modeling of rotorcraft elements using vector mechanics, linear algebra, calculus and numerical methods. Special emphasis on rotors, aerodynamic interference, proper axis system representation, model assembly methods and trimming. Offered as AE 5365 and ME 5365. Credit will be granted only once.

ME 5366. FUEL CELLS AND APPLICATIONS. 3 Hours.

The course introduces: Principles and thermodynamics applied to fuel cell-based power generation systems; materials and manufacturing methods of two common fuel cells and their stacks; modeling, analysis, and design of fuel cells and various reformers; and design issue of balance of plants such as steam management systems.

ME 5374. NONLINEAR SYSTEMS ANALYSIS AND CONTROLS. 3 Hours.

Nonlinear systems; phase plane analysis; Poincare-Bendixon theorems; nonlinear system stability; limit cycles and oscillations; center manifold theorem, Lyapunov methods in control; variable structure control; feedback linearization; backstepping techniques. Offered as AE 5374 and ME 5374. Credit will be granted only once.

ME 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Offered as AE 5378 and ME 5378. Credit will be granted only once.

ME 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Offered as AE 5379 and ME 5379. Credit will be granted only once. Prerequisite: B or better in MAE 4378 or AE 5378 or ME 5378 and admission to the UVS certificate program.

ME 5380. DESIGN OF DIGITAL CONTROL SYSTEMS. 3 Hours.

Difference equations, z- and w- transforms, discrete TF (Transfer Function). Discrete equivalence (DE) to continuous TF. Aliasing & Nyquist sampling theorem. Design by DE, root locus in z- plane & Youla parameterization. Discrete state- space model, minimality after sampling, pole placement, Moore-Kimura method, linear quadratic regulator, asymptotic observer. Computer simulation and/or laboratory implementation. Offered as EE 5324, AE 5380 and ME 5380. Credit will be granted only once. Prerequisite: undergraduate level controls course or equivalent. Also offered as AE 5380, EE 5324. Credit will be granted only once.

ME 5381. BOUNDARY LAYERS. 3 Hours.

An introductory course on boundary layers. The coverage emphasizes the physical understanding and the mathematical foundations of boundary layers, including applications. Topics covered include laminar and turbulent incompressible and compressible boundary layers, and an introduction to boundary layer transition. Offered as AE 5381 and ME 5381. Credit will be granted only once.

ME 5382. RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES. 3 Hours.

This course is offered to graduate and senior level undergraduate students with engineering and science background to introduce them to micro/nano research and development for energy conversion and storage. The course will cover topics such as Scaling laws, MEMS fabrication, Nanomaterial synthesis, Electrochemical energy storage/conversion (Batteries, Fuel Cells & Supercapacitors), Solar energy (photovoltaics and solar thermal energy), Energy harvesting and Solar water splitting and electrocatalysis.

ME 5386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses. (also taught as AE 5386).

ME 5390. SPECIAL TOPICS IN MECHANICAL ENGINEERING. 3 Hours.

To provide formal instruction in special topics pertinent to Mechanical Engineering from semester to semester depending on the availability of faculty. May be repeated provided topics differ.

ME 5391. ADVANCED STUDIES IN MECHANICAL ENGINEERING. 3 Hours.

May be repeated for credit as topics change. Project work performed under a non-thesis degree will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies.

ME 5397. RESEARCH IN MECHANICAL ENGINEERING. 3 Hours.

Research in master's programs.

ME 5398. THESIS. 3 Hours.

Thesis.

ME 5698. THESIS. 6 Hours.

Thesis Prerequisite: GRAD ME thesis major.

ME 5998. THESIS. 9 Hours.

Thesis Prerequisite: GRAD ME thesis major.

ME 6196. MECHANICAL ENGINEERING INTERNSHIP. 1 Hour.

For students participating in internship programs. May be repeated for credit. Requires prior approval of ME Graduate Advisor.

ME 6197. RESEARCH IN MECHANICAL ENGINEERING. 1 Hour.

May be repeated for credit.

ME 6297. RESEARCH IN MECHANICAL ENGINEERING. 2 Hours.

May be repeated for credit.

ME 6299. DISSERTATION. 2 Hours.

Prerequisite: Admission to candidacy for the Doctoral of Philosophy degree.

ME 6310. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Also offered as ME 6310.

ME 6311. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Offered as AE 6311 and ME 6311. Credit will be granted only once. Prerequisite: ME 5311, AE 5311 or equivalent.

ME 6315. ADVANCED COMPOSITES. 3 Hours.

Review of current state-of-the-art applications of composites: composite structural analysis; structural properties, damage characterization and failure mechanism; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints. Offered as AE 6315, ME 6315 and MSE 5349. Credit will be granted only once. Prerequisite: ME 5315, AE 5315 or MSE 5348 or equivalent.

ME 6316. COMPUTER AIDED DESIGN. 3 Hours.

Role of graphics; image representation, batch and interactive computing, methods of automated mathematical model generation in engineering design. Application in mechanical, structural, thermal, controls areas of mechanical engineering.

ME 6337. ADVANCED ROBOTICS. 3 Hours.

Advanced robotic design concepts considering structural statics, dynamics and control strategies for both rigid and flexible manipulators will be studied using optimization techniques and analytical approaches and introduction to micro- and mobile robotic devices. Study of emerging applications of robotics will be explored. Digital simulation of robotic devices and programming and demonstration of robotic devices in the laboratory. Prerequisites: AE 5337 or ME 5337 or equivalent.

ME 6344. HEAT TRANSFER IN TURBULENT FLOW. 3 Hours.

Introduction to heat transfer in turbulent boundary layers including internal and external flows, turbulence structure, the Reynolds analogy, van Driest hypothesis, high and low Prandtl number two equation model, effects of surface roughness on heat transfer. Also offered as AE 6344. Credit will be granted only once.

ME 6397. RESEARCH IN MECHANICAL ENGINEERING. 3 Hours.

May be repeated for credit.

ME 6399. DISSERTATION. 3 Hours.

May be repeated for credit.

ME 6697. RESEARCH IN MECHANICAL ENGINEERING. 6 Hours.

May be repeated for credit.

ME 6699. DISSERTATION. 6 Hours.

Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

ME 6997. RESEARCH IN MECHANICAL ENGINEERING. 9 Hours.

May be repeated for credit.

ME 6999. DISSERTATION. 9 Hours.

Admission to candidacy for the Doctor of Philosophy degree.

ME 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Mechanical and Aerospace Engineering - Undergraduate Programs

Overview

The Department of Mechanical and Aerospace Engineering (MAE) offers three programs of study leading to the bachelor's degree. They are the Bachelor of Science in Aerospace Engineering, the Bachelor of Science in Mechanical Engineering, and a double degree of Bachelor of Science in Aerospace Engineering and Bachelor of Science in Mechanical Engineering. Both Aerospace Engineering and Mechanical Engineering degree programs offer a Fast Track option which enables outstanding undergraduate students to receive dual undergraduate/ graduate course credit for up to nine hours of coursework. Minor degrees are also offered in Aerospace Engineering and Mechanical Engineering. The Aerospace and Mechanical Engineering programs have been accredited since 1968 and 1967, respectively, by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

This section contains Department policies governing admission and academic progress which are common to both aerospace and mechanical degree programs.

Admission

For admission to the aerospace engineering and mechanical engineering programs, students must meet the requirements for admission to the College of Engineering. A minimum grade point average of 2.25 in all science, mathematics and engineering courses and a minimum 3-GPA calculation of 2.25 in any UTA coursework is required for unconditional transfer into the department.

Advising

The advising process is designed to assist students as they make important decisions related to their academic progress at UT Arlington and career goals in general.

Specifically, the purpose of advising is:

- To empower students to clarify and achieve their educational goals by providing timely and accurate information about degree requirements, as well as College and University policies and procedures.
- To provide every student with the opportunity to develop a relationship with a knowledgeable advisor in order to obtain sound academic advising with a degree of continuity.
- To provide students with information about additional services, programs, and support systems available within the College and University as appropriate.

Ultimately, the student is responsible for seeking academic advice, making decisions regarding goals, meeting degree requirements, and enrolling in appropriate courses. The academic advisor is to provide assistance in these decisions. Each student is responsible for understanding and complying with University and College policies and procedures.

During each long semester, the Mechanical and Aerospace Engineering Department conducts pre-enrollment advising weeks. Returning students (i.e., students who are or have previously been students at The University of Texas at Arlington) shall meet with their assigned advisors during advising weeks and complete a Registration Advising Form. Returning students who are unable to be present for advising during advising weeks should contact their advisor at the earliest opportunity. New students may receive pre-enrollment advising following advising weeks during normal advising hours.

Goal of the Undergraduate Program

The overall goal of the undergraduate program is to provide the graduate an educational background for lifelong learning and the ability to assume a leadership role in the mechanical or aerospace engineering professions. The programs are broad-based and designed to provide a strong foundation in science, mathematics, and engineering science; technical competence in multiple areas of mechanical or aerospace engineering practice; and an understanding of the importance of ethics, safety, professionalism, and socioeconomic concerns in resolving technical problems.

Educational Objectives and Student Outcomes

Degree Programs

Educational Objectives

A primary goal of the mechanical engineering and aerospace engineering degree programs is to provide an educational experience and training that will prepare graduates to excel within the broad scope of the mechanical and aerospace engineering professions. Our Program Educational Objectives are to enable our graduates to attain the following professional and career accomplishments during the first few years following graduation:

- Be employed in a professional mechanical, aerospace or related engineering organization, or be admitted to graduate programs in engineering or other professional areas,

- Become an active participant in professional society activities,
- Demonstrate the initiative, motivation and ability to grow professionally in their chosen endeavor.

Student Outcomes

Mechanical engineering and aerospace engineering student outcomes established to accomplish the educational objectives are as follows.

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The mechanical engineering and aerospace engineering programs offer broad technical backgrounds for students who may choose other engineering fields for advanced study.

Academic Regulations

Academic Honesty

The College of Engineering takes academic honesty and ethical behavior very seriously. Engineers are entrusted with the safety, health, and well being of the public. Students found guilty of academic dishonesty will be punished to the full extent permitted by the rules and regulations of UT Arlington. In particular, a student found guilty of a second offense by the Office of Student Judicial Affairs will be subject to dismissal from the College of Engineering

Academic Standing

To be in good academic standing within the MAE department, each mechanical engineering and aerospace engineering student must maintain a minimum 3-GPA calculation of 2.25 in the pre-professional program. Further, in the professional program, each student must maintain a minimum UTA cumulative GPA of 2.0 and a minimum major GPA of 2.0.

Advancement into Mechanical and Aerospace Engineering Professional Programs

Requirements for advancement into the Professional Programs in Mechanical Engineering and Aerospace Engineering are in accordance with those in the College of Engineering with the added stipulation that:

- Each student must complete all pre-professional courses stipulated under "Requirements for a Bachelor of Science Degree in Aerospace Engineering" or "Requirements for a Bachelor of Science Degree in Mechanical Engineering" with a minimum grade of C in each course and a minimum GPA of 2.25 on a 4.0 scale in each of three categories:
 - a. overall,
 - b. required math, science, and engineering courses, and
 - c. required MAE courses.
- Application to the Professional Program is to be made to the Undergraduate Advisor during the semester following completion of the last pre-professional course.
- No professional Mechanical and Aerospace Engineering course may be taken unless the student is admitted into the professional program or obtains the consent of the Undergraduate Advisor. Professional courses may be taken to fill out a schedule in the semester that the last pre-professional course is taken.
- Some professional Mechanical and Aerospace Engineering courses are offered only once a year. Students are urged to plan their course sequence schedules carefully to avoid delaying their graduation.

Additional Requirements

Requirements for the bachelor of science in mechanical engineering and bachelor of science in aerospace engineering are in accordance with those of the University and the College of Engineering with the added stipulation that:

- Each student must complete all professional courses stipulated under "Requirements for a Bachelor of Science Degree in Aerospace Engineering" or "Requirements for a Bachelor of Science Degree in Mechanical Engineering" with a minimum grade of C in each course.

- Each student must have a minimum UTA cumulative GPA of 2.0, and a minimum major GPA of 2.0. The major GPA includes all MAE courses in the degree plan.
- The College of Engineering requires that students who do not have two units of high school foreign language take six hours, in the same language, of modern or classical language courses in addition to the previously listed requirements.
- Mechanical Engineering and Aerospace Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Aerospace Engineering" or "Requirements for a Bachelor of Science Degree in Mechanical Engineering" along with ENGL 1301, Math 1426, Math 2425, Math 2326, Phys 1443 and Phys 1444, which are also required in the Pre-Professional program.
- After a student has begun the Mechanical Engineering or Aerospace Engineering professional program at UT Arlington, it is required that further professional courses be completed at UT Arlington.

Oral Communication and Computer Use Competency Requirements

Mechanical Engineering and Aerospace Engineering students will satisfy the Oral Communication Competency requirement by completing COMS 2302 PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING, and the Computer Use Competency requirement by completing MAE 2360 NUMERICAL ANALYSIS & PROGRAMMING.

Other Provisions

Refer to the College of Engineering section of this catalog for information concerning the following topics: (p. 425)

- Preparation in High School for Admission to the College of Engineering
- Admission to the College of Engineering
- Advising in the College of Engineering
- Admission into the Professional Program
- College of Engineering Academic Regulations
- Course Transfer Policies
- College of Engineering Probation
- Repeating Course Policy
- Modern and Classical Languages Requirement

Bachelor of Science in Aerospace Engineering (BSAE)

Academic requirements governing the Bachelor of Science in aerospace engineering. (p. 671)

Rapid advances in aerospace systems require the successful aerospace engineer to develop new concepts and bring them into reality as reliable, competitive, and environmentally acceptable products. Successful completion of a balanced study of basic science and engineering topics, further complemented by humanities, will ensure that graduates are well prepared to tackle tomorrow's challenges. The curriculum covers the broad areas of aerodynamics and fluid mechanics, propulsion and combustion, flight mechanics and controls, structural mechanics and material behavior, structural dynamics, and system design and optimization supplemented by appropriate laboratory experiences. The culmination of the curriculum is a vehicle design project. Students may broaden their education by choosing elective courses in a secondary field of interest or by taking a second bachelor's degree in mechanical engineering.

Requirements for a Bachelor of Science Degree in Aerospace Engineering

For a suggested course sequence, see the department web site: www.uta.edu/mae

Pre-Professional Courses

One of the following: ¹

UNIV 1131	STUDENT SUCCESS	1
ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	
MATH 1426	CALCULUS I	4
MAE 1140	PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING (This course is new for fall 2021)	1
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
CHEM 1465	CHEMISTRY FOR ENGINEERS	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
ENGL 1301	RHETORIC AND COMPOSITION I	3
EE 2320	CIRCUIT ANALYSIS	3

MAE 1106	INTRODUCTION TO AEROSPACE ENGINEERING	1
MAE 1312	ENGINEERING STATICS	3
MAE 1351	INTRODUCTION TO ENGINEERING DESIGN	3
MAE 2312	SOLID MECHANICS	3
MAE 2315	FLUID DYNAMICS	3
MAE 2323	DYNAMICS	3
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING	3
MAE 2381	EXPERIMENTAL METHODS AND MEASUREMENTS	3
MAE 3309	THERMAL ENGINEERING	3
MAE 3360	ENGINEERING ANALYSIS	3
Professional Courses ²		
MAE 3181	MATERIALS AND STRUCTURES LAB	1
MAE 3182	AERODYNAMICS AND FLUIDS LAB	1
MAE 3185	INTRODUCTION TO MECHATRONICS (This course is new for fall 2021)	1
MAE 3302	INCOMPRESSIBLE AERODYNAMICS	3
MAE 3303	COMPRESSIBLE FLOW	3
MAE 3304	ASTRONAUTICS I	3
MAE 3405	FLIGHT DYNAMICS	4
MAE 3306	FLIGHT PERFORMANCE, STABILITY & CONTROL	3
MAE 3315	AEROSPACE STRUCTURAL STATICS	3
MAE 3324	STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS	3
MAE 4310	INTRODUCTION TO AUTOMATIC CONTROL	3
MAE 4314	MECHANICAL VIBRATIONS	3
MAE 4321	AEROSPACE PROPULSION	3
MAE 4350	AEROSPACE VEHICLE DESIGN I	3
MAE 4151	AEROSPACE VEHICLE DESIGN II	1
Technical Electives: Approved engineering, science, or mathematics (3000 level or higher) ³		6
General Education Courses: Additional courses required for the aerospace engineering degree		
U. S. History electives: any courses which satisfy the University Core Curriculum requirements for U. S. History are accepted.		6
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture elective: any course which satisfies the University Core Curriculum requirements for Language, Philosophy and Culture is accepted.		3
Communication: COMS 2302		3
Creative arts elective: any course which satisfies the University Core Curriculum requirements for Creative Arts is accepted.		3
Social/behavioral elective: ECON 2305 or IE 2308		3
Total Hours		130

Total hours completed will depend upon prior preparation and academic qualifications.

- ¹ UNIV 1131 is required for students admitted as Freshman. ENGR 1101 is required for students admitted as Transfer.
- ² All pre-professional courses must be completed before enrolling in professional courses.
- ³ Technical electives must be approved in advance by the student's academic advisor. Normally, they are selected from the senior elective 4000 level courses in Mechanical and Aerospace Engineering.

Recommended Core Curriculum

Aerospace Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Aerospace Engineering" along with ENGL 1301, MATH 1426, MATH 2425, MATH 2326, PHYS 1443 and PHYS 1444, which are within the Pre-Professional Program. The university core curriculum allows each degree plan to designate a component area to satisfy three hours of the core requirement. For the aerospace engineering degree plan, the designated component area is Math and MATH 2326 is selected to satisfy the requirement. For more information, see University Core Curriculum. (p. 50)

Bachelor of Science in Mechanical Engineering (BSME)

Academic requirements governing the bachelor of science in mechanical engineering. (p. 671)

The mechanical engineer needs to be extremely versatile and can be found in a large variety of private and public sector organizations. He or she may be involved in product design and development, manufacturing, project management, power generation or other operations. Therefore, the mechanical engineering curriculum is broad-based and emphasizes fundamental engineering sciences and applications. Approximately equal emphasis is given to machine design, structural analysis, thermodynamics and energy, systems and control, and materials science. Classroom lectures are supplemented by laboratories. The student completes a capstone design project as the culmination of the undergraduate program.

Requirements for a Bachelor of Science Degree in Mechanical Engineering

For a suggested course sequence, see the department web site: www.uta.edu/mae

Pre-Professional Courses

One of the following: ¹ 1

UNIV 1131	STUDENT SUCCESS	
ENGR 1101	ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS	
MATH 1426	CALCULUS I	4
MAE 1140	PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING (This course is new for fall 2021)	1
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
CHEM 1465	CHEMISTRY FOR ENGINEERS	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
ENGL 1301	RHETORIC AND COMPOSITION I	3
EE 2320	CIRCUIT ANALYSIS	3
MAE 1107	INTRODUCTION TO MECHANICAL ENGINEERING	1
MAE 1312	ENGINEERING STATICS	3
MAE 1351	INTRODUCTION TO ENGINEERING DESIGN	3
MAE 2312	SOLID MECHANICS	3
MAE 2323	DYNAMICS	3
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING	3
MAE 2381	EXPERIMENTAL METHODS AND MEASUREMENTS	3
MAE 3310	THERMODYNAMICS I	3
MAE 3324	STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS	3
MAE 3360	ENGINEERING ANALYSIS	3

Professional Courses ²

MAE 3181	MATERIALS AND STRUCTURES LAB	1
MAE 3183	MEASUREMENTS LABORATORY II	1
MAE 3185	INTRODUCTION TO MECHATRONICS (This course is new for fall 2021)	1
MAE 3242	MECHANICAL DESIGN I	2
MAE 3311	THERMODYNAMICS II	3
MAE 3313	FLUID MECHANICS	3
MAE 3314	HEAT TRANSFER	3
MAE 3318	KINEMATICS AND DYNAMICS OF MACHINES	3
MAE 3319	DYNAMIC SYSTEMS MODELING AND SIMULATION	3
MAE 3344	INTRODUCTION TO MANUFACTURING ENGINEERING	3
MAE 4188	DESIGN PROJECT LABORATORY II	1
MAE 4287	DESIGN PROJECT I	2
MAE 4310	INTRODUCTION TO AUTOMATIC CONTROL	3
MAE 4342	MECHANICAL DESIGN II	3
MAE 4344	COMPUTER-AIDED ENGINEERING	3

Technical Electives: Approved engineering, science, or mathematics (3000 level or higher) ³ 9

General Education Courses: Additional courses required for the mechanical engineering degree

U. S. History electives: any courses which satisfy the University Core Curriculum requirements for U. S. History are accepted.	6
POLS 2311 GOVERNMENT OF THE UNITED STATES	3
POLS 2312 STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture elective: any course which satisfies the University Core Curriculum requirements for Language, Philosophy and Culture is accepted.	3
Communication: COMS 2302	3
Creative arts elective: any course which satisfies the University Core Curriculum requirements for Creative Arts is accepted.	3
Social/behavioral elective: ECON 2305 or IE 2308	3
Total Hours	130

Total hours completed will depend upon prior preparation and academic qualifications.

- ¹ UNIV 1131 is required for students admitted as Freshman. ENGR 1101 is required for students admitted as Transfer.
- ² All pre-professional courses must be completed before enrolling in professional courses.
- ³ Technical electives must be approved in advance by the student's academic advisor. Normally, they are selected from the senior elective 4000 level courses in Mechanical and Aerospace Engineering.

Recommended Core Curriculum

Mechanical Engineering students will satisfy the university core curriculum requirement by completing all General Education courses specified under "Requirements for a Bachelor of Science Degree in Mechanical Engineering" along with ENGL 1301, MATH 1426, MATH 2425, MATH 2326, PHYS 1443 and PHYS 1444, which are within the Pre-Professional Program. The university core curriculum allows each degree plan to designate a component area to satisfy three hours of the core requirement. For the mechanical engineering degree plan, the designated component area is Math and MATH 2326 is selected to satisfy the requirement. For more information, see University Core Curriculum. (p. 50)

Mechanical and Aerospace Engineering Double Major

A student wishing to obtain a double major in mechanical engineering and aerospace engineering under a single degree, simultaneously prior to graduation, can integrate the courses for the double major requirement throughout his/her undergraduate career at UT Arlington. When applying for graduation, a student should note on the application that he/she will be completing an additional major. One diploma is issued and both majors are recorded on a student's transcript and diploma. The student is encouraged to consult with the Undergraduate Advisor on the appropriate course of study.

Fast Track Program to *Master's Degree in Aerospace Engineering*

Overview: The Fast Track Program enables outstanding senior undergraduate Aerospace Engineering students to receive dual undergraduate/graduate course credit for six or nine hours of coursework. These designated graduate courses satisfy both bachelor's and master's degree requirements.

Application: Interested undergraduate students should apply to the appropriate program when they are within 30 hours of completing their bachelor's degrees. They must have completed at least 30 hours at UT Arlington, achieving a GPA of at least 3.0 in those courses, and have an overall GPA of 3.0 or better in all college courses. Additionally, they must have completed the Aerospace Engineering Foundation courses listed below with a minimum GPA of 3.3 in these courses, and a grade of B or better in each course.

Aerospace Engineering Foundation Courses Required for Admission into the Fast Track Program:

MAE 3302	INCOMPRESSIBLE AERODYNAMICS	3
MAE 3303	COMPRESSIBLE FLOW	3
MAE 3315	AEROSPACE STRUCTURAL STATICS	3
MAE 3405	FLIGHT DYNAMICS	4
MAE 3306	FLIGHT PERFORMANCE, STABILITY & CONTROL	3
Total Hours		16

Requirements: AE Fast Track students must meet the following requirements to complete the program.

1. **Course requirements:** Complete a minimum of 6 and maximum of 9 hours of graduate coursework from the list of core courses for AE Master's students. The graduate courses may be used in the undergraduate program only as follows. AE 5326 AIR-BREATHING PROPULSION may replace MAE 4321 AEROSPACE PROPULSION, AE 5311 STRUCTURAL DYNAMICS may replace MAE 4314 MECHANICAL VIBRATIONS, and up to two AE Master's core courses, other than AE 5326 and AE 5311, may replace technical electives. (See Graduate catalog (<http://catalog.uta.edu/engineering/mechanical/graduate/#masterstext>) for the list of approved core courses.)

2. Grade requirements: Earn B or better in all graduate courses intended for both undergraduate and graduate credit.

3. GPA: Maintain UTA cumulative GPA of 3.0 or above.

Requirements to Continue in the AE Fast Track Program. If at any time an undergraduate Fast Track student falls below the 3.000 GPA requirements or earns a grade below B in a graduate course intended for both undergraduate and graduate credit, he or she will be obliged to leave the program immediately and will not be allowed to take additional graduate courses as an undergraduate. If a student does not complete at least two graduate courses with B or better, any graduate credits earned with a grade of C or better will be applied only to the undergraduate degree. Graduate courses used for credit in the undergraduate program cannot be applied towards a graduate degree.

Benefits: Students who successfully complete the Fast Track Program will be automatically admitted to Graduate School. They will not be required to take the Graduate Record Examination, complete an application for admission to the Graduate School or pay an application fee. For more details about the specifics of the Fast Track program contact the Undergraduate Advisor or Graduate Advisor in Aerospace Engineering or Mechanical Engineering.

Course Enrollment Clearance: Students must obtain clearance each semester from the Graduate Advisor and Undergraduate Advisor for all graduate courses that will be used to satisfy undergraduate degree requirements.

Time Limit to Begin Graduate Studies: A student may take off one long semester plus a summer after receiving the undergraduate degree before starting as a graduate student. An application for graduate admission must be completed and approved before post-baccalaureate studies can begin. Students returning after longer delays will have to apply as a regular student, completing a full application, paying all fees and meeting all admission requirements.

Fast Track Program to Master's Degree in Mechanical Engineering for Mechanical Engineering Undergraduate Students

Overview: The Fast Track Program enables outstanding senior undergraduate Mechanical Engineering students to receive dual undergraduate / graduate course credit for up to nine hours of coursework. These designated graduate courses satisfy both ME bachelor's and ME master's degree requirements.

Application: Interested undergraduate students should apply to the program when they are within 30 hours of completing their bachelor's degrees. They must have completed at least 30 hours at UT Arlington, achieving a GPA of at least 3.0 in those courses, and have an overall GPA of 3.0 or better in all college courses. Additionally, they must have completed the Mechanical Engineering Foundation courses listed below with a minimum GPA of 3.3 in these courses, and a grade of B or better in each course.

Mechanical Engineering Foundation Courses Required for Admission into the Fast Track Program:

MAE 3242	MECHANICAL DESIGN I	2
MAE 3314	HEAT TRANSFER	3
MAE 3318	KINEMATICS AND DYNAMICS OF MACHINES	3
MAE 3319	DYNAMIC SYSTEMS MODELING AND SIMULATION	3
Total Hours		11

Requirements: ME Fast Track students must meet the following requirements to complete the program.

1. Course requirements: Complete a minimum of 6 and maximum of 9 hours of graduate coursework from the list of core courses for ME Master's students. The graduate courses may be used in the undergraduate program only as follows. ME 5303 CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS may replace MAE 4310 INTRODUCTION TO AUTOMATIC CONTROL, and up to two ME Master's core courses, other than ME 5303, may replace technical electives. (See Graduate catalog (<http://catalog.uta.edu/engineering/mechanical/graduate/#masterstext>) for the list of approved core courses.)

2. Grade requirements: Earn B or better in all graduate courses intended for both undergraduate and graduate credit.

3. GPA: Maintain UTA cumulative GPA of 3.0 or above.

Requirements to Continue in the ME Fast Track Program. If at any time an undergraduate Fast Track student falls below the 3.000 GPA requirements or earns a grade below B in a graduate course intended for both undergraduate and graduate credit, he or she will be obliged to leave the program immediately and will not be allowed to take additional graduate courses as an undergraduate. If a student does not complete at least two graduate courses with B or better, any graduate credits earned with a grade of C or better will be applied only to the undergraduate degree. Graduate courses used for credit in the undergraduate program cannot be applied towards a graduate degree.

Benefits: Students who successfully complete the Fast Track Program will be automatically admitted to Graduate School. They will not be required to take the Graduate Record Examination, complete an application for admission to the Graduate School or pay an application fee. For more details about the specifics of the Fast Track program contact the Undergraduate Advisor or Graduate Advisor in Aerospace Engineering or Mechanical Engineering.

Course Enrollment Clearance: Students must obtain clearance each semester from the Graduate Advisor and Undergraduate Advisor for all graduate courses that will be used to satisfy undergraduate degree requirements.

Time Limit to Begin Graduate Studies: A student may take off one long semester plus a summer after receiving the undergraduate degree before starting as a graduate student. An application for graduate admission must be completed and approved before post-baccalaureate studies can begin. Students returning after longer delays will have to apply as a regular student, completing a full application, paying all fees and meeting all admission requirements.

Fast Track Program to *Master's Degree in Materials Science and Engineering* for Mechanical Engineering Undergraduate Students

The Fast Track Program enables outstanding senior undergraduate Mechanical Engineering students to receive dual ME undergraduate / MSE graduate course credit for up to nine hours of coursework. These designated graduate courses satisfy both bachelor's and master's degree requirements if they are completed within the last 15 hours of the undergraduate degree program. Students should refer to the Materials Science and Engineering section of the graduate catalog for detailed requirements of a master's degree in Materials Science and Engineering.

Interested undergraduate students should apply to the program when they are within 30 hours of completing their bachelor's degrees. They must have completed at least 30 hours at UT Arlington, achieving a GPA of at least 3.000 in those courses, and have an overall GPA of 3.000 or better in all college courses. Additionally, they must have completed the specific set of undergraduate foundation courses that are listed below with a minimum GPA of 3.250 in these courses, and a grade of B or better in each course.

Mechanical Engineering Foundation Courses Required for Admission into the Fast Track Program:

MAE 3314	HEAT TRANSFER	3
MAE 3324	STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS	3
MAE 3242	MECHANICAL DESIGN I	2
MAE 3344	INTRODUCTION TO MANUFACTURING ENGINEERING	3
Total Hours		11

Fast Track students may choose 3 graduate courses from the recommended course list to serve as technical electives in the undergraduate degree plan. Other appropriate materials oriented graduate courses may be used if approved by both the student's Undergraduate ME and Graduate MSE Advisors. MSE 5300 INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING and independent project courses (for example MSE 5391 ADVANCED STUDIES IN MATERIALS SCIENCE AND ENGINEERING) cannot be used toward the fast track degree.

Recommended graduate courses include:

ME 5304 ADVANCED MECHANICS OF MATERIALS
 ME 5314 FRACTURE MECHANICS IN STRUCTURAL DESIGN
 ME 5315 FUNDAMENTALS OF COMPOSITES
 MSE 5312 MECHANICAL BEHAVIOR OF MATERIALS
 MSE 5320 NANOSCALE MATERIALS
 MSE 5321 PHASE TRANSFORMATIONS OF MATERIALS
 MSE 5330 CORROSION SCIENCE AND ENGINEERING
 MSE 5339 Failure Analysis and Reliability Engineering
 MSE 5347 POLYMER MATERIALS SCIENCE
 MSE 5353 FUNDAMENTALS OF SUSTAINABLE ENERGY
 MSE 5355 MATERIALS FOR ENERGY
 MSE 5343 NANOBIO TECHNOLOGY
 MSE 5351 CURRENT TOPICS IN NANOTECHNOLOGY
 MSE 5352 SOLAR ENERGY MATERIALS AND DEVICES
 MSE 5355 MATERIALS FOR ENERGY

Good Standing: Students must maintain an overall GPA of at least 3.000 and must earn grades of B or better in all Fast Track-approved courses that will be used to satisfy undergraduate and graduate degree requirements. Students must enroll in at least 2 graduate courses and earn a B or better in all graduate courses taken prior to receiving their bachelor's degree.

If a student does not complete the two required graduate courses or fails to make adequate grades, he or she will be obliged to leave the program and apply as a regular graduate student after receiving the bachelor's degree. Any graduate credits earned will be applied only to the undergraduate degree. Graduate courses used for credit in the undergraduate program cannot be applied towards a graduate degree.

Course Enrollment Clearance: Students must obtain clearance each semester from the Graduate Advisor to take graduate courses that will be used to satisfy degree requirements. The advisor will monitor student progress carefully and advise accordingly.

Time Limit to Begin Graduate Studies: A student may take off one long semester plus a summer after receiving the undergraduate degree before starting as a graduate student. An application for graduate admission must be completed and approved before post-baccalaureate studies can begin. Students returning after longer delays will have to apply as a regular student, completing a full application, paying all fees and meeting all admission requirements.

MINOR IN AEROSPACE ENGINEERING

To receive a minor in Aerospace Engineering (AE), a student must:

1. complete 18 hours of course work as listed below,
2. complete all prerequisites for courses used to satisfy the AE Minor,
3. complete all courses used to satisfy AE Minor requirements with a grade of C or better, and
4. complete at least 9 hours of the AE Minor course requirements in residence at UTA with approval in advance by the MAE Undergraduate Advisor.

Additional requirements. To pursue an AE Minor, a student must be in compliance with the AE 3-GPA calculation requirements for all completed courses that are part of the BSAE program and be in compliance with the COE 3-attempt rule, including prerequisite courses.

9 hours required:

9

MAE 2312	SOLID MECHANICS
MAE 2323	DYNAMICS
MAE 2315	FLUID DYNAMICS
or MAE 3313	FLUID MECHANICS

Take one course from each of the following three core areas:

Fluid Mechanics, Aerodynamics and Propulsion 3

MAE 3302	INCOMPRESSIBLE AERODYNAMICS
MAE 3303	COMPRESSIBLE FLOW
MAE 4321	AEROSPACE PROPULSION

Solid Mechanics and Structures 3

MAE 3315	AEROSPACE STRUCTURAL STATICS
MAE 4314	MECHANICAL VIBRATIONS
or MAE 3316	AEROSPACE STRUCTURAL DYNAMICS

Flight Mechanics and Controls 3 or 4

MAE 3304	ASTRONAUTICS I
MAE 3405	FLIGHT DYNAMICS
MAE 3306	FLIGHT PERFORMANCE, STABILITY & CONTROL

Total Hours 18-19

MINOR IN MECHANICAL ENGINEERING

To receive a minor in Mechanical Engineering (ME), a student must:

1. complete 18 hours of course work as listed below,
2. complete all prerequisites for courses used to satisfy the ME Minor,
3. complete all courses used to satisfy ME Minor with a grade of C or better,
4. complete at least 9 hours of the ME Minor course requirements in residence at UTA with approval in advance by the MAE Undergraduate Advisor.

Additional requirements. To pursue an ME Minor, a student must be in compliance with the ME 3-GPA calculation requirements for all completed courses that are part of the BSME program and be in compliance with the COE 3-attempt rule, including prerequisite courses.

9 hours required:

9

MAE 2312	SOLID MECHANICS
MAE 2323	DYNAMICS
MAE 3310	THERMODYNAMICS I

9 hours of coursework selected from the following:

9

MAE 3242	MECHANICAL DESIGN I
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MAE 3311	THERMODYNAMICS II
MAE 3313	FLUID MECHANICS
MAE 3314	HEAT TRANSFER
MAE 3318	KINEMATICS AND DYNAMICS OF MACHINES
MAE 3319	DYNAMIC SYSTEMS MODELING AND SIMULATION
MAE 3324	STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS
MAE 3344	INTRODUCTION TO MANUFACTURING ENGINEERING
MAE 4310	INTRODUCTION TO AUTOMATIC CONTROL (BSAE majors only)
MAE 4342	MECHANICAL DESIGN II
MAE 4344	COMPUTER-AIDED ENGINEERING (BSAE majors only)

Total Hours

18

Certificate in Automotive Engineering

Program Objective and Requirements

The University of Texas at Arlington is pleased to offer a Certificate in Automotive Engineering through the Arnold E. Petsche Center for Automotive Engineering. This certificate confirms the student's commitment to automotive engineering and the learning experience gained from being a contributing team member of a student design competition. The Certificate in Automotive Engineering will be awarded concurrently with an undergraduate degree. The completed certificate program of study will be forwarded to the Office of Admissions, Records and Registration for verification and notation on the student's transcript. A formal certificate will be prepared for the student by the university and recognition will be given at the graduation ceremonies.

The Certificate in Automotive Engineering is offered through the Mechanical and Aerospace Engineering Department.

Admission Requirement

The certificate is open to all degree-seeking students.

Academic Requirements

The Certificate in Automotive Engineering requires 15 credit hours of appropriate coursework as well as two semesters of practical training experience. All courses must be passed with a grade of C or better to apply to the Certificate in Automotive Engineering.

At least 9 hours from the following list of courses.

EE 2303	ELECTRONICS I
EE 2341	DIGITAL CIRCUITS AND SYSTEMS
EE 2347	MATHEMATICAL FOUNDATIONS OF ELECTRICAL ENGINEERING
EE 3346	CIRCUIT ANALYSIS II (This course is new for fall 2021)
MAE 2312	SOLID MECHANICS
MAE 2315	FLUID DYNAMICS
MAE 3313	FLUID MECHANICS
MAE 3309	THERMAL ENGINEERING
MAE 3310	THERMODYNAMICS I
MAE 3315	AEROSPACE STRUCTURAL STATICS
MAE 3318	KINEMATICS AND DYNAMICS OF MACHINES

At least 3 hours from the following:

MAE 4357	AUTOMOTIVE ENGINEERING
MAE 4358	RACECAR ENGINEERING

Two courses from the following (courses may be repeated): ¹

MAE 2010	AUTOMOTIVE ENGINEERING PRACTICUM I
MAE 4010	AUTOMOTIVE ENGINEERING PRACTICUM II

¹ MAE 2010 and 4010 are Engineering Practicum courses that have no academic credit and do not require a tuition fee. Students must gain approval to enroll in these courses from the faculty of the Arnold E. Petsche Center for Automotive Engineering.

Certificate in Unmanned Vehicle Systems

Program Objective

The Certificate in UVS (Unmanned Vehicle Systems) is offered through the Mechanical and Aerospace Engineering Department and will educate undergraduate students in the knowledge and skills required for design, development and operation of UVS including UAS (Unmanned Aircraft

Systems), UGS (Unmanned Ground Systems) and UMS (Unmanned Maritime Systems). The certificate program will emphasize the common aspects of UVS such as sensors, actuators, communications, and more importantly, decision-making capabilities (autonomy), while also covering development of domain-specific mobile platforms such as airplane, rotorcraft, Ackerman steering car and boat. This program aims at the dual goal of providing the UVS industry with a knowledgeable, locally available workforce and developing career opportunities for its participants. To this end, the Certificate in UVS will be awarded concurrently with an undergraduate degree.

Admission Requirements

The certificate is open to all degree-seeking students. Students should see the certificate advisor for admission to the program.

Academic Requirements

Students must complete 15 hours of coursework as outlined below. All courses used to satisfy the certificate requirements must be passed with a grade of B or better.

Required courses:

6

MAE 4378	INTRODUCTION TO UNMANNED VEHICLE SYSTEMS
MAE 4379	UNMANNED VEHICLE SYSTEM DEVELOPMENT

Nine credit hours from the following list:

9

MAE (Mechanical and Aerospace Engineering) Courses:

MAE 2312	SOLID MECHANICS
MAE 2315	FLUID DYNAMICS
or MAE 3313	FLUID MECHANICS
MAE 3309	THERMAL ENGINEERING
or MAE 3310	THERMODYNAMICS I
MAE 3315	AEROSPACE STRUCTURAL STATICS
MAE 3318	KINEMATICS AND DYNAMICS OF MACHINES
MAE 3405	FLIGHT DYNAMICS
MAE 3306	FLIGHT PERFORMANCE, STABILITY & CONTROL
MAE 4315	INTRODUCTION TO COMPOSITES
MAE 3319	DYNAMIC SYSTEMS MODELING AND SIMULATION
MAE 4301	SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING ²
MAE 4310	INTRODUCTION TO AUTOMATIC CONTROL
MAE 4314	MECHANICAL VIBRATIONS
MAE 3242	MECHANICAL DESIGN I
MAE 4350	AEROSPACE VEHICLE DESIGN I
MAE 4307	FINITE ELEMENT METHODS
MAE 4345	INTRODUCTION TO ROBOTICS

EE (Electrical Engineering) Courses:

EE 2341	DIGITAL CIRCUITS AND SYSTEMS
EE 3318	ANALOG AND DIGITAL SIGNAL PROCESSING
EE 3317	LINEAR SYSTEMS
EE 4314	CONTROL SYSTEMS
EE 4318	DIGITAL SIGNAL PROCESSING
EE 4315	INTRODUCTION TO ROBOTICS
EE 4330	FUNDAMENTALS OF TELECOMMUNICATIONS SYSTEMS

CSE (Computer Science and Engineering) Courses:

CSE 3313	INTRODUCTION TO SIGNAL PROCESSING
CSE 3442	EMBEDDED SYSTEMS I
CSE 4342	EMBEDDED SYSTEMS II
CSE 4308	ARTIFICIAL INTELLIGENCE
CSE 4360	AUTONOMOUS ROBOT DESIGN AND PROGRAMMING

IE (Industrial Engineering) Courses:

IE 2305	COMPUTER APPLICATIONS IN INDUSTRIAL ENGINEERING
IE 3314	ENGINEERING RESEARCH METHODS
IE 4325	AUTOMATION AND ROBOTICS I

IE 4339	PRODUCT DEVELOPMENT, PRODUCIBILITY AND ENTREPRENEURSHIP
ENGR (Engineering) Courses:	
ENGR 4302	ENGINEERING ENTREPRENEURSHIP
PHYS (Physics) Courses:	
PHYS 2321	COMPUTATIONAL PHYSICS
PHYS 3445	OPTICS
PHYS 3455	ELECTRONICS
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS
PHYS 4319	ADVANCED MECHANICS
Total Hours	15

² Special topics courses must be approved by the certificate advisor.

COURSES

MAE 1104. INTRODUCTION TO ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Students will become familiar with engineering and its many sub-fields, ethical responsibilities, creativity, and design.

MAE 1105. INTRODUCTION TO MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Opportunities are provided to develop skills in oral and written communication and department specific material. Case studies are presented and analyzed. Prerequisite: C or better in ENGR 1250 (or concurrent enrollment), or C or better in ENGR 1300 or MAE 1104.

MAE 1106. INTRODUCTION TO AEROSPACE ENGINEERING. 1 Hour.

An introduction to human flight and to the field of aerospace engineering through a combined theoretical and hands-on approach. Topics covered include history of flight and aerospace engineering and introductions to aerostatics and aerodynamics, aerospace structures, stability and control, and propulsion. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment).

MAE 1107. INTRODUCTION TO MECHANICAL ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Opportunities are provided to develop skills in oral and written communication, in engineering design teamwork, as well as in department-specific material. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment).

MAE 1140. PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Preparation for advanced study in mechanical and aerospace engineering curricula. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment); or student group.

MAE 1312. ENGINEERING STATICS. 3 Hours. (TCCN = ENGR 2301)

A study of forces and force systems, resultants and components of force systems, forces due to friction, conditions of equilibrium, forces acting on members of trusses and frame structures, centroids and moments of inertia. Vector and index notation introduced. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250), MATH 1426 (or HONR-SC 1426), and PHYS 1443; or student group.

MAE 1351. INTRODUCTION TO ENGINEERING DESIGN. 3 Hours.

Foundational course in product design and manufacturing using computer-based methodologies. 3D parametric solid modeling of parts and assemblies. Technical sketching, and ASME Y14 engineering drawing standards. Industrial practices for product design and fabrication. Introduction to 3D product analysis tools. Prerequisite: C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment) or HONR-SC 1426 (or concurrent enrollment); or student group.

MAE 2000. UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

MAE 2010. AUTOMOTIVE ENGINEERING PRACTICUM I. 0 Hours.

Practical design experience as full team member of automotive design competition team. Prerequisite: Permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

MAE 2312. SOLID MECHANICS. 3 Hours.

The relationship between stresses and strains in elastic bodies and the tension, compression, shear, bending, torsion, and combined loadings which produce them. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250) and MAE 1312; or student group.

MAE 2315. FLUID DYNAMICS. 3 Hours.

Introduction to Fluid Dynamics and low speed aerodynamics; fluid properties; dimensional analysis; conservation equations in integral and differential form; potential flow theory and viscous flow. Prerequisites: C or better in each of the following, MAE 1106, MAE 2323 (or concurrent enrollment), MAE 3309 (or concurrent enrollment) or MAE 3310 (or concurrent enrollment), and MAE 3360 (or concurrent enrollment); or student group.

MAE 2323. DYNAMICS. 3 Hours. (TCCN = ENGR 2302)

The relation between forces acting on particles, systems of particles and rigid bodies, and the changes in motion produced. Review of kinematics and vector analysis, Newton's Laws, energy methods, methods of momentum, inertia tensor and Euler's equations of motion. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250), MAE 1312 and MATH 2425 (or HONR-SC 2425); or student group.

MAE 2360. NUMERICAL ANALYSIS & PROGRAMMING. 3 Hours.

Utilization of digital computers in mechanical and aerospace engineering. Computational algorithms and their representation in FORTRAN, C, and Matlab. Introduction to linear algebra and numerical methods. Prerequisite: C or better in MATH 2425 (or HONR-SC 2425) (or concurrent enrollment); or student group.

MAE 2381. EXPERIMENTAL METHODS AND MEASUREMENTS. 3 Hours.

Introduction to data analysis, incorporating statistics and probability, design and planning of engineering experiments for error prediction and control. Measurement and instrumentation, basic instruments, their calibration and use. Prerequisite: C or better in each of the following, MAE 1351 and MATH 2425 (or HONR-SC 2425) and PHYS 1443 (or HONR-SC 1443); or student group.

MAE 2391. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Special problems in mechanical and aerospace engineering for preprofessional students in mechanical or aerospace engineering. Prerequisite: Instructor permission.

MAE 3000. UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good academic standing and permission of instructor. May be taken a maximum of 3 times.

MAE 3181. MATERIALS AND STRUCTURES LAB. 1 Hour.

Experiments to study materials behavior and deformation of structural elements. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2381 and C or better in MAE 3315 (or concurrent enrollment) or MAE 3242 (or concurrent enrollment); or student group.

MAE 3182. AERODYNAMICS AND FLUIDS LAB. 1 Hour.

Wind tunnel experiments to study flow phenomena of aerodynamics interest, including scale testing of airfoils, wings, and aircraft. Prerequisite: C or better in each of the following, MAE 2381, MAE 3302 (or concurrent enrollment), and MAE 3303 (or concurrent enrollment); or student group.

MAE 3183. MEASUREMENTS LABORATORY II. 1 Hour.

Fundamental measurement techniques and experimental data analysis in mechanical engineering in the fields of thermal, fluid, structures, design, and dynamic systems. Introduction to sensor calibration, digital data acquisition, uncertainty analysis, and report writing. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2381, MAE 3314, and MAE 3319; or student group.

MAE 3185. INTRODUCTION TO MECHATRONICS. 1 Hour.

Project based introduction to the application of software and hardware required to build functioning electromechanical systems. Integrates the theory of electrical circuits, electromechanics, electronics, mechanics, and mechanical devices, along with computer and microprocessor programming and the software-hardware interface, for practical applications. Prerequisite: Professional AE or ME program and C or better in each of MAE 2360, MAE 2381, MAE 3360 and EE 2320; or student group.

MAE 3242. MECHANICAL DESIGN I. 2 Hours.

The overall nature of design as a process is presented along with various models, methods, techniques, and tools for the various phases of the process provide the student with an excellent understanding of how to design. Students learn to design mechanical components based on stress/deflection and the associated failure theories. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, and MAE 3324; or student group.

MAE 3302. INCOMPRESSIBLE AERODYNAMICS. 3 Hours.

Introduction to and application of the methods used to determine the low speed aerodynamic forces on aerodynamic components such as wings and airfoils. Topics include potential flow theory for lifting flows; airfoil and finite wing theory; panel and vortex-lattice methods. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2315, MAE 2323, MAE 3309 (or MAE 3310), and MAE 3360; or student group.

MAE 3303. COMPRESSIBLE FLOW. 3 Hours.

Fundamental thermodynamic concepts of compressible flow, isentropic flow, normal and oblique shock waves; expansion waves; quasi-one dimensional flows within nozzles and diffusers, linearized compressible flow theory, the method of characteristics and supersonic nozzle design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following MAE 2315, MAE 2323, MAE 3309 (or MAE 3310), and MAE 3360; or student group.

MAE 3304. ASTRONAUTICS I. 3 Hours.

Introduction to astronautics, the solar system, and the two-body problem. Orbit shaping and orbit transfers. Patched conic approximations for interplanetary transfers. Introduction to the three-body problem and relative motion. Rigid spacecraft equation of motion. Active and passive attitude stabilization techniques for spacecraft. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 2323, MAE 2360, and MAE 3360; or student group.

MAE 3306. FLIGHT PERFORMANCE, STABILITY & CONTROL. 3 Hours.

Review of aerodynamics. Introduction to aircraft performance and the assessment of aircraft static stability and control characteristics. Performance topics covered include cruise, climb, gliding flight, turns, range and endurance. Static stability and control topics covered include longitudinal, lateral and directional stability and control power calculations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 3302 and MAE 3303.

MAE 3309. THERMAL ENGINEERING. 3 Hours.

Basic concepts and definitions, properties of pure substances, work and heat, first law of thermodynamics, second law of thermodynamics, entropy, and introduction to conductive, convective, and radiative transfer. Prerequisite: Must be in an EE or MAE department degree program and C or better in each of the following, CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment); MATH 2425 (or HONR-SC 2425) and PHYS 1444; or student group.

MAE 3310. THERMODYNAMICS I. 3 Hours.

Basic concepts and definitions, properties of pure substances, work and heat, first law of thermodynamics, second law of thermodynamics, entropy, thermodynamics of gases, vapors, and liquids in various nonflow and flow processes, and irreversibility and availability. Prerequisite: Must be in an MAE department degree plan and C or better in each of the following, CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment); MAE 1312 (or concurrent enrollment), MATH 2425 (or HONR-SC 2425), and PHYS 1444; or student group.

MAE 3311. THERMODYNAMICS II. 3 Hours.

Availability, power, refrigeration and heat pump cycles (both gas and vapor), property relations and equations of state, ideal gas mixtures, mixtures of gases and vapors, psychrometrics, adiabatic flame temperature, thermochemical equilibrium, and compressible flow. Emphasis is on applying these topics to thermal systems design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3313 (or concurrent enrollment) and MAE 3310; or student group.

MAE 3313. FLUID MECHANICS. 3 Hours.

Fundamental concepts of fluid mechanics leading to the development of both the integral and differential forms of the basic conservation equations. Application of the integral conservation equations to engineering problems in fluid dynamics including buoyancy and other hydrostatics problems. Dimensional analysis and similitude are also discussed. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2323, MAE 2360, MAE 3360, and MAE 3310 (or concurrent enrollment); or student group.

MAE 3314. HEAT TRANSFER. 3 Hours.

Topics cover the fundamental laws of heat and mass transfer, including steady and unsteady conduction, forced and free convection, and radiation as well as heat transfer in phase change. Applications of heat transfer to thermal systems design are included. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313 or C or better in MAE 3302.

MAE 3315. AEROSPACE STRUCTURAL STATICS. 3 Hours.

Overview of aircraft basic structural elements and materials; introduction to elasticity; equations of equilibrium; constitutive equations of isotropic solids; bending and torsion analysis of thin-walled beams; flexure shear of thin-walled beams with stringer reinforcement; introduction to fatigue and fracture analysis; failure criteria; energy method to find strain energy release rate; elastic column buckling. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2312; or student group.

MAE 3316. AEROSPACE STRUCTURAL DYNAMICS. 3 Hours.

Harmonic and periodic motion including both damped and undamped free and forced vibration. Single- and multi-degree-of-freedom discrete systems. Vibration of continuous systems. Introduction of finite element method for structural dynamics. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, MAE 3360, and MATH 3330; or student group.

MAE 3318. KINEMATICS AND DYNAMICS OF MACHINES. 3 Hours.

The motion and interaction of linkage and mechanisms. Fundamental concepts of kinematics and dynamics applied to the determination of degree of freedom mechanisms and forces acting on joints of mechanisms. Specific mechanisms and applications such as multi-body mechanisms, linkage synthesis, cam design, and balancing. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2323, or student group.

MAE 3319. DYNAMIC SYSTEMS MODELING AND SIMULATION. 3 Hours.

Introduction to modeling and prediction of behavior of engineering systems. Analytic and numerical simulation, state-space differential equations, and Laplace transform methods. Effects of physical characteristics of system elements on system design and dynamic performance. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3314 (or concurrent enrollment), EE 2320, and MATH 3330; or student group.

MAE 3324. STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Crystal structure and defects in materials. Diffusion, phase diagrams and phase transformations in metallic systems. The inter relationships between processing, structure, and properties of engineering materials with emphasis on the mechanical behavior of metals, polymers, and composite materials. Prerequisites: Must be in an MAE department degree program and C or better in each of the following, CHEM 1465 (or CHEM 1441 and CHEM 1442), MAE 2312 (or concurrent enrollment), and PHYS 1444; or student group.

MAE 3344. INTRODUCTION TO MANUFACTURING ENGINEERING. 3 Hours.

Introduction to casting, forming, machining, and joining processes for metals and nonmetals. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 3360. ENGINEERING ANALYSIS. 3 Hours.

Mathematical analysis with emphasis on solution techniques and engineering applications. Topics include: ordinary differential equations (ODE), Laplace Transform, numerical solutions of ODE, boundary value problems, Fourier series, Sturm-Liouville problem and vector calculus. Prerequisite: Must be in an MAE department degree program and C or better in each of the following, MATH 2326 and MAE 2360 (or concurrent enrollment); or student group.

MAE 3405. FLIGHT DYNAMICS. 4 Hours.

Derivation of equation of motion (EOM) of a flight vehicle. Trimmed flight condition analysis based on the nonlinear EOM. Linearization of EOM for a given trimmed flight condition. State-space and transfer-function representations of the linear EOM. Aircraft stability and dynamic performance analysis based on the linear EOM. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3406 (or concurrent enrollment) or MAE 3306 (or concurrent enrollment) and MATH 3330; or student group.

MAE 3406. FLIGHT PERFORMANCE & STABILITY. 4 Hours.

Classical Aerodynamics including potential flow theory for lifting flows; airfoil and finite wing theory; panel and vortex-lattice methods. Lift and drag buildup for aircraft. Aircraft performance analysis including cruise, climbing, gliding and turning flight, range and endurance. Aircraft longitudinal, lateral and roll stability and control. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 (or concurrent enrollment).

MAE 4000. UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good academic standing and permission of instructor. May be taken a maximum of 3 times.

MAE 4010. AUTOMOTIVE ENGINEERING PRACTICUM II. 0 Hours.

Practical design experience as full team member of automotive design competition team. Prerequisite: Permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

MAE 4151. AEROSPACE VEHICLE DESIGN II. 1 Hour.

Analysis and design of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, harmonization of individual design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Prerequisite: Must be in the professional ME or AE program and C or better in MAE 4350.

MAE 4188. DESIGN PROJECT LABORATORY II. 1 Hour.

The design project from MAE 4287 continued. The design is finalized, a physical model (prototype) is manufactured and tested. Redesign and retest is accomplished as desired. The final design is documented by written report and oral presentation. Exit survey forms and exit essays must be submitted to complete the requirements of this course. Prerequisite: Must be in the professional ME program and C or better in MAE 4287.

MAE 4191. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

MAE 4287. DESIGN PROJECT I. 2 Hours.

Team engineering approach to a design project that integrates engineering knowledge from several courses. Problem definition and creative synthesis of prospective design solutions. Engineering proposals, feasibility studies, trade-off studies, systems models and analysis, decision making, and engineering reports and presentations. Professionalism, ethics, and societal impact issues. Prerequisite: Must be in the professional ME program and C or better in MAE 4344 (or concurrent enrollment) and must be within two calendar semesters of graduation (possibly including an 11-week summer session). MAE 4287 and MAE 4188 must be taken in consecutive semesters.

MAE 4291. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 2 Hours.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

MAE 4301. SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Topics will vary from semester to semester depending on student interest and the availability of faculty. May be repeated, provided topics are different. Prior approval by the student's advisor required. Prerequisite: Must be in the professional ME or AE program and others that vary by topic.

MAE 4302. INTRODUCTION TO BEARING DESIGN AND LUBRICATION. 3 Hours.

The course introduces 1) selection principles and design guidelines for various rolling element bearings, 2) theory of liquid and gas lubrication, 3) various novel fluid film bearings used in modern high speed turbomachinery and energy systems, and 4) fundamental principles of rotordynamics. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313.

MAE 4304. ASTRONAUTICS II. 3 Hours.

The restricted three-body problem, the n-body problem, and approximations. Interplanetary transfers. Design considerations for both manned and unmanned interplanetary vehicles. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3304.

MAE 4305. FUNDAMENTALS OF ELECTRONIC PACKAGING. 3 Hours.

An introductory treatment of electronic packaging, from single chip to multichip, including materials, electrical design, thermal design, mechanical design, package modeling and simulation, processing considerations, reliability, and testing. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3309; or student group.

MAE 4306. COMPUTATIONAL TECHNIQUES FOR ELECTRONIC PACKAGING. 3 Hours.

Characterization of the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3309; or student group.

MAE 4307. FINITE ELEMENT METHODS. 3 Hours.

Static response of complex structures and continua; application to field problems; mesh generation; error estimation and adaptive refinement. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3242.

MAE 4310. INTRODUCTION TO AUTOMATIC CONTROL. 3 Hours.

Block diagram algebra, transfer functions, and stability criteria. The use of transient response, frequency response, and root locus techniques in the performance analysis, evaluation, and design of dynamic systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, (MAE 3314 and MAE 3319) or (MAE 3405 and EE 2320); or student group.

MAE 4312. CONTROL SYSTEMS COMPONENTS. 3 Hours.

The components used in mechanical, electronic, and fluid power control systems are studied. Modeling and performance analysis are used to help in the understanding of system behavior. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 4310.

MAE 4314. MECHANICAL VIBRATIONS. 3 Hours.

Harmonic and periodic motion including both damped and undamped free and forced vibration. Single and multi-degree-of-freedom discrete systems. Vibration of continuous systems. Introduction of finite element method for structural dynamics. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, MAE 3360, and MATH 3330; or student group.

MAE 4315. INTRODUCTION TO COMPOSITES. 3 Hours.

Composite classification, laminate coding, fiber and weight fractions of composite lamina; lamina constitutive equations; structural characteristics of [A], [B], [D] matrices; lamination theory; thermal and moisture induced load and moment; lamina stress analysis and failure prediction; issues in composite structural design. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2312 (or CE 2313); or student group.

MAE 4320. HYDRAULIC AND PNEUMATIC SYSTEMS. 3 Hours.

The fundamentals of fluid mechanics as applied to hydraulic and pneumatic hardware. Mathematical models of pumps, motors, pistons, accumulators, valves, and transmission lines. Design and analysis procedures for implementing total fluid power systems with high operating efficiencies and adequate dynamic response characteristics. Theory is supported by laboratory demonstrations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3313, MAE 4310, and MAE 3310; or student group.

MAE 4321. AEROSPACE PROPULSION. 3 Hours.

Introduction to rocket and air-breathing propulsion systems. Development of thrust and efficiency relations, mission requirements, rocket and gas turbine engine cycle analysis, off-design performance, component design and performance analysis, advanced propulsion system concepts. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 or C or better in each of MAE 3313 and MAE 3311.

MAE 4322. ROCKET PROPULSION. 3 Hours.

Examines chemical, nuclear, and electrical propulsion concepts. Development of design and performance analysis methods. Flight performance of rocket powered vehicles. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 (or MAE 3311).

MAE 4323. ENERGY CONVERSION. 3 Hours.

Thermodynamics as applied to thermo-mechanical systems such as power cycles, engines, turbines, refrigeration, and air-conditioning systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3311 and MAE 3314.

MAE 4324. POWER PLANT ENGINEERING. 3 Hours.

Fundamental thermodynamics and heat transfer principles behind design and optimization of power generation systems with significant emphasis on component and system design. This class will cover a number of power plant types, including coal/gas fired, hydroelectric, nuclear, and solar. Concepts learnt in this class prepare students for an engineering career in power plants, oil, gas and related industries. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3310 (or MAE 3309); or student group.

MAE 4325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3311 or MAE 3303.

MAE 4326. COMPUTATIONAL AERODYNAMICS I. 3 Hours.

Solution of engineering problems by finite-difference methods, emphasis on aerodynamic problems characterized by single linear and non-linear equations, introduction to and application of major algorithms used in solving aerodynamics problems by computational methods. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3303.

MAE 4327. HEATING, VENTILATION, AND AIR CONDITIONING. 3 Hours.

Application of engineering sciences to design of heating, venting, and air conditioning (HVAC) systems. Humidification and dehumidification, psychrometric charts, heat load, cooling load, degree-days, comfort zones, and air distribution systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3311 and MAE 3314.

MAE 4329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing (AM) are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for AM are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacture. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 1351 and MAE 3324; or student group.

MAE 4331. DESIGN FOR MANUFACTURING. 3 Hours.

The interaction between design and manufacturing stressed in terms of the design process, customer-focused quality, design specifications versus process capability and tolerances, and redesign for producibility. Topics include material and manufacturing process selection, tolerancing, quality function deployment (QFD), design for assembly (DFA), quality control techniques, reliability, and robust design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242 and MAE 3344.

MAE 4335. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include: kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3318.

MAE 4336. ADVANCED MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Concept of stress and strain; elementary dislocation theory. Deformation of single crystals; strengthening mechanisms including solid solution strengthening, and precipitation hardening. Fracture mechanics; microscopic aspects of fracture, fatigue, and creep of materials; design and processing of materials for improved mechanical properties. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 4338. FAILURE ANALYSIS. 3 Hours.

Theory and practice of techniques for determining modes of failure and fracture of engineering materials. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 4339. FRACTURE MECHANICS. 3 Hours.

Theory and applications of fracture mechanics. Stress analysis of cracks, crack-tip plasticity, fatigue crack growth, and stress corrosion cracking. Applicability to materials selection, structural design, failure analysis, and structural reliability. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3242.

MAE 4342. MECHANICAL DESIGN II. 3 Hours.

Analysis for the design and manufacture of basic mechanical elements, and their role in the design of machines. A brief review of relevant topics including stress/deflection, failure theories, and contact stress is initially conducted. It is then extended to the design of fundamental mechanical components including shafts, gears, springs, bearings, fasteners, and clutches/brakes. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242 and MAE 3318 (or concurrent enrollment).

MAE 4344. COMPUTER-AIDED ENGINEERING. 3 Hours.

A study of the principles of computer-aided engineering in mechanical and aerospace engineering. Applications in mechanical, structural, and thermal systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242, MAE 3314 (or concurrent enrollment), and MAE 3318.

MAE 4345. INTRODUCTION TO ROBOTICS. 3 Hours.

Overview of industrial robots. Study of principles of kinematics, dynamics, and control as applied to industrial robotic systems; robotic sensors and actuators; path planning; guidelines to robot arm design and selection; introduction to mechatronics; laboratory exercise in designing, building, and controlling a 3D-printed robotic manipulator. Prerequisite: Must be in the professional ME or AE program.

MAE 4347. HEAT EXCHANGER DESIGN. 3 Hours.

Design procedure system evaluation; design parameters in heat exchangers. The course considers various heat exchanger configurations and includes student design projects. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314.

MAE 4348. COOLING OF ELECTRONIC PACKAGES. 3 Hours.

The calculation of heat loads and temperature fields using different cooling techniques. Includes parameter evaluation and design studies. Prerequisite: Must be in the professional ME or AE program and C or better in, MAE 3314 (or MAE 3309); or student group.

MAE 4350. AEROSPACE VEHICLE DESIGN I. 3 Hours.

Analysis and design of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, integration of design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 3306 or MAE 3406 and MAE 3405.

MAE 4351. AEROSPACE VEHICLE DESIGN II. 3 Hours.

Analysis, design, and synthesis of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, integration of individual design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Also included will be economic, environmental, sustainability, manufacturability, safety, social and political considerations. Formal written and oral reports are required. Exit survey forms and exit essays must be submitted to complete the requirements of this course. Prerequisite: Must be in the professional AE program and C or better in MAE 4350.

MAE 4352. SPACE VEHICLE AND MISSION DESIGN. 3 Hours.

Space vehicle design; influence of space environment, astrodynamics, and atmospheric reentry. Space vehicle sub system design; propulsion, attitude determination and control, structural design, thermal control, power and telecommunications. Investigation into mission design concepts and considerations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2323 and MATH 2326; or student group.

MAE 4357. AUTOMOTIVE ENGINEERING. 3 Hours.

Introduction to automotive engine types and performance, drive train modeling and vehicle loading characteristics, fueling requirements, fuel injection systems, tire characteristics and modeling, suspension characteristics and handling, braking systems and requirements. Course taught through lecture, student presentations and student design projects. Prerequisite: Must be in the professional ME, AE or EE program and C or better in each of the following, MAE 3360 (or MATH 3319) and MAE 2312 (or EE 3446); or student group.

MAE 4358. RACECAR ENGINEERING. 3 Hours.

This course is intended for Formula SAE team members and other interested students to develop new systems or analyze concepts for the Formula SAE or Formula Electric racecar and related equipment. The students will form teams and perform research and development on projects related to automotive or racecar engineering. Prerequisites: Must be in the professional ME, AE or EE program and C or better in each of the following, MAE 3360 (or Math 3319) and MAE 2312 (or EE 3446); or student group.

MAE 4362. INTRODUCTION TO MICRO AND NANOFUIDICS. 3 Hours.

As going down to micro scales, the basic hypothesis in the macro scale fluid mechanics may not be applicable in such scales. The objectives of this course are: to identify dominant forces and their effects in micro scale fluid systems that are different from those in the macro scales; to understand the fundamentals of micro fluidic phenomena; to discuss various microfluidic applications in research and commercial levels; and to explore new possible microfluidic applications in the emerging fields. Topics include overview of microfluidics, scaling laws, violation limit of the Navier-Stokes equations, surface force, surface tension, electrowetting, electrokinetics, dielectrophoresis, and soft lithography. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313 and MAE 3310; or student group.

MAE 4363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects.

MAE 4378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

MAE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in MAE 4378 and admission to the UVS certificate program.

MAE 4382. RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES. 3 Hours.

This course is offered to graduate and senior level undergraduate students with engineering and science background to introduce them to micro/nano research and development for energy conversion and storage. This course will include: Scaling laws, MEMS fabrication, Nanomaterial synthesis, Electrochemical energy storage/conversion (Batteries, Fuel Cells & Supercapacitors), Solar energy (photovoltaics and solar thermal energy), Energy harvesting and Solar water splitting and electrocatalysis. Prerequisite: Must be in the professional ME or AE program.

MAE 4386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses. Prerequisite: Must be in the professional ME or AE program and C or better in EE 2320 and C or better in either MAE 3313 or MAE 2315, or student group.

MAE 4391. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

College of Liberal Arts

UNDERGRADUATE

Overview

The mission of the College of Liberal Arts is to provide a learning community wherein students are provided both broad-based and specialized education and to vitalize the educational process by creating and transmitting knowledge through research, scholarship and creative activity.

The College of Liberal Arts offers a 21st century education by inculcating skills which students will apply throughout their lifetimes in increasingly complex and interdisciplinary ways: skills in critical thinking, oral and written communication, multilingual and multicultural competency, textual analysis, analytic reasoning and the scientific method. Faculty research scholarship and creative expertise in the visual and performing arts, humanities, and social sciences advance knowledge and contribute toward civic engagement and improvement of local and global communities through interdisciplinary and cross-disciplinary initiatives across the College of Liberal Arts and the UT Arlington academic community, and in partnership with national and international colleagues

The college is characterized by a diversity of intellectual styles and interests. Departments and programs cluster into social sciences, humanities and fine arts. Liberal Arts disciplines address the rich meanings of human experience and expression and liberate the imagination.

The traditional objectives of liberal arts in the University are:

1. to develop the tools for analysis, appreciation and communication; for written and oral expression; for comprehension, interpretation, and analysis of textual material; for analytic reasoning and scientific method; and for appreciation of aesthetic experience;
2. to prepare students for a range of careers in academia and public and private sector organizations. Graduates of the college contribute to the region, the state and the nation as college and university professors, elementary and secondary teachers, legal professionals, in government agencies, social services, international business and industry, media and advertising, health and recreation, and cultural and entertainment industries; and
3. to promote understanding and critical evaluation of the cultural milieu of the attitudes and the ideas that shape institutions and strategies in societies.

A liberal arts education prepares the student for leadership in whatever profession or vocation he or she chooses and is designed to help students live enlightened, purposeful, and effective lives in a challenging, complex, and global technological environment.

A center of learning and scholarship, the College of Liberal Arts and its departments and programs help students achieve an understanding and knowledge of the past, a comprehension of the realities of the present, and a sense of the vision and potential of the future. Our courses of study not only develop habits of mind (such as mastery in reading, communication, and critical thinking skills), but also address the meaning of human experience and expression.

The college promotes these goals in the following ways:

- By enabling students to develop the tools for analysis, appreciation and communication; for written and oral expression; for comprehension, interpretation, and analysis of textual material; for analytic reasoning and scientific method; and for appreciation of aesthetic experience;
- By enabling students to prepare for professions or careers by offering specialized major programs; and
- By enabling students to understand and evaluate critically the attitudes and ideas that shape contemporary society.

Because they deal with the meanings of human experience, the Liberal Arts are the oldest and most central study in higher education, with a past that reaches back to the origins of the university in the Middle Ages. The disciplinary units of the college provide current perspectives on the individual, society, culture, and the cosmos; the various courses of study taken together offer students a range of approaches to the human condition. Through their research and teaching, the faculty of the college seek to prepare students to achieve success in many different professions, to contribute to the community, and to lead enriched and enlightened lives.

Departments and Programs

The College of Liberal Arts offers programs of study in 12 academic units.

- Art and Art History (<http://www.uta.edu/art/>)
- Communication (<http://www.uta.edu/communication/>)
- Criminology and Criminal Justice (<http://www.uta.edu/criminology/>)
- English (<http://www.uta.edu/english/>)
- History (<http://www.uta.edu/history/>)
- Linguistics and (<http://www.uta.edu/linguistics/>)TESOL
- Modern Languages (<http://www.uta.edu/modl/>)

- Music (<http://www.uta.edu/music/>)
- Philosophy and Humanities (<http://www.uta.edu/philosophy/>)
- Political Science (<http://www.uta.edu/pols/>)
- Sociology and Anthropology (<http://www.uta.edu/socio-anthro/>)
- Theatre Arts (<http://www.uta.edu/theatre/>)

The college also offers interdisciplinary programs of undergraduate study in the Charles T. McDowell Center for Critical Languages and Area Studies, Mexican American Studies, Southwestern Studies, Women's and Gender Studies, and Disability Studies. Military Science offers a program that leads to a commission in the U.S. Army. The Pre-Law Center is an advising and information resource for students in the Liberal Arts as well as in any other major at the university, who are considering legal and law-related careers.

Interdisciplinary Minors

Disability Studies

Women's and Gender Studies (<http://www.uta.edu/womens-studies/>)

Mexican American Studies (<http://www.uta.edu/cmas/>)

Military Science (ROTC)

Law and Legal Studies

Liberal Arts Advising

Individual degree programs (<http://www.uta.edu/libarts/departments.html>) in the College of Liberal Arts have undergraduate advisors who are available to help students with academic planning, course selection, and professional career advice.

Admission to the College of Liberal Arts

Admission is determined by application to the academic unit offering the degree of interest. Individual departments and programs in the College of Liberal Arts may set more specific and restrictive requirements than those stipulated in the Core Curriculum statement (See Degree Program), and may set additional requirements for admission to the major. Information may be obtained in department and program offices.

The College of Liberal Arts has a modern and classical languages requirement for the B.A. degree. Students must demonstrate proficiency in a modern or classical language at the first-year college level (1441 and 1442) unless the degree pursued does not require a modern or classical language.

The requirement for modern and classical language acquisition within the B.A. degree at UT Arlington is designed to help students become effective members of the global community. It is not only essential for a broad education, but also provides a basis for practical benefits to students with widely varying and highly specific objectives. Language proficiency may be demonstrated through the prescribed score on the CLEP test for the language, transfer of credits from another institution, successful completion of first-year language (1441 and 1442) at UT Arlington, or proof of a secondary education in a modern language (as evidenced by a diploma from a high school in which the language is the primary language of instruction). Although the College of Liberal Arts requires successful completion of only one year of a modern or classical language for the B.A., some degree plans may require more than one year. Thus, it is important that the student consult with the appropriate academic advisor in his/her intended major regarding this requirement.

Computer Use and Oral Communication Competencies

Students majoring in Liberal Art disciplines are also required to demonstrate computer use proficiency and oral communication competency. Methods for demonstrating these competencies vary across departments and programs within the College of Liberal Arts and are detailed in the sections of this catalog pertaining to the various majors.

Transfer Credits

Students entering the College of Liberal Arts may transfer up to 72 hours of academic credit from two-year institutions to be applied to a degree.

Teacher Certification

The College of Education, in cooperation with the College of Liberal Arts, offers programs leading to elementary, secondary and all-level certification. Students interested in teacher certification should consult the advisor or his/her major department or the Advising Center of the College of Education for more information.

Honors Degree in Liberal Arts

In addition to earning a disciplinary degree with Latin honors (summa, magna, cum laude), Liberal Arts students who wish to graduate with an Honors Degree in a Liberal Arts discipline must be members of the Honors College in good standing, have an overall GPA of 3.2, and complete the degree requirements in a disciplinary major. Please see the Honors College (<http://www.uta.edu/honors/>) website for more information.

Study Abroad

The College of Liberal Arts offers many opportunities for students wishing to study abroad. Programs in Mexico, Spain, France, Italy, Germany and other locations are led by faculty from different departments. Semester-long programs with affiliated institutions are also available. Start with the Office for International Education's Study Abroad site. (<http://studyabroad.uta.edu>)

Scholarships

Scholarships for outstanding undergraduate students are available from the College of Liberal Arts. Information about scholarships and applications may be found here (<https://www.uta.edu/cola/resources/#scholarships&gsctab=0>). Students should also speak with their advisor about major-specific scholarships.

Pass-Fail

Any student majoring in the College of Liberal Arts may, with the permission of an advisor from his/her major department and of the department or academic unit offering the course, take any course approved with a pass/fail grading option on a pass-fail basis, provided that the course is not required for the student's degree and provided the student has sophomore standing (30 hours credit). Students seeking teacher certification may not take education courses on a pass-fail basis with the exception of student teaching which is offered only on a pass-fail basis. Junior-senior level military science courses also may not be taken on a pass-fail basis.

GRADUATE

Mission and Philosophy

The mission of the College of Liberal Arts is to provide a learning community wherein students are provided both broad-based and specialized education and to vitalize the educational process by creating and transmitting knowledge through research, scholarship and creative activity.

The College is characterized by a diversity of intellectual styles and interests. Departments and programs cluster into social sciences, humanities and fine arts. Liberal Arts disciplines address the rich meanings of human experience and expression and liberate the imagination by producing knowledge and creating beauty.

The faculty and administration of the college address the traditional objectives of liberal arts in the University:

1. to develop the tools for analysis, appreciation and communication; for written and oral expression; for comprehension, interpretation, and analysis of textual material; for analytic reasoning and scientific method; and for appreciation of aesthetic experience;
2. to prepare students for a range of careers in academia and public and private sector organizations. Graduates of the College contribute to the region, the state and the nation as college and university professors, elementary and secondary teachers, legal professionals, in government agencies, social services, international business and industry, media and advertising, health and recreation, and cultural and entertainment industries; and
3. to promote understanding and critical evaluation of the cultural milieu and of the attitudes and the ideas that shape institutions and strategies in societies.

Accomplishing these objectives culminates in students reaping the creative, utilitarian and life enriching benefits of a liberal arts education.

History and Overview

The University of Texas at Arlington's College of Liberal Arts acquired its first graduate degrees in 1968, with the establishment of M.A. programs in English and History. Since that time, the number of M.A. programs offered has expanded to 13. In 1974, the college established its first Ph.D. level program, Humanities. The Humanities Program was reorganized in 1997 and replaced by three new Ph.D. level programs in English (Literature and Rhetoric/Composition tracks), History (transatlantic) and Linguistics.

Scholastic Activity and Research/Creative Interests of the Faculty

The faculty in the College of Liberal Arts excel in their roles as educators, creative scholars and researchers, and professional performers. Numerous faculty have received recognition for their work, including a Guggenheim Fellowship and two Pulitzer Prize nominations. The college has two endowed chair positions: the Jenkins and Virginia Garrett Endowed Chair in Greater Southwestern Studies and the History of Cartography; and the Morgan Woodward Endowed Distinguished Professor in Film & Video. Many of our faculty members are or have been members of the Academy of

Distinguished Teachers, the Academy of Distinguished Scholars, or recipients of the Chancellor's Teaching Award. Our faculty have won the prestigious state-level Piper Award for distinguished teaching in higher education, as well as the UT System Regents' Outstanding Teaching Award.

The scholarly activities and research of the faculty cover a range of areas represented within the 13 disciplines in the college. History faculty research interests center on transatlantic broadly defined, and research specializations of faculty include southern, western and southwestern history, frontier development, women and gender, urban and labor and public history. English faculty research strengths lie in the areas of American, British and comparative literatures; and rhetoric, composition and criticism. Linguistics faculty specialize in experimental linguistics, field linguistics, corpus linguistics and documentation of endangered languages. Numerous faculty throughout the college also conduct research on gender and women's issues. Anthropology faculty members recently became the first foreign archaeological team to excavate in Albania in more than 50 years.

Our faculty in the Fine and Performing Arts are very active and internationally recognized as artists, performers, and pedagogues.

Special Programs and Opportunities

The College of Liberal Arts provides a number of special programs and opportunities for graduate students. College lecture series and seminars, conferences, publications, academic centers, library collections and an art gallery provide a mosaic of events and resources that enrich the university community.

Lecture Series, Seminars and Conferences

- Each year the English Department sponsors the Hermann Lecture series, which brings scholars from UT Arlington and other universities together for discussions and master classes on an issue of general theoretical interest.
- The History Department presents the Walter Prescott Webb Memorial Lectures each March. Nationally prominent speakers make presentations on an annual topic, followed by a dinner in the University Center and a keynote address.
- Graduate students in Linguistics sponsor The UTA Conference in Linguistics and TESOL each year. This conference provides an opportunity for students to begin their professional careers by organizing the sessions, reviewing paper abstracts and presenting their own research.
- The Women's and Gender Studies Program hosts an annual, month-long Women's History Month Lecture Series during March that features a range of events from scholarly talks to film screenings to gallery exhibits to roundtable discussions. Speakers are invited from around the nation and around the globe and have included Pulitzer Prize-winners, ground-breaking scholars, and prominent female politicians.
- The Criminal Justice and Criminology Program sponsors a Brown Bag Lecture Series every spring semester, and students have the opportunity to receive credit for practicums.
- The Department of Political Science hosts the annual Haggard Lectures, bringing in nationally and internationally known scholars in the field.
- The Department of History hosts an annual student conference for the graduate students.

Publications

- The History Department publishes an annual volume comprised of Webb Lecture Series papers.
- The English Department houses the online journal, "Agora: A Graduate Journal of Theory" and "Early Modern Studies Journal."
- The Center for Theory houses the online journal, "Fast Capitalism."
- The Music Department has a student-run record label, "UT Arlington Records."
- Individual departments/programs publish newsletters which provide news and information about and for students, faculty and alumni.

Centers

The College of Liberal Arts houses numerous centers designed to promote scholarship, research and teaching. These centers organize conferences, lecture series and workshops and provide a conduit for making faculty expertise available to the community. College of Liberal Arts centers are listed below and described in the Facilities for Advanced Studies and Research section of this catalog.

- The Center for Criminal Justice Research and Training
- The Center for Greater Southwestern Studies and the History of Cartography
- The Center for Mexican American Studies
- The English Language Institute
- The Charles McDowell Center for Critical Languages and Area Studies
- The Center for Social Research
- The Center for Theory
- The Language Acquisition Center

Other Resources

- In support of the history M.A. and Ph.D. programs, the UT Arlington Library Special Collections houses the Jenkins Garrett Library of Texana and Mexican War historical material and the Cartographic History Library. In addition, Special Collections has material on UT Arlington's history since 1895, the history of organized labor in Texas and the Southwest, and Yucatan and Honduran archival materials.

- The Gallery at UT Arlington presents a full program of major exhibitions in its 4,000-square-foot gallery, including lectures, symposia, screenings and publications. The Gallery's program demonstrates the complementary roles of visual and verbal literacy.
- The Department of Music offers laboratory facilities and the Fine Arts Library contains an extensive collection of recordings and publications relating to musical performance and theory. The department presents over 200 concerts and events per year, most open to the general public.
- Numerous student organizations exist on campus to provide students with the opportunity to interact with peers in their disciplines. These student groups include interdisciplinary organizations for graduate students interested in Medieval Studies and Rhetoric; and honor societies for Communication, Criminal Justice, English, History, Music, Political Science, and Sociology, as well as specialized interest groups.
- Student awards, scholarships and teaching and research assistantships are available in many College of Liberal Arts departments and programs. Each spring the History Department awards an outstanding graduate student the Wolfskill Prize, a cash award and plaque representing superior attainment in history studies.
- The College also awards funds for research travel and for travel to conferences for presentation of original research.

Graduate Teaching Assistantships, Fellowships and Scholarships

The College of Liberal Arts offers a wide variety of research, travel, fellowship and dissertation funding for deserving students. Typically, these awards are designed to encourage research or creative activity that leads to the completion of your graduate degree. The College also maintains a graduate listserv that regularly announces awards.

A limited number of Graduate Teaching & Research Assistantships are awarded by several departments. You are encouraged to visit with faculty on availability and requirements of departmental assistantships during the application process.

Programs

The College of Liberal Arts offers the following graduate degree programs:

- Studio Art, M.F.A
- Communication, M.A.
- Criminology and Criminal Justice, M.A.
- English, M.A., Ph.D.
- History, M.A.; Transatlantic History, Ph.D.
- Linguistics, M.A., Ph.D.; TESOL, M.A.
- Modern Languages (French and Spanish), M.A.
- Music Education, M.M.
- Music Performance, M.M.
- Political Science, M.A.
- Sociology, M.A.

The College of Liberal Arts offers the following Dual Degree Programs:

Criminology and Criminal Justice M.A. & Social Work M.S.
 Criminology and Criminal Justice M.A. & Political Science, M.A.
 Criminology and Criminal Justice M.A. & Master of Public Administration
 Political Science M.A. & Master of Public Administration

The College of Liberal Arts offers these Graduate Certificates:

Archival Administration
 TESOL Certificate Program
 Graduate Certificate in French and Spanish
 Graduate Music Performance Certificate
 Graduate Certificate in Data, Humanities, and Society

Aerospace Studies

Overview

The United States Air Force Reserve Officer Training Corps (AFROTC) provides women and men at Texas Christian University, Texas Wesleyan University, Dallas Baptist University, The University of Texas at Arlington, Weatherford College, and Tarrant County College the education and training necessary to develop the management and leadership skills vital to professional Air Force officers.

Enrollment in the General Military Course (first two years) is voluntary for eligible students and does not obligate non-scholarship students for further military service. The Professional Officer Course (last two years) is also voluntary but competitive. Because the POC leads to a commission in the United States Air Force, those selected to continue training incur military obligation.

Aerospace studies courses are taken concurrently with other degree programs. No degree is offered in aerospace studies, but up to 24 semester hours may be earned in aerospace studies over the four-year period. Some of the classes may be used to meet major elective requirements. See your academic advisor for confirmation. Students who enroll in aerospace studies classes must attend both classroom and leadership laboratory classes located at Texas Christian University, Rickel Academic Wing (3005 Stadium Drive) Office 247, Fort Worth, Texas 76109. The laboratory classes give students firsthand experience in leadership and organizational skills while preparing them for enrollment in the Professional Officer Course.

Program Requirements

Four-Year Program

This program enables students to take advantage of four years of aerospace studies courses. Each semester, for the first two years, cadets take a one-credit hour academic class and a one-credit hour Pass/No-Credit Leadership Laboratory (LLab). The first two years collectively are referred to as the General Military Course (GMC). Upon successful completion of the GMC and an ensuing four-week Air Force paid field training course, qualified and selected students may elect to enroll in the final two years, referred to as the Professional Officer Course (POC). Each semester in the POC, students take a three-credit hour academic class and a one-credit hour Pass/No-Credit LLab. AFROTC uniforms and textbooks are issued by the unit.

Aerospace Studies General Qualifications

A student enrolling in AFROTC must:

- Be a full-time student (12 semester hours or more);
- Be a U.S. citizen;
- Be in good physical condition/health;
- Have good moral character; and
- Be no older than 34 years old upon commissioning.

Program Benefits

As Air Force ROTC cadets, students are entitled to selective benefits. Social and co-curricular activities, together with leadership and academic training, are all part of Air Force ROTC. Contracted cadets receive a nontaxable subsistence allowance each month during the school year. The detachment sponsors a Civil Air Patrol where cadets can obtain front-seat and back-seat flying time in Cessna aircraft. Drill team, honor guard and Arnold Air Honor Society are just a few social outlets for the cadets. Summer opportunities for cadets can include a paid visit to a military installation for two weeks, freefall parachuting, combat survival training, flight nurse shadowing and cadet training assistant duty at field training.

Scholarships

Air Force ROTC offers scholarships that vary in length of award and amount based on academic major and applicant qualifications. All awarded scholarships pay a stipend for textbooks and fees, plus a monthly, nontaxable, stipend during the school year. Scholarship awards are based on specific academic majors related to the needs of the U.S. Air Force. These scholarship opportunities for in-college students are determined at the national level by Air Force ROTC and are subsequently administered by the detachment/Department of Aerospace Studies. Scholarship applicants are selected using the whole-person concept, which includes objective factors (i.e., GPA, standardized test scores (SAT/ACT), and physical fitness test) and subjective factors (i.e., personal evaluations). Students who are enrolled in Air Force ROTC generally improve their scholarship selection opportunity.

In addition to meeting the general qualifications mentioned above, scholarship applicants must be at least 17 years of age when the scholarship is activated and must be less than 31 years of age as of the end of their commissioning year. Because the scholarship program varies according to budget and needs of the Air Force, interested applicants should contact the Department of Aerospace Studies at 817.257.7461 or www.afrotc.com for specific details.

Commissioning

Upon successful completion of the AFROTC Program and baccalaureate or graduate degree, a student is commissioned a second lieutenant in the U.S. Air Force. In some instances, active service can be delayed by students continuing in post-baccalaureate degree programs.

Additional Information

More detailed information about the Air Force ROTC program is available through the Department of Aerospace Studies. The department is located at Texas Christian University, Rickel Academic Wing (3005 Stadium Drive) Office 247, Fort Worth, Texas 76109.

COURSES

AS 1121. FOUNDATION OF THE UNITED STATES AIR FORCE. 1 Hour.

(AS 1121 in the fall and AS 1122 in the spring) AS 100 is a survey course designed to introduce students to the U.S. Air Force and Air Force ROTC. Featured topics include: mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force officer opportunities, and an introduction into communication skills. Leadership Laboratory (AS 1001) complements this course by providing cadets with followership experiences.

AS 1122. FOUNDATION OF THE UNITED STATES AIR FORCE. 1 Hour.

(AS 1121 in the fall and AS 1122 in the spring) AS 100 is a survey course designed to introduce students to the U.S. Air Force and Air Force ROTC. Featured topics include: mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force officer opportunities, and an introduction into communication skills. Leadership Laboratory (AS 1001) complements this course by providing cadets with followership experiences.

AS 1181. LEADERSHIP LABORATORY. 1 Hour.

(LLAB) (Every semester). The AS 100 and AS 200 LLabs include a study of Air Force customs and courtesies, drill and ceremonies, and military commands. The LLAB also includes studying the environment of an Air Force officer and learning about areas of opportunity available to commissioned officers. The AS 300 and AS 400 LLAB consist of activities classified as leadership and management experiences. They involve the planning and controlling of military activities of the cadet corps; and the preparation and presentation of briefings and other oral and written communications. LLAB also include interviews, guidance, and information that will increase the understanding, motivation, and performance of other cadets.

AS 2121. THE EVOLUTION OF USAF AIR AND SPACE POWER. 1 Hour.

(AS 2121 in the fall and AS 2122 in the spring) AS 200 is a survey course designed to examine general aspects of air and space power through a historical perspective. Utilizing this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of the Persian Gulf War. Historical examples are provided to extrapolate the development of Air Force capabilities (competencies), and missions (functions) to demonstrate the evolution of what has become today's USAF air and space power. Furthermore, the course examines several fundamental truths associated with war in the third dimension: e.g. Principles of War and Tenets of Air and Space Power. As a whole, this course provides the student with a knowledge level understanding for the general element and employment of air and space power, from an institutional, doctrinal, and historical perspective. In addition, the students will continue to discuss the importance of the Air Force Core Values with the use of operational examples and historical Air Force leaders and will continue to develop their communication skills. In addition, Leadership Laboratory (AS 1001) is mandatory for Air Force ROTC cadets (not special students), and it complements this course by providing cadets with followership experiences. Professional Officer Courses (POC).

AS 2122. THE EVOLUTION OF USAF AIR AND SPACE POWER. 1 Hour.

(AS 2121 in the fall and AS 2122 in the spring) AS 200 is a survey course designed to examine general aspects of air and space power through a historical perspective. Utilizing this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of the Persian Gulf War. Historical examples are provided to extrapolate the development of Air Force capabilities (competencies), and missions (functions) to demonstrate the evolution of what has become today's USAF air and space power. Furthermore, the course examines several fundamental truths associated with war in the third dimension: e.g. Principles of War and Tenets of Air and Space Power. As a whole, this course provides the student with a knowledge level understanding for the general element and employment of air and space power, from an institutional, doctrinal, and historical perspective. In addition, the students will continue to discuss the importance of the Air Force Core Values with the use of operational examples and historical Air Force leaders and will continue to develop their communication skills. In addition, Leadership Laboratory (AS 1001) is mandatory for Air Force ROTC cadets (not special students), and it complements this course by providing cadets with followership experiences. Professional Officer Courses (POC).

AS 3301. LEADERSHIP STUDIES. 3 Hours.

(AS 3301 in the fall and AS 3311 in the spring). AS 300 is a study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required for an Air Force junior officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. A mandatory Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles of this course.

AS 3311. LEADERSHIP STUDIES. 3 Hours.

(AS 3301 in the fall and AS 3311 in the spring). AS 300 is a study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required for an Air Force junior officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. A mandatory Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles of this course.

AS 4301. NATIONAL SECURITY AFFAIRS/PREPARATION FOR ACTIVE DUTY. 3 Hours.

(AS 4301 in the fall and 4311 in the spring). AS 400 examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Within this structure, continued emphasis is given to refining communication skills. An additional Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences, giving students the opportunity to apply the leadership and management principles of this course.

AS 4311. NATIONAL SECURITY AFFAIRS/PREPARATION FOR ACTIVE DUTY. 3 Hours.

(AS 4301 in the fall and AS 4311 in the spring). AS 400 examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Within this structure, continued emphasis is given to refining communication skills. An additional Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences, giving students the opportunity to apply the leadership and management principles of this course.

Art and Art History

Undergraduate Degrees

- Bachelor of Fine Arts in Art (p. 715)
- Bachelor of Fine Arts in Art (with teacher certification) (p. 721)
- Bachelor of Arts in Art (p. 715)
- Bachelor of Arts in Art History (p. 715)
- Minor in Art (p. 721)

Graduate Degree

- Art, M.F.A. (p. 710)

COURSES

ART 1200. FIRST YEAR SEMINAR IN ART. 2 Hours.

This is a required course intended to establish a solid overview of the Art and Art History Department for all first semester UTA students who intend to declare a studio art or art history major. Topics for the class can include: visiting artist speakers, attendance of exhibitions, writing assignments, surviving the advising process and concentration portfolio review, and library resources. Other topics may be discussed. This course requires concurrent enrollment with UNIV 1131. This course may only be taken once for credit. Prerequisite: Requires concurrent enrollment in UNIV 1131.

ART 1300. FIRST YEAR SEMINAR IN ART. 3 Hours.

This is a required course intended to establish a solid overview of the Art and Art History Department for all first semester UTA students who intend to declare a studio art or art history major. Topics for the class can include: visiting artist speakers, attendance of exhibitions, writing assignments, surviving the advising process and concentration portfolio review, and library resources. Other topics may be discussed. This course may only be taken once for credit. This course includes student success curriculum and associated content and fulfills the University requirement for either UNIV 1101 or UNIV 1131.

ART 1301. ART APPRECIATION. 3 Hours. (TCCN = ARTS 1301)

Intended to develop an understanding, appreciation, and enjoyment of art in its many forms. Recommended as a fine arts elective for non-art majors.

ART 1305. TWO-DIMENSIONAL DESIGN. 3 Hours. (TCCN = ARTS 1311)

The principles and elements of two-dimensional design as expressed through concepts and problems with various media and techniques. Lab fee: \$35.

ART 1306. THREE-DIMENSIONAL DESIGN. 3 Hours. (TCCN = ARTS 1312)

Three-dimensional design principles will be explored to expand knowledge of various materials and develop an awareness of spatial elements as a creative expression. Formerly listed as ART 1303. Credit will not be granted for both ART 1303 and ART 1306. Lab fee: \$35.

ART 1307. DRAWING FUNDAMENTALS. 3 Hours. (TCCN = ARTS 1316)

Basic drawing principles and elements in varied media including such concepts and skills as hand-eye coordination, perceptual acuity, spatial organization, and interpretation of directly observed subjects.

ART 1309. INTRODUCTION TO ART HISTORY I: PREHISTORIC THROUGH 16TH CENTURY. 3 Hours. (TCCN = ARTS 1303)

Major developments in art, from Archaic Greece through the European Renaissance.

ART 1310. INTRODUCTION TO ART HISTORY II: 17TH CENTURY TO THE PRESENT. 3 Hours. (TCCN = ARTS 1304)

The work of major figures in European and American art from the 17th century to the present.

ART 1317. INTRODUCTION TO ART HISTORY III: AFRICA, ASIA, AMERICAS. 3 Hours.

This course is designed to introduce students to works of art in various media developed in isolation from the European tradition, including the arts of the Near East, Asia, the Ancient Americas, Africa, and Oceania. Using visual arts as a tool, this course will introduce students to the diverse social customs, religions, and beliefs of nonwestern peoples.

ART 2304. DIGITAL MEDIA. 3 Hours.

This course introduces students to a variety of digital software and hardware as applied to design and artistic concepts.

ART 2308. DRAWING CONCEPTS. 3 Hours. (TCCN = ARTS 1317)

Application of specific drawing skills with emphasis on personal expression. Course content will focus on conceptual development and media exploration as outlined by instructor. Previous drawing experience strongly recommended. Formerly listed as ART 1348. Credit will not be granted for both ART 1348 and ART 2308. Prerequisite: ART 1305 and ART 1307 or permission of instructor.

ART 2342. GLASSBLOWING. 3 Hours.

The manipulation, construction, and experimentation of glass as a sculptural medium. Emphasis will be on developing technical and aesthetic expertise in glassblowing and related techniques. Exploration of the conceptual application of the material will be addressed. Students who received credit for ART 3342 prior to Fall 2010 may not receive credit for ART 2342. Prerequisite: ART 1306 or permission of the academic advisor.

ART 2353. VISUAL COMMUNICATION FOUNDATION. 3 Hours.

Introduction to the studio practices in the area of Visual Communications. Focus is on advanced foundation design concepts and exposure to contemporary digital tools. In addition, an introduction to the purpose, industry, and broad history of visual communication will be established. Prerequisite: Art + Art History Major, Permission of Advisor, ART 1305.

ART 2354. TYPOGRAPHY. 3 Hours.

Creative problem solving using basic elements of visual communication with an introduction to typography, composition, and materials. Prerequisite: ART 2304 or permission of the instructor.

ART 2355. LAYOUT. 3 Hours.

Development and application of concept, layout, and design as related to visual communication. Prerequisite: ART 2304 or permission of advisor.

ART 2357. DIGITAL PHOTOGRAPHY FOR DESIGNERS. 3 Hours.

Introduction to the production of visuals through digital photographic imaging as related to the needs of the Visual Communication Design field. Students will study composition, camera function, studio lighting, and photographic proficiency to create compelling imagery. Students will be expected to incorporate these photographic skills and concepts into their design practice.

ART 2358. CINEMA PRODUCTION 1. 3 Hours.

Introduction to the video and filmmaking production process, techniques, history and aesthetics through the use of digital video, basic film, and basic digital (computer) video and audio editing. Students will write, produce, and edit a number of short original works.

ART 2360. INTRODUCTION TO PHOTOGRAPHIC CONCEPTS. 3 Hours. (TCCN = ARTS 2356)

Introduction to the essentials of photography including digital camera operation, digital printing, utilizing the principles of photography for artistic expression, and lighting techniques for documentation of 2D and 3D artwork and other objects. Students are encouraged to use their own digital camera; some cameras may be available for check out on a limited basis.

ART 2371. PAINTING. 3 Hours. (TCCN = ARTS 2316)

Fundamentals of painting, composition and techniques both traditional and contemporary. Prerequisite: ART 1305 and ART 1307 or permission of the instructor.

ART 2387. FILM ANALYSIS AND AESTHETICS. 3 Hours.

Students will critically engage in screenings of selected significant films and learn concepts and approaches to film analysis and criticism. The course will examine the emergence of the film form, the elements of film language, formal approaches and principles of film analysis, and the workings of motion pictures as a means of narrative expression.

ART 3300. METHODS FOR THE STUDY OF ART HISTORY. 3 Hours.

Sources and procedures of art historical research. Introduction to methodologies of art historical scholarship. Use of computer and data retrieval is emphasized.

ART 3302. ART OF ANTIQUITY. 3 Hours.

Art and architecture of Greco-Roman antiquity, beginning with the Aegean Bronze Age (ca 2500 BC) and concluding with the Late Roman Empire (4th century AD). Emphasis on the political and ritual role of art, especially in Periclean Athens and Augustan Rome. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3304. JAPANESE ART & ARCHITECTURE. 3 Hours.

Exposes students to the art and architectural traditions of Japan from the Jomon (12,000/10,500 - 300 BCE) through the Tokugawa periods (1615 - 1868). The course will focus on the cultural, social, and political movements that informed artistic changes over time. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3306. BYZANTINE AND MEDIEVAL ART. 3 Hours.

Art and architecture of the Mediterranean area and Northern Europe, beginning with Early Christian and Byzantine period (4th century AD) and concluding with the Late Middle Ages (14th century AD). Special attention is given to the religious and political context of art including Christian and Islamic influences. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3307. THE EARLY RENAISSANCE. 3 Hours.

Developments in the art and architecture of Italy in the 13th and 14th Centuries focused on the changing status of the artist and the political and religious role of art. Includes a workshop based on 14th century recipes for the making of art. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3308. HIGH RENAISSANCE. 3 Hours.

Developments in the art and architecture of 16th century Italy (Leonardo, Raphael, and Michelangelo) understood in historical context. Themes include the notion of creative genius in the Renaissance; Mannerism and the Counter-Reformation; the restoration of the Sistine Chapel. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3310. FILM AS ART. 3 Hours.

The history and aesthetics of the motion picture from 1895 to the present day. Screening and analysis of film as an artistic medium, focusing on various technical innovations, filmmakers, and landmarks of film history. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3311. AMERICAN ART. 3 Hours.

The role of art in the shaping of a national identity with emphasis on our beginnings and attention to vernacular and indigenous traditions. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3312. NEO-CLASSICISM AND ROMANTICISM. 3 Hours.

European art from c.1760 to c.1840. Emphasis is placed on cultural and historical contexts. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3313. BACKGROUNDS OF MODERN ART. 3 Hours.

Painting, sculpture, and photography of the period c. 1850-1900 in western Europe, focusing on Realism, Impressionism, Post-Impressionism and Symbolism (fin de siècle). Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3314. MODERN ART. 3 Hours.

The history of European and American art from the late 19th century to the mid-20th century. Emphasis on the formal and conceptual evolution of modernism in art and society, and on the rise of the avant-garde. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3315. IMPRESSIONISM. 3 Hours.

The history, theory, and aesthetics of Impressionist painting in France, from 1860 to 1900. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3316. ANCIENT EGYPTIAN & NEAR EASTERN ART. 3 Hours.

Study of select aspects of the material culture of ancient Mesopotamia and Egypt, with emphasis on religion and notions of kingship. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3317. ISLAMIC ART AND ARCHITECTURE. 3 Hours.

This is a survey course of Islamic art and architecture from the seventh century to present, covering arts from the Arabian peninsula, north and west Africa, southern Spain, central Asia and South Asia. Emphasis will also be given to the cultural and religious aspects that shape Islamic art, such as the forms and functions of different examples of sacred architecture; calligraphy; and the arts associated with pilgrimage. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3319. ART & ARCHITECTURE OF INDIA. 3 Hours.

Explores the history of Indian art and architecture, beginning with the Harappan civilization and progressing to the present. India's religious and cultural impact on its East and Southeast Asian neighbors will also be examined. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3320. ART OF THE ANCIENT AMERICAS. 3 Hours.

Art and architecture of the Olmecs, Maya, Aztecs, Inca, Anasazi and other selected cultures of Mexico, Central America, South America and North America. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3321. CHINESE ART & ARCHITECTURE. 3 Hours.

Introduces students to the art and architectural traditions of China from Neolithic times (5th to 3rd millennium BCE) to the end of the Qing dynasty in the early 20th century. The course will focus on the cultural, social, and political movements that informed artistic changes over time. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3322. INTRODUCTION TO ART EDUCATION. 3 Hours.

This course studies the theories and outlines the history of art education and provides undergraduate students with the basic knowledge, skills, and strategies for teaching art. Students will be introduced to current issues in art education including multicultural, visual culture, technological art education, creativity, museum collaborations, and arts for special needs. The course will cover TEKS and national visual arts standards, a child's artistic development, learning styles, and philosophy. Also, students will learn and understand professional development resources. Prerequisites: None.

ART 3323. PLANNING AND CONSTRUCTING ART CURRICULA. 3 Hours.

This course reviews and introduces the elements needed to create art education curricula including production, performance and exhibition of visual art and other performing arts practices, historical and cultural contexts as well as critical and aesthetic response. Students will focus on curriculum development for both 2D and 3D artwork for various age levels. Prerequisite: None; however students are highly encouraged to take ART 3322 before, or concurrent with, this course.

ART 3325. STUDIES IN THE BAROQUE. 3 Hours.

Developments in the art and architecture of Baroque Europe (Italy, Low Countries and Spain), with an emphasis on patronage and the social, religious and historical context of artistic production. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3331. BRITISH ART. 3 Hours.

An overview of British art from prehistory to the present with an emphasis on cultural and historical contexts. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3332. ART OF SUB-SAHARAN AFRICA. 3 Hours.

An examination of the art and architectural traditions of cultures within and south of the Sahara Desert of Africa. Emphasis is on indigenous visual traditions prior to Muslim and European contact and contextualizing our understanding through anthropological perspectives. This course incorporates critical considerations of the biases involved in the study of sub-Saharan arts. May include participation with local African arts and archival collections and various campus collections to undertake experiential analysis of primary sources. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3340. KILN FORMED GLASS. 3 Hours.

The exploration of various non-blowing techniques of glass construction and manipulation. Students will use kilns to explore fusing, slumping, pate de verre, and casting. May be repeated for credit. Prerequisite: ART 1306 or permission of the instructor.

ART 3341. SCULPTURE. 3 Hours.

An exploration of sculptural forms, concepts, and methods through various media. Emphasis on contemporary processes and individual expression. May be repeated for credit. Prerequisite: ART 1306. For non-art majors, permission of the instructor.

ART 3342. INTERMEDIATE GLASSBLOWING. 3 Hours.

Continued technical and aesthetic development, manipulation, construction, and experimentation with glass as a sculptural medium. Other techniques may be introduced in order to explore a stronger conceptual application of glass. Prerequisite: ART 2342 or permission of the academic advisor.

ART 3343. PRINTMAKING. 3 Hours.

Development in the technical and conceptual practice of printmaking. Emphasis placed on an understanding of the history, theory and philosophy of independently published prints. Both traditional and nontraditional processes for creating printed images will be explored, including: lithography, relief, intaglio, silk screen, monoprints, book arts, and photomechanical technologies. Prerequisite: ART 1305 and ART 1307 or permission of the instructor.

ART 3345. WORKS ON PAPER. 3 Hours.

The class will focus on works on paper as a finished work of art as opposed to being preliminary study for paintings, sculptures, and other disciplines. Class may work in a variety of media including watercolor, drawing, collage, painting and mixed media. Personal creativity and development is stressed along with critical thinking and analysis. May be repeated for credit. Prerequisite: ART 1306, ART 1307, and ART 2308 or permission of the instructor.

ART 3346. PAPERMAKING. 3 Hours.

Procedures for the understanding and development of both Eastern and Western handmade papers. Focus will be on sheet-forming, casting, and marbling papermaking processes. Emphasis placed on personal expression, process, and innovation. May be repeated for credit. Prerequisite: ART 1305, ART 1306.

ART 3347. ADVANCED DRAWING. 3 Hours.

Conceptual and expressive problems to encourage independent thinking with regard to contemporary drawing issues. May be repeated for credit. Prerequisite: ART 2308.

ART 3348. LIFE DRAWING. 3 Hours.

Drawing of the human figure using a variety of media in the solution of figure construction problems with emphasis on perceptual and creative expression. May be repeated for credit. Prerequisite: ART 2308.

ART 3349. WATER MEDIA PAINTING. 3 Hours.

Transparent and opaque water color media and techniques. Emphasis on conceptual and manipulative skills. May be repeated for credit. Prerequisite: ART 1305, ART 1307, and ART 2371 or permission of the instructor.

ART 3350. SCREENWRITING 1. 3 Hours.

Students will learn the principles of storytelling and will apply these principles to the craft of screenwriting. As part of this process students will learn to evaluate and improve their own and other's original stories, characters, dramatic conflict, dialogue and descriptions. All screenplays must use proper screenwriting formatting and all creative projects must demonstrate the use of content introduced in class. Offered as ENGL 4330 when that course is taught as Screenwriting; credit will be granted in only one department. Prerequisite: ENGL 1301 and ENGL 1302 or permission of instructor.

ART 3351. ILLUSTRATION. 3 Hours.

Practical approach to concepts, techniques, and problem solving with illustration. May be repeated for up to 9 hours credit. Prerequisite: ART 1307 and ART 2304. Advisor permission required to enroll in this course.

ART 3352. DIGITAL IMAGING. 3 Hours.

Basic course in computer imaging for art majors. Emphasis is on the introduction and use of the computer as a tool for personal expression. Fundamental principles in electronic media are explored with additional emphasis on experimental and innovative techniques. May be repeated for credit.

ART 3353. METALS. 3 Hours.

Both contemporary and traditional metalworking techniques and concepts, including the construction of small metal forms with a sculptural approach. Emphasis on basic fabrication and manipulation methods. Exploration of integrating other media is also encouraged. Prerequisite: ART 1306. For non-art majors, permission of the instructor.

ART 3354. SIGN AND SYMBOL. 3 Hours.

Design and problem solving focusing on transformation of visual elements into logos, logotypes, information and environmental graphics. May only be taken once for credit. Prerequisite: ART 2304, or permission of the advisor.

ART 3355. ADVANCED TYPOGRAPHY. 3 Hours.

Typographic theory exploring traditional and non-traditional forms, both historical and contemporary typographic achievements. Prerequisite: ART 2354, ART 2355, or permission of the advisor.

ART 3356. WEB TYPOGRAPHY. 3 Hours.

Instruction of typographic theories and practice for the web to facilitate connections with words, ideas, and information. Emphasis is placed on the structuring of information hierarchy, grid application, and typographic systems. May be repeated once. This course was formerly titled Electronic Design. Prerequisite: ART 2355.

ART 3357. SUSTAINABLE DESIGN. 3 Hours.

An overview of critical environmental issues that affect the contemporary practice of visual communication. Emphasis on ethics, environmental and society responsibility, and creative visual problem solving. Course may include, but is not limited to, lecture, discussion, reading, and creative design exploration. Prerequisite: ART 2354 or permission of the advisor.

ART 3358. CINEMA PRODUCTION 2. 3 Hours.

Continuation of ART 2358 with emphasis on more advanced concepts, production techniques, film/video history, and aesthetics. May include basic 16mm film production, digital video post-production and studio editing. Students will propose, write, produce and edit a number of short, original works. Prerequisite: ART 2358 and ART 3350 or permission of the instructor.

ART 3359. APPLYING AND TEACHING ART CURRICULA. 3 Hours.

This course provides art education students with an overview of teaching in the K-12 art classroom through further exploration in curriculum and instructional methods as well as observation in the DFW area public schools. Students are provided opportunities to observe various work situations, to reflect on their own education, and to examine teaching practices within the arts. Emphasis is placed on both 2D and 3D studio issues. Students are expected to develop professional skills in observation and written and oral communication. The material in this course serves to establish a foundation for building professional awareness and a normative philosophy of art education. Prerequisite: ART 3323.

ART 3360. BLACK AND WHITE PHOTOGRAPHY. 3 Hours.

This course introduces students to black and white photography as a means to express ideas and become more aware of the potential of photographic art. Some coursework may be digitally based but the emphasis will be on analog black and white processes. Students will learn how to use various film camera formats, process film, and produce black and white darkroom prints. May be repeated for credit. Prerequisite: ART 2360 (or equivalent), or permission of instructor.

ART 3361. SITUATIONAL LIGHTING. 3 Hours.

This course is a skills based class that will explore augmenting and improving existing light at photographic locations. Prerequisite: ART 2360 or permission of instructor.

ART 3362. MOTION GRAPHICS. 3 Hours.

A course exploring animation and/or digital footage to create the illusion of motion for implementation in multimedia applications. Motion graphics incorporates animation pre-production processes to improve viewer engagement by crafting believable motion. Prerequisite: ART 2304 and ART 2358; or permission from the instructor.

ART 3363. CLAY. 3 Hours.

The various methods of construction, manipulation, and decoration of clay. The integration of form, design, and concept, emphasizing clay as an expressive medium. Prerequisite: ART 1306. For non-art majors, permission of the instructor.

ART 3371. INTERMEDIATE PAINTING. 3 Hours.

Continued development of painting techniques, composition and exploration of traditional and contemporary media. Specific problem solving assignments, creative thinking, and idea development will be emphasized. Prerequisite: ART 2308, ART 2371 or permission of the instructor.

ART 3383. MOLDMAKING & CASTING IN CLAY. 3 Hours.

Continuation of ceramic media techniques and forming processes. The introduction of moldmaking, mold forming, slipcasting, tile design, kiln firing, and glaze techniques. Prerequisite: ART 3363 or permission of the instructor.

ART 3384. CINEMATOGRAPHY. 3 Hours.

An intense study of the visual language/style of film imagery through cinematography, lighting, gaffing, gripping, and extensive camerawork. Students will use digital equipment to shoot exercises, light sets and locations, and learn to accurately expose, color correct, and manipulate motion picture film. Students will also learn the proper use of advanced lighting equipment, professional production standards, camera crew responsibilities, and how to interpret a scene through visuals. Students will work in digital video and/or 16mm film format. May be repeated once for credit. Prerequisite: ART 2358 and ART 2360 or permission of instructor.

ART 3386. DIRECTING 1: ACTOR LAB. 3 Hours.

This course is designed to help student directors understand how actors approach their craft and will study the language of acting and various techniques and approaches for casting. Directors and actors will work together in rehearsal and on set to craft a performance for film and develop confidence in the skills necessary for collaboration. Prerequisite: ART 2358 or permission of instructor.

ART 3387. DIRECTED SCREENINGS. 3 Hours.

This course will screen significant films. It will examine the emergence of the film form, the elements of film language and the significance of film form and style. Motion pictures will be screened weekly with commentary or discussion by film faculty in class. This course may be taken only once for credit.

ART 3388. DIRECTING 2: VISUAL STORYTELLING. 3 Hours.

This course will cover the relationship of actor performance to the placement and/or movement of the camera and other cinematic techniques. Students will explore approaches to visual style and distinctly cinematic expression and study specific shot compositions, camera movement and blocking dynamics. Prerequisite: ART 3358 or permission from the instructor.

ART 3389. CONTEMPORARY ART. 3 Hours.

This course offers a focus on the period from 1980 to the present emphasizing the themes within contemporary art, how they build on the modernism of earlier decades and extend globally across issues of aesthetics and identity, developing artwork engaged with performance, the legacies of conceptual and pop art practices, as well as minimalism and activist art. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3390. HISTORY OF GRAPHIC DESIGN. 3 Hours.

A broad overview of the history and evolution of design from prehistory to the present day. Course emphasis is on the cultural and technological contexts that influenced the practice of graphic design in Europe and the United States. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3391. HISTORY OF PHOTOGRAPHY. 3 Hours.

The history of still photography from its inception to the present. Emphasis on the conceptual and technical evolution of photography as an artistic medium. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3399. DISABILITY & ART. 3 Hours.

Explores the many connections between disability and art, including both art created by people with disabilities and the wide variety of artistic representations about disability. Examines the purposes of art-making by people with disabilities: for therapeutic reasons, as a means of self-expression, to achieve professional goals, or as an act of activism. Investigates historical depictions of disability in art as well as art's role as a visual voice for the disability rights movement. Offered as DS 3399 and ART 3399; credit will only be granted once. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor or Disability Studies.

ART 4100. SENIOR EXHIBITION. 1 Hour.

Application of professional practices for graduating BFA art majors. Primary concentration is preparation for BFA exhibition/presentation. Prerequisite: ART 4200 or, for graphics students, ART 4356.

ART 4101. PORTFOLIO PRESENTATION. 1 Hour.

This course is the capstone of the Bachelor of Arts track. Working with their advisor, students will prepare an artist's talk about their work and deliver this presentation at an advertised public lecture. This course is to be taken in the student's last semester before graduation.

ART 4191. INDEPENDENT STUDY. 1 Hour.

Mature, capable students may be permitted to pursue individual art problems. Problems must be stated in writing, a definite conference schedule arranged, and the paperwork must be approved by both the supervising faculty member and the department chair prior to registration. May be repeated for credit for varied subject matter. Prerequisite: B average in art concentration.

ART 4291. INDEPENDENT STUDY. 2 Hours.

Mature, capable students may be permitted to pursue individual art problems. Problems must be stated in writing, a definite conference schedule arranged, and the paperwork must be approved by both the supervising faculty member and the department chair prior to registration. May be repeated for credit for varied subject matter. Prerequisite: B average in art concentration.

ART 4300. PROFESSIONAL PRACTICES. 3 Hours.

Professional practices for upcoming graduating BFA art majors in studio and media concentration, excluding graphics. Exploration of professional capabilities applied to media and studio areas. Emphasis on complex professional skills, knowledge and presentation.

ART 4301. ART AND GENDER. 3 Hours.

Approaches to the interpretation of art from the stance of gender and feminism. Emphasis is placed on the work of significant female artists and on the gendered representations of art. Offered as ART 4301 and WOMS 4301; credit will be granted only once. Fulfills the Social/Cultural Studies requirement. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4304. ART AND THE HUMAN CONDITION. 3 Hours.

A seminar offered to students in majors across campus, undergraduate and graduate. Practice in the analysis of visual information and discussion of topics which relate to medical humanities, disability studies, the impact of race and ethnicity, the representation of aging, narrative medicine, and art therapy. Students engage in research and creative projects and present their works to the class. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor, Medical Humanities, or Disability Studies.

ART 4306. MID-RENAISSANCE. 3 Hours.

Art and architecture in 15th century Italy, beginning with developments in Renaissance Florence. The relation of humanism and science to the visual arts, patronage, and the social and historical contexts of artistic production. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4307. SPECIAL TOPICS IN ASIAN ART. 3 Hours.

Special studies seminar dealing with various aspects of the history and development of Asian art, architecture, and archeology. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4308. FINE ART MUSEUMS AND RESEARCH COLLECTIONS. 3 Hours.

Examines current issues and developments in museum practice. This course uses area museums, auction houses, and research collections as a learning resource. This course is supplemented by on-site visits and readings. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4310. TOPICS IN CINEMA STUDY. 3 Hours.

Historical surveys of nonfiction film, experimental cinema, and genres (e.g., the western, the gangster film, science-fiction films), as well as geographical or national movements (e.g., German expressionism, Italian neo-realism, French new wave) and film theory and criticism. The particular subject will change from year to year. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission of the instructor.

ART 4311. SCRIPT TO SCREEN. 3 Hours.

This course for Cinematic Arts majors is a high energy merger of a production class and a short film writing class to both write and produce a film per week during the Summer sessions. Students in this class will have a realistic view of the production consequences of writing for the screen. May be repeated once for credit. Prerequisite: ART 3350 or permission of instructor.

ART 4312. TOPICS IN NINETEENTH CENTURY ART. 3 Hours.

An in-depth study of topics in European and American art c. 1780 to 1900, such as the art and revolutions (the French Revolution, the American Revolution, 1830, 1848, the Commune); Romanticism; Symbolism. May be repeated for credit as course content changes. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4313. COLLECTIONS MANAGEMENT. 3 Hours.

This course will examine the history of museum and research collections, long-term care and sustainability of works, and the concerns of ethics and law in relation to acquisition and management of these collections. This course is enriched by guest speakers and on-site visits to area collections. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4314. TOPICS IN 20TH CENTURY ART. 3 Hours.

Topics from c. 1900 to c. 2000, such as analysis of an individual movement, medium, or theme. May be repeated for credit as course content changes. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4315. ASPECTS OF CONTEMPORARY ART. 3 Hours.

Topics from c. 1970 to the present, such as performance and conceptual art, art in and about the natural environment, post-modernism and critical perspectives, art in the social context, and the genres of the 1980s. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4317. ART AND ISLAM. 3 Hours.

This upper level art history course studies Islamic art and architecture from the seventh century to the present, covering arts from the Arabian peninsula, north and west Africa, southern Europe, central Asia, and south Asia. Emphasis may also be given to the cultural and religious aspects that shape Islamic art including sacred architecture, calligraphy, and pilgrimage. Prerequisites: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4318. ADVANCED DIGITAL IMAGING. 3 Hours.

Advanced level course in computer imaging for art majors. Conceptual as well as expressive problems are introduced to encourage independent and creative problem solving in digital imaging. Emphasis is placed on both manipulation of photo-based media and creation of two-dimensional animation. May be repeated for credit. Prerequisite: ART 3352.

ART 4320. BEYOND PHOTOGRAPHY: WORKING OUTSIDE THE IMAGE. 3 Hours.

This course will examine different approaches to art that are not medium-specific but assumes the student has knowledge of photography as art. Projects will be structured as responses to lectures on topics in modern and contemporary art with emphasis on installation and conceptual work. Prerequisite: 3 hours to be selected from ART 4318, ART 4344, ART 4359, ART 4360, ART 4363, ART 4372.

ART 4330. 18TH CENTURY ART. 3 Hours.

A history of European art from the end of the Baroque era through the Rococo and Neoclassical styles to the beginning of Romanticism. Emphasis will be on cultural and global contexts in which paintings, prints, sculptures, and architecture were produced. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4340. ADVANCED KILN FORMED GLASS. 3 Hours.

Continuation of ART 3340. This class focuses on glass kiln forming techniques and concepts including kiln casting, fusing, slumping, and various cold working processes. Emphasis is on using glass as an expressive and creative art media. Prerequisite: ART 3340 or permission of instructor.

ART 4341. ADVANCED SCULPTURE. 3 Hours.

Advanced work in continuation of ART 3341. Students are encouraged to develop a creative style in their own personal direction. A variety of materials and techniques is explored. May be repeated for credit. Prerequisite: ART 3341 or permission of the instructor.

ART 4342. ADVANCED GLASS. 3 Hours.

Continued development of ART 3342 with emphasis on advanced technique, manipulation and form development. Course assignments will emphasize personal creativity and exploration. May be repeated for credit. Prerequisite: ART 3342 or permission of instructor.

ART 4343. ADVANCED CLAY. 3 Hours.

Further development and focus on techniques and personal expression in sculptural, hand-built, and wheel thrown clay forms. Continuation of kiln firing, moldmaking, slipcasting, and glazemaking. May be repeated for credit. Prerequisite: ART 3363 or permission of the instructor.

ART 4344. ALTERNATIVE PHOTOGRAPHIC PROCESSES. 3 Hours.

This class explores the use of hand-made, physical photographic processes, both historical and modern. Techniques may include camera obscura, pinhole, cyanotype, VanDyke brownprint, tintype, and inkjet negatives. May be repeated for up to six hours credit. Prerequisite: ART 3360, or ART 4360, or permission of the instructor.

ART 4345. ADVANCED PRINTMAKING. 3 Hours.

Continued study and development of both conceptual and technical practice of printmaking. Emphasis placed on personal expression of ideas as well as the broader implications of printed images. Explorations and innovations will be encouraged. May be repeated for credit. Prerequisite: ART 1305, ART 1307, and ART 3343 or permission of the instructor.

ART 4346. GRAPHICS: PORTFOLIO PREPARATION. 3 Hours.

This course concentrates on the creation, development, and evaluation of the graphic design portfolio. Course work will include advanced level conceptual assignments and various methods of presentation. May be repeated for credit. Lab fee: \$50. Prerequisite: ART 3355 and ART 4355 with grades of B or better, or permission of the instructor.

ART 4347. PUBLICATION DESIGN. 3 Hours.

Philosophy, concepts, and structures of magazine and book design. May be repeated for up to six hours credit. Prerequisite: ART 2354 and ART 2355.

ART 4348. INFORMATION VISUALIZATION. 3 Hours.

This course is an exploration of the graphic visualization and representation of data driven information sets to achieve insights into the cognitive and perceptive complexities of the world around us. Course may be repeated for credit. The previous title of this course was Interactive Design. Prerequisite: ART 2304.

ART 4349. ADVANCED CINEMA PRODUCTION (ACP): VIDEO ART & NEW GENRES. 3 Hours.

Advanced work involving production, postproduction, and distribution with a special emphasis on experimental and innovative applications. Instruction may include video integrated with performance, installation, audio/sound art, and computer graphics appropriate to the medium. Lectures, readings, and screenings will frame video art within an historical and critical survey of new genres. May be repeated once for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4350. ADVANCED CINEMA PRODUCTION (ACP): DOCUMENTARY. 3 Hours.

Using film and video as a tool for creative research, students will produce, write, direct and edit original documentaries or nonfiction films/videos under supervision of the instructor. May be repeated once for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4351. ADVANCED CINEMA PRODUCTION (ACP): COMMERCIAL. 3 Hours.

Commercial and corporate applications of video. Students produce original individual projects integrating concepts and technical skills under supervision of the instructor. May be repeated for credit. Prerequisite: ART 3358 or permission of instructor.

ART 4352. ADVANCED CINEMA PRODUCTION (ACP): FICTION. 3 Hours.

Narrative storytelling film/video techniques. Students write, produce, direct and edit original, short narrative film/video projects under supervision of the instructor. May be repeated once for credit. Prerequisite: ART 2358 or ART 3350 or permission of the instructor.

ART 4353. FOUNDRY. 3 Hours.

This advanced studio class will explore work in sculpture methods specific to casting and related mold making processes. Students will develop expertise in model preparation, silica-based slurry mold processes, and chasing metal castings.

ART 4354. SCREENWRITING 2. 3 Hours.

A continuation of ART 2350 focusing on writing an original (no adaptations), narrative, full-length screenplay through all stages to final draft status primarily focusing on the development of a polished first act. Students study screenplays, view films, conduct actor readings, and complete various other assignments. May be repeated once for credit. Prerequisite: ART 3350 or permission of the instructor.

ART 4355. VISUAL IDENTITY SYSTEMS. 3 Hours.

Creative exploration and application of complex visual communication skills to the development of a visual identity system. Prerequisite: ART 3354, or permission of the advisor.

ART 4356. PROFESSIONAL PREPARATION. 3 Hours.

Exploration and development of the visual communication portfolio. Course work includes advanced level conceptual assignments. Emphasis on complex professional skills. May be repeated for up to six hours credit. Prerequisite: ART 3354, or permission of the advisor.

ART 4357. ADVERTISING DESIGN. 3 Hours.

Typography, layout, visualization, and conceptual problem solving as applied to advertising. Prerequisite: ART 3354, or permission of the advisor.

ART 4358. ADVANCED CINEMA PRODUCTION (ACP): EDITING. 3 Hours.

An advanced workshop in video editing and post production. Emphasis will be placed on long form editing, the aesthetics of editing, and editing work flow. May be taken 3 times for credit. Prerequisite: ART 3358 or permission of instructor.

ART 4359. ADVANCED PHOTOGRAPHY. 3 Hours.

This course encourages students to use a variety of photographic processes (black & white, color, non-silver, computer imaging, etc.) with an emphasis on the development of a personal stance. Students will work on individual projects and present work in an environment of critical discussion. May be repeated for credit. Prerequisite: Three hours to be selected from ART 4344, ART 4360, ART 4363, or permission of the instructor.

ART 4360. COLOR PHOTOGRAPHY. 3 Hours.

This course will direct students to an understanding of color photography as a contemporary art medium. Students will utilize various digital photographic techniques including color correction and digital printing. Color theory, use of color as an element in image making, and the psychology of color may be covered. May be repeated for up to six hours credit. Prerequisite: ART 3360 or permission of the instructor.

ART 4361. ADVANCED CINEMA PRODUCTION (ACP): 3-D ANIMATION. 3 Hours.

Intensive study of digital computer animation and 3-D digital animation tools and techniques. Students will produce a number of short, original works under the supervision of the instructor. May be repeated for credit. Prerequisite: ART 2304 and ART 2358, or permission of instructor.

ART 4362. CINEMA THESIS PRODUCTION. 3 Hours.

This capstone course is designed to bring together ideas, processes, practices, and theories in the service of the production of a substantial work of cinema. Students will pursue an entire project from conception to completion, combining intensive preproduction, production, and post-production with in-depth instruction on lab work, distribution, and exhibition. Throughout the course, emphasis is placed on instructor, peer, and self-critique. May be repeated for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4363. STUDIO PHOTOGRAPHY. 3 Hours.

The theory and practice of studio photography. Students will master studio strobe lighting, large format film camera, and digital camera techniques. Prerequisite: ART 3360 or permission from the instructor.

ART 4364. MOBILE APP DESIGN. 3 Hours.

An overview of the development and design process for mobile web applications and portable technologies. Exploration of best practices for mobile app design and brand strategy, user experience, concept development, mobile content strategy, information architecture, interaction/interface design, visual design, and rapid prototyping. No coding is required or expected with this course. Prerequisite: ART 3356.

ART 4365. TECHNOLOGY IN ART EDUCATION. 3 Hours.

This course provides digital media presentation strategies to enhance teacher effectiveness and explores how to incorporate the use of digital media in curriculum development. It also enables students to develop an electronic teaching portfolio to prepare students for job interviews and to showcase both personal and student artwork. Reading assignments, research, hands-on experiences, and in-class discussion provide students with an understanding of technology and its application to an art education classroom. Students will gain a working knowledge of current best practice digital technology, including the internet and video software. Prerequisite: None; however students are highly encouraged to take ART 3323 before, or concurrent with, this course.

ART 4366. WEB DESIGN. 3 Hours.

Concentrated study in the use of design, creation, and strategic planning of websites. Emphasis is placed on creative concepts, information architecture, user experience, and site development. Course work will explore issues of differing perspectives of technology as a tool, a medium, and/or an environment. May be repeated for credit with grade of B or better. Prerequisite: ART 3356.

ART 4367. ADVANCED CINEMA PRODUCTION (ACP): 2-D ANIMATION. 3 Hours.

This course introduces techniques for two-dimensional animation presented in an historical and aesthetic context. Students will produce short animated films utilizing basic animation principles and developing the conceptual skills necessary for creating motion designs. May be repeated for credit. Prerequisite: ART 2304 and ART 2358 or permission of the instructor.

ART 4368. ADVANCED DARKROOM PHOTOGRAPHY. 3 Hours.

This advanced level course explores the use of medium and large format film cameras, film development, gelatin silver printing techniques, and archival presentation. May be repeated for up to 6 hours credit. Prerequisite: ART 3360.

ART 4370. STAGED ENVIRONMENTS. 3 Hours.

This course concentrates on the conceptualization, development and execution of tableaux designed exclusively for the camera. Lectures, readings and presentations will cover view cameras, studio lighting, set design, scouting locations, using props, and working with models. Prerequisite: ART 3360 or permission of the instructor.

ART 4371. ADVANCED PAINTING. 3 Hours.

Students will be encouraged to develop a personal direction which complements their development as visual thinkers. The student will be required to plan a course outline of conceptual development with the instructor at the beginning of each semester. May be repeated for credit. Student must earn a grade of "B" or above in the course to repeat it. Prerequisite: ART 2308, ART 2371 and a grade of B or above in ART 3371 or permission of the instructor. Transfer students will be required to schedule a portfolio review with the painting instructor to gain permission to enroll in the class.

ART 4373. ADVANCED THREE-DIMENSIONAL STUDIES. 3 Hours.

Class is designed for students to continue the development of advanced three-dimensional work and engage in a cross section of various media. May be repeated for credit. Prerequisite: 12 hours to be selected from ART 3341, ART 3342, ART 3363, ART 4341, ART 4342, ART 4343, ART 4353, or permission of the instructor. Formerly ART 4366. Credit will be granted for both.

ART 4374. PACKAGING & 3D CAD. 3 Hours.

Packaging structure design, materials, performance, testing and sustainability. The curriculum integrates with the Corrugated Prototype Design and CAD Production Lab (CORRPRO). Students use 3D structural design software, a variety of materials, and a computer-aided design (CAD) table to produce significant packaging solutions. May be repeated once for credit. Prerequisite: ART 1306 and ART 2304.

ART 4375. DESIGN TEXAS. 3 Hours.

Visual Communication outreach and problem solving. Individual and group projects for clients selected by the instructor. Provides advanced undergraduate students an opportunity to interact with clients on the development and completion of complex communication design problems. May be taken up to three times for credit. Prerequisite: ART 3355.

ART 4376. ADVANCED CINEMA PRODUCTION (ACP): SOUND. 3 Hours.

An advanced workshop in sound recording, sound design, and editing. Through lectures, lab, class demonstrations, and projects, students develop skills and knowledge in the technical and artistic aspects of sound techniques for film. May be repeated once for credit. Prerequisite: ART 3358 or permission from the instructor.

ART 4377. ADVANCED CINEMA PRODUCTION (ACP): PRODUCING. 3 Hours.

This course investigates real-world methodologies and best practices used in the art of producing. Topics may include cinematic, episodic, and documentary formats, as well as evolving formats such as VR/AR. Students develop a professional regard for the three vital elements of production: Time, Money, and Labor. With an eye on the intersection of aesthetic, legal, and practical considerations, students take a methodical approach to development and production through distribution and profit participation. May be repeated once for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4378. TOPICS IN SCREENWRITING. 3 Hours.

This course will focus on specialized areas of screenwriting beyond foundational and developmental content. The content covered may include screenwriting adaptation, non-linear storytelling, and serial/episodic screenwriting. May be repeated for credit as topics change. Prerequisite: ART 3350 or permission from the instructor.

ART 4382. ENTREPRENEURSHIP IN THE ARTS. 3 Hours.

Students will apply creativity, imagination, and innovation as they explore opportunities for entrepreneurship in the arts. Prerequisite: Student must have completed 60 credit hours or have the permission of the instructor.

ART 4383. INDEPENDENT CINEMA PRODUCTION. 3 Hours.

Students will produce a major film or video in the genre of their choosing (narrative, documentary, commercial, or animation). Students may elect to work in a variety of media (including 16 mm film, digital video or installation) to produce original works. Students will be individually mentored as their productions move through preparation, shooting and post-production. May be repeated for credit. Prerequisite: ART 3358 or permission of instructor.

ART 4384. ADVANCED CINEMA PRODUCTION (ACP): DIGITAL VISUAL EFFECTS. 3 Hours.

Analysis of the shooting requirements, set and location considerations, and software choices and techniques used for various visual effects treatments. Includes digital compositing and techniques such as matte generation, camera tracking, color correction, roto-scoping, chromakey, set extension, and 3D integration. May be repeated once for credit. Prerequisite: ART 2304 and ART 2358, or permission of the instructor.

ART 4390. CONFERENCE COURSE: ART HISTORY. 3 Hours.

Independent study or research in an area of art history agreed upon in advance with the instructor. Written permission and the determination of obligations and objectives are required before registration. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4391. INDEPENDENT STUDY. 3 Hours.

Mature, capable students may be permitted to pursue individual art problems. Problems must be stated in writing, a definite conference schedule arranged, and the paperwork must be approved by both the supervising faculty member and the department chair prior to registration. May be repeated for credit for varied subject matter. Prerequisite: B average in art concentration.

ART 4392. SPECIAL STUDIES. 3 Hours.

Special course work in new or experimental offerings for which there is immediate need and for which special resources are available. May be repeated for credit. Primarily for art majors.

ART 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

ART 4395. ART INTERNSHIP. 3 Hours.

An opportunity to apply academic training as participant/observer in a professional organization relevant to a major area of concentration. With permission of advisor, internships may be repeated for up to a maximum of nine hours credit. Internships must be arranged with the internship supervisor in the semester prior to enrolling for this course. Prerequisite: permission of the instructor.

ART 4396. SPECIAL STUDIES IN ART HISTORY. 3 Hours.

Subjects of immediate interest in various fields of art history; to complement temporary museum exhibitions and/or faculty research specializations. May be repeated for credit as course content changes. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4397. ADVANCED CINEMA PRODUCTION (ACP): SPECIAL STUDIES. 3 Hours.

Topics in this course respond to emerging technologies, immediate needs, and specialized processes. May be repeated for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4695. ART INTERNSHIP. 6 Hours.

An opportunity to apply academic training as participant/observer in a professional organization relevant to a major area of concentration. With permission of advisor, internships may be repeated for up to a maximum of nine hours credit. Internships must be arranged with the internship supervisor in the semester prior to enrolling for this course. Prerequisite: permission of the instructor.

ART 5000. SUPERVISED TEACHING STUDIO ART. 0 Hours.

Training in teaching methods and procedures for studio art classes, including weekly group meetings with the instructor and individual consultations. Prerequisite: graduate standing in studio art, or graduate standing and appointment as a teaching assistant. May be repeated.

ART 5320. ART CRITICISM & THEORY. 3 Hours.

A discussion of placing art within the context of the history of ideas.

ART 5321. CREATIVE STRATEGIES. 3 Hours.

This is a seminar class for graduate students and will focus on exploring research strategies including the collection, interpretation and presentation of visual information. Students will read selected writings by artists, film and video makers, art historians, critics, designers and arts professionals on a weekly basis, contribute to class discussions, and examine their own creative strategies. A major component of this course will also be a series of in-class presentations by UTA Art+Art History faculty. The purpose of these lectures is to provide new graduate students with access to the diversity of faculty and their own unique perspectives. Invited faculty will work with the course instructor in selecting topics and readings for discussion within the seminar.

ART 5322. ENTREPRENEURSHIP IN ARTS MANAGEMENT AND ARTS BRANDING. 3 Hours.

Entrepreneurship in Arts Management and Arts Branding will offer students the opportunity to create, imagine, develop and implement individualized and collaborative entrepreneurial strategies that will strengthen their potential for success in their careers.

ART 5323. RESEARCH FILM/VIDEO: EAST-WEST CINEMA. 3 Hours.

Study of the cinema production process using significant works representative of important historic and contemporary ideas and movements from East and West.

ART 5330. CRITICAL PERSPECTIVE IN THE VISUAL ARTS & VISUAL COMMUNICATION. 3 Hours.

Seminar course that focuses on graduate student interaction with visiting artists, scholars, curators, critic, designers, and filmmakers.

ART 5340. RESEARCH IN STUDIO INTERMEDIA. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5341. RESEARCH IN SCULPTURE. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5342. RESEARCH IN GLASS. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5343. RESEARCH IN PRINTMAKING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5347. RESEARCH IN DRAWING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5355. RESEARCH IN VISUAL COMMUNICATION. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5359. RESEARCH IN PHOTOGRAPHY DIGITAL IMAGING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5360. TOPICS IN THE HISTORY OF ART & DESIGN. 3 Hours.

Special seminar/topics course focusing on enhancing the art and design knowledge base of MFA candidates in the areas of film/video, visual communication, intermedia-expanded studio, and glass as art.

ART 5363. RESEARCH IN CLAY. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5371. RESEARCH IN PAINTING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5383. RESEARCH IN FILM/VIDEO: SCREENWRITING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5384. RESEARCH IN FILM/VIDEO: CINEMATOGRAPHY. 3 Hours.

Emphasis is given to individual application of technical skills and aesthetic abilities of cinematography to develop students' "creative eye." Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5385. RESEARCH FILM/VIDEO: EDITING. 3 Hours.

An advanced workshop in video editing and post production. Emphasis will be placed on diverse editing genres and styles and the aesthetics of editing and post-production workflow. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5386. RESEARCH FILM/VIDEO: SHORT FILM PRODUCTION. 3 Hours.

This course will concentrate on the narrative form with the goal of directing a 3-5-minute original short film exploring dramatic beats and the use of blocking and camera as narrator. The course involves the planning, production, and post-production of short narrative films. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5387. RESEARCH IN FILM/VIDEO: PRE THESIS FILM PRODUCTION I. 3 Hours.

Students will develop scripts or treatment and finish all the major pre-production works and production for pre-thesis films to be edited in pre-thesis Film Production. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5388. RESEARCH FILM/VIDEO: PRE THESIS FILM PRODUCTION II. 3 Hours.

Students will finish all the major post-production works for pre-thesis films. The class will work through a number of topics relating to digital post-production including video editing, sound design, basic compositing, color correction, and exporting final projects for various exhibition platforms with an exploration of the aesthetics and guiding principles behind each area. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5389. RESEARCH FILM/VIDEO: SPECIAL TOPICS TECHNIQUES. 3 Hours.

The class will provide a foundation for the student in learning the art of Producing and Production Management. It will encompass the four phases of film making: development, production, post production and distribution. Prerequisite: permission of instructor.

ART 5390. RESEARCH FILM/VIDEO: SPECIAL TOPICS IN FILM STUDIES. 3 Hours.

Exploration of a specific area of cinema studies, designed to enhance and enrich the traditional production curriculum and provide significant professional research for an ever-changing discipline. Prerequisite: permission of the instructor.

ART 5391. INDEPENDENT STUDY. 3 Hours.

Independent and directed research in the area of Studio Intermedia. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5392. INDEPENDENT STUDY IN VISUAL COMMUNICATION. 3 Hours.

Independent and directed research in the study of Visual Communication.

ART 5393. INDEPENDENT AND DIRECTED RESEARCH IN FILM AND VIDEO. 3 Hours.

Independent and directed research in Film and Video.

ART 5394. INDEPENDENT STUDY IN GLASS. 3 Hours.

Independent and directed research in the study of glass.

ART 5395. INDEPENDENT STUDY IN ART HISTORY AND CRITICISM. 3 Hours.

Independent and directed research in art history and criticism.

ART 5396. SPECIAL TOPICS IN ART HISTORY. 3 Hours.

Subjects of immediate interest in various fields of art history; to compliment faculty research specializations. May be repeated for credit as course content changes. Permission of the instructor required.

ART 5397. MASTER OF FINE ARTS EXHIBITION. 3 Hours.

This course is intended to be the final course in the Master of Fine Arts (M.F.A.) students program of study. Here, students will concentrate their studio activity towards the completion of a body of work to be exhibited, complete the written component of the degree as well as oral examinations. Students must have 30 hours of coursework in the concentration completed in their program of study prior to enrolling for this course.

ART 5640. RESEARCH IN STUDIO INTERMEDIA. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5641. RESEARCH IN SCULPTURE. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5642. RESEARCH IN GLASS. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5643. RESEARCH IN PRINTMAKING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5647. RESEARCH IN DRAWING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5655. RESEARCH IN VISUAL COMMUNICATION. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5659. RESEARCH IN PHOTOGRAPHY DIGITAL IMAGING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5663. RESEARCH IN CLAY. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5671. RESEARCH IN PAINTING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5683. RESEARCH IN FILM/VIDEO: FILM PRODUCTION. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5697. MASTER OF FINE ARTS EXHIBITION. 6 Hours.

This course is intended to be the final course in the Master of Fine Arts (M.F.A.) student's program of study. Here, students will concentrate their studio activity towards the completion a body of work to be exhibited, complete the written component of the degree as well as oral examinations. Students must have 30 hours of coursework in the concentration completed in their program of study prior to enrolling for this course.

Art + Art History - Graduate Program

Objective

The mission of the Program in Studio Art is to:

1. Encourage and guide MFA students to successfully complete the recognized terminal degree in the practice of art.
 - a. Self discipline
 - b. Self confidence
 - c. Proficiency in their work
 - d. Open Communication
2. Enable artists, filmmakers, and designers in the program to develop habits of:
 - a. Make connections with various media and mediums to expand visual and conceptual vocabulary
 - b. Meet distinguished artists, filmmakers and designers to enhance the meaningful on-going dialogue related to their work and future.
3. Enable students to:
4. Provide studio space for students to explore methods of concept development, the exploration of time based media, reflection and development of personal work.
5. Encourage students to develop new skills and enhance existing ones. Expand the conventional concepts of the "studio" and are encouraged to develop their personal style and direction.
6. Encourage graduates to compete for professional positions in teaching, artistic fields and pursue careers as exhibiting artists, filmmakers/writers, and designers.

Graduate Teaching Assistantships

To be considered for a Graduate Teaching Assistant position, the candidate must be admitted unconditionally. Within the Slideroom application process, there is a form that will require potential candidates to indicate interest in funding. Decisions regarding funding are based on the needs of the department and the quality of the applicant. Students being considered for funding will be interviewed prior to decisions being made to award. All GTA and students must mentor with faculty for 18 credit hours, taking ART 5000, Supervised Teaching in Art prior to being assigned as Instructor of Record. ART 5000 is taken each semester that a graduate student is teaching or assisting in a course. GTA are subject to all university standards and requirements for funding, and must maintain a 3.0 to have their awards renewed. Candidates whose native language is not English must submit a score 45 on the Test of Spoken English (TSE-A), a score of 23 on the TOEFL iBT Speaking subtest, or a score of 45 on UT Arlington's SEA test. GTA positions in the Department of Art and Art History are limited and are very competitive.

Departmental Scholarships

The Department of Art and Art History attempts to provide some level of funding to all students admitted into the program. The amount of this funding varies based on the needs of the department and the quality of the applicant. There is no separate application for consideration. The student must be unconditionally admitted and meet all of the admission standards of the university and the department.

Advisement and Supervisory Committees

The MFA Director will advise all incoming graduate students. After a student has selected a supervisory committee and submitted a program of work, the major professor becomes his/her adviser. Students should consult the Department of Art and Art History's Graduate Student Handbook, the MFA Director or their Major Professors for details on forming a supervisory committee, creating a program of work and other requirements.

Admissions Requirements

Thank you for your interest in our MFA program. If you are planning to apply and would like to visit our campus and department, please contact Nancy Palmeri, MFA director at npalmeri@uta.edu to arrange a visit.

The application process for the MFA in Art has two steps, first the application to the UTA, that is known as ApplyTexas, then to the departments website. For information on the process, please go to our website www.uta.edu/art (<http://www.uta.edu/art/>) for materials due dates. To apply, please navigate to the MFA Application Requirements on the dropdown menu under MFA.

Unconditional Admission

Applicants must possess a bachelor's degree from an accredited college or university. Submit transcripts from all previous college or university work, and three letters of recommendation are required of all applicants. In addition, applicants should have a minimum Grade Point Average (GPA) of 3.0, as calculated by Graduate Admissions. Applicants must submit a portfolio and statement of intent. The Art and Art History faculty review all materials and positively recommend acceptance into the M. F. A. program.

Provisional Admission

Those who have submitted their applications forms, but whose packets are incomplete, can be admitted provisionally if their GPA is at least 3.0, and if the program and Graduate Admissions have received official transcripts. In this case, incomplete materials could include letters of recommendation.

Probationary Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, portfolio, statement of intent, and GPA), can be admitted on probation, with the condition that they make no less than a B in the first 12 hours of coursework in their art concentration. Such students must complete no fewer than 9 credits during the semester in which they are on probation.

Deferred Admission

Those who have weaknesses in no more than two of the Degree Requirements (letters of recommendation, portfolio, statement of intent, and GPA), and/or who have not submitted all of the materials required for unconditional admission, can have their applications deferred for one semester, until outstanding requirements and criteria are met.

International Student Admission

International applicants must have a bachelor's degree from a regionally accredited U.S. college or university or its foreign equivalent, a GPA of at least 3.0 as calculated by the Graduate School, 3 letters of recommendation, portfolio and letter of intent to be considered for admission. In addition, applicants whose native language is not English must demonstrate proficiency in English by earning a score of at least 550 on the paper-based Test of English as a Foreign Language (TOEFL) or a score of at least 213 on the computer-based test, or a minimum score of 40 on the Test of Spoken English (TSE). The Internet-based TOEFL examination (TOEFL iBT) will be accepted as an alternative to the paper and computer-based TOEFL for admission purposes. Students taking TOEFL iBT must attain a minimum total test score of 79 and meet or exceed the following scores on each of the sections of the test:

Writing: 22
Speaking: 21
Reading: 20
Listening: 16

Those who do not meet the English proficiency requirement must satisfactorily complete courses in the ESOL area, as approved by the program and the Graduate School.

Degree Requirements

M.F.A. Course Requirements

The graduate course requirements for the M.F.A. of 60 semester credit hours are normally distributed over six semesters of a three-year program. The student will be required to spend a minimum of three semesters in the M.F.A. program with one academic year in residency as a full time student.

Specific Course Requirements

Area of Concentration	39
Supporting Studio Courses	9
Art History	9
Free electives	3
Total Hours	60

Courses outside the area of concentration (supporting and free electives) should be taken from faculty other than the major professor. It is strongly recommended that the students study with a minimum of three additional faculty members during the course of his/her program. Students are also encouraged to take a free elective outside the Art and Art History Department.

The supervisory committee will approve the course options (work) and scholarly research. It is emphasized that this is a committee/department option, not a student option.

Studio Art (ART)

Concentration Required Courses in Studio Intermedia, Glass, Visual Communication and Film/Video & Screenwriting

ART 5330	CRITICAL PERSPECTIVE IN THE VISUAL ARTS & VISUAL COMMUNICATION	3
ART 5340	RESEARCH IN STUDIO INTERMEDIA (Studio)	3
or ART 5640	RESEARCH IN STUDIO INTERMEDIA	
ART 5342	RESEARCH IN GLASS	3
or ART 5642	RESEARCH IN GLASS	

ART 5355	RESEARCH IN VISUAL COMMUNICATION	3
or ART 5655	RESEARCH IN VISUAL COMMUNICATION	
ART 5360	TOPICS IN THE HISTORY OF ART & DESIGN (varied)	3
ART 5383	RESEARCH IN FILM/VIDEO: SCREENWRITING	3
or ART 5683	RESEARCH IN FILM/VIDEO: FILM PRODUCTION	
ART 5321	CREATIVE STRATEGIES (Required Course for all incoming MFA students. first semester, first year (for fall admits) second semester of first year (spring admits))	3
Total Hours		21

Prescribed Elective Courses for Supporting Studio in Studio Intermedia, Glass, Visual Communication, Film/Video & Screenwriting

ART 5320	ART CRITICISM & THEORY	3
ART 5341	RESEARCH IN SCULPTURE	3
or ART 5641	RESEARCH IN SCULPTURE	
ART 5342	RESEARCH IN GLASS	3
or ART 5642	RESEARCH IN GLASS	
ART 5343	RESEARCH IN PRINTMAKING	3
or ART 5643	RESEARCH IN PRINTMAKING	
ART 5347	RESEARCH IN DRAWING	3
or ART 5647	RESEARCH IN DRAWING	
ART 5355	RESEARCH IN VISUAL COMMUNICATION	3
or ART 5655	RESEARCH IN VISUAL COMMUNICATION	
ART 5359	RESEARCH IN PHOTOGRAPHY DIGITAL IMAGING	3
or ART 5659	RESEARCH IN PHOTOGRAPHY DIGITAL IMAGING	
ART 5363	RESEARCH IN CLAY	3
or ART 5663	RESEARCH IN CLAY	
ART 5371	RESEARCH IN PAINTING	3
or ART 5671	RESEARCH IN PAINTING	
ART 5391	INDEPENDENT STUDY	3

Example Course Sequence

First Year

First Semester	Hours	Second Semester	Hours
ART 5330		3 ART 5320	3
56xx Research in Concentration		6 56xx Research in Concentration	
		53xx Research in Supporting Studio	
		9	3

Second Year

First Semester	Hours	Second Semester	Hours
ART 5360		3 53xx Research in Supporting Studio	
56xx Research in Concentration		0 56xx Research in Concentration	
53xx Free Elective		0	
Mid-Program Review ¹		0	
		3	0

Third Year

First Semester	Hours	Second Semester	Hours
53xx Research in Supporting Studio		53xx Research in Concentration	3
56xx Research in Concentration		56xx Thesis Exhibition (Research in Concentration) ²	6
		0	9

Total Hours: 24

- ¹ Mid-Program review completed after 30 credits.
- ² Thesis Exhibition, Oral Exam and research paper completed during this semester. Summer opportunities may be available to complete required course work. This is dependent upon the faculty availability.

Graduate Review Exhibition Requirements

Each spring semester, the graduate students will be required to organize a summer exhibition of their recent work.

1. The number of work each student may exhibit will depend upon the number of exhibitors, the size of work, etc., but we would expect that each student will be able to exhibit or screen several pieces.
2. These exhibitions and screenings will be drawn from the work done by each student in the previous spring and fall semesters and will, therefore, represent each student's most recent efforts.
3. Each student will write an "artist's statement" to accompany his/her work on exhibit.

At the end of the exhibition, the graduate students will hold a formal "closing". All graduate students are expected to attend.

Mid-Program Review Requirements

The preliminary examination for the M.F.A. degree at the University of Texas Arlington is the Mid-Program Review.

When the student has completed one-half of her/his program of study, the supervisory committee will conduct a comprehensive review of the student's work in order to ascertain if satisfactory progress is being made toward completion of the degree. The student will present all visual work done to this point, along with an outline and preliminary draft of the written document which is part of the thesis requirement (see below).

To pass, the student must receive a unanimous vote of the committee members. A failed review may be retaken once with permission from the Director of the MFA program and the MFA Graduate Studies Committee. If the student still does not pass, the Director of the MFA program will report the failure and the termination of the student's enrollment in the M.F.A. program to the Graduate School.

M.F.A. Thesis Requirements

The thesis requirement for the M.F.A. degree consists of the following:

- The Thesis Exhibition: A substantial body of original works of art to be exhibited or screened on campus at a time announced to all graduate faculty.
- A written document in which the candidate demonstrates proficiency in conducting research and in analyzing, interpreting and organizing material, as well as demonstrating the ability to communicate perceptions, insights, and conclusions.
- During the last semester of the MFA candidates study a final oral examination coordinated by the supervising committee will be completed.
- Satisfactory completion of the visual and written portions of the thesis and the final oral examination is required for the awarding of the M.F.A. degree.

Specific requirements for the written document are found in Guidelines for the M.F.A.

Art and Art History - Undergraduate Programs

Overview

Areas of study for the BA and BFA degrees include:

- **Design** (Graphic Design, Web Design, App Design, Game Design and Illustration)
- **Cinematic Arts** (Filmmaking, Animation-2D/3D, and Screenwriting)
- **3D Studio** (Sculpture, Clay, Glass, and Intermedia)
- **2D Studio** (Drawing, Painting, Photography, Printmaking, and Intermedia)
- **Art History** (BA only)
- **Art Education** (BFA only)

For additional details, please review the Art and Art History Department's website: <https://www.uta.edu/art/advising/degree-plans> (<https://www.uta.edu/art/advising/degree-plans/>)

The mission of the Department of Art and Art History in the College of Liberal Arts at the University of Texas at Arlington is to provide and encourage an understanding and expansion of knowledge in visual arts, art history, and art education. Our curriculum provides students with varied opportunities to study and interrogate the fundamental nature of the visual arts, its methods, technologies, and boundaries. As a department, we encourage the use of wide-ranging media and methodologies, which enables our students not only to create unique and exciting work, but also to locate their work in the meaningful broader context of the history of art and society. Our intellectual community is purposefully inclusive, enriched and enhanced by its diversity of race and ethnicity, gender identity, and religious tolerance.

Students are challenged to think in experimental and creative, as well as disciplined and established, ways as they prepare to engage with a changing and increasingly complex world. Situated in the center of two major metropolitan cities, Dallas and Fort Worth, UT Arlington is at the core of an internationally significant cultural community. The Department of Art and Art History enhances its programs through co-sponsorship of projects with area museums and cultural sites, as well as off-campus courses and student internships with local, regional, and national professional studios and businesses. This exceptional blend of resources and programs provides graduates of the department with a distinctive point of view and better prepares them to make the transition into a competitive professional world.

The Department of Art and Art History offers degrees in the following:

- Bachelor of Fine Arts (B.F.A.) in Art
- Bachelor of Fine Arts (B.F.A.) in Art Education (Teacher Certification)
- Bachelor of Arts (B.A.) in Art
- Bachelor of Arts (B.A.) in Art History

To assist you in your future program growth, we have created ART 1300 to establish your Art program foundation. This is a required course intended to provide a meaningful overview of the Art and Art History Department for all first semester UTA students. This course satisfies credit for UNIV 1101.

The Gallery at UT Arlington (<http://www.uta.edu/gallery/>) is an exceptionally valuable resource for students in the department. It presents a full program of major exhibitions in its 4,900-square-foot gallery, including lectures, symposia, screenings and publications.

Facilities

The Department of Art & Art History studios and classrooms are located in two facilities:

The Fine Arts Building at 502 S. Cooper Street houses Art History, Cinematic Arts, Photography, Design, Animation, Drawing, 2-D Design, 3-D Design as well as the Digital Design foundation classes. Also included are Departmental Offices, The Gallery at UT Arlington and the Visual Resources Commons.

The Studio Arts Center at 810 S. Davis Street houses the following studios: Clay, Glass, Painting, Printmaking, Neon and Sculpture. It is also the site of Gallery West, a student-run exhibition space.

Student Concentration Portfolio Review

The student concentration portfolio review is a method of assessing art student's progress and their preparedness to enter advanced classes in the B.F.A. program. The review will be able to recommend either acceptance into the B.F.A./B.A. programs (a pre-professional program) or placement into the B.A. degree (a more general program).

Transfer and new students would be allowed to register for the B.F.A./B.A. as "Art intended." Those students designated as "Art" would be scheduled by the Art Advising Office into a set calendar of entrance reviews, by panels of appropriate faculty members.

As 21 and 36 studio class hours are achieved, each potential B.F.A./B.A. student will be reviewed by appropriate faculty (not by a standing committee). At 21 hours, the review would have the purpose of "entrance" into the B.F.A./B.A. programs.

For more information concerning the student concentration portfolio review, visit here (<https://www.uta.edu/art/advising/concentration-portfolio-review/>) or contact the Art and Art History advisor.

Computer and Oral Competency

Students majoring in Art or Art History are required to demonstrate computer use and oral communication competency.

Computer use proficiency can be demonstrated by completion of:

- ART 2304 (Required for Studio majors)
- ART 3300 (Required for Art History majors)
- or by completion of the University administered computer competency exam.

Oral communication competency can be demonstrated by completion of:

- ART 3300 (Required for Art History majors)
- ART 4100 (Required for Studio, Art Education¹, and Art History¹ majors) or ART 4101 (Required for BA Studio majors)
- COMS 1301, COMS 2305, , or COMS 3315.

¹ Art Education and Art History majors will select a specific section, with the assistance of advisors, of ART 4100 for Senior Lecture and Senior Research Presentation.

Degree Programs

To assist you in your future program growth, we have created ART 1300 to establish your Art program foundation. This is a course intended to provide a meaningful overview of both the Art and Art History Department and to the University as a whole. This course is required for all first semester UTA students and satisfies credit for UNIV 1101 or UNIV1131.

For additional degree plan details, please review the Art and Art History Department's website at <https://www.uta.edu/art/advising/degree-plans> (<https://www.uta.edu/art/advising/degree-plans/>) or contact an advisor at art-arthistory@uta.edu.

Bachelor of Fine Arts in Art

Areas of study for the BFA degree include:

- **Design** (Graphic Design, Web Design, App Design, Game Design, and Illustration)
- **Cinematic Arts** (Filmmaking, Animation-2D/3D, and Screenwriting)
- **3D Studio** (Sculpture, Clay, Glass, and Intermedia)
- **2D Studio** (Drawing, Painting, Photography, Printmaking, and Intermedia)
- **Art Education** (see the *CERTIFICATE, Art Education (Teacher Certification)* section for additional requirements and information)

The B.F.A. degree program offers intensive pre-professional preparation in the field of studio art. This program is designed for those aspiring to work in their field of interest as professionals or to enter graduate school upon completion of the degree. In addition to fulfilling University and the College of Liberal Arts requirements, students planning to graduate with a B.F.A. in Art degree must complete required art foundational courses and major requirements specific to their intended area of interest. Please refer to the B.F.A. in Art degree course listings section below for more details.

B.F.A. students must also maintain a 3.0 GPA within the major. A total of 124 credit hours will be achieved from all requirements. *B.F.A. Art Education students will complete 133 credit hours due to additional requirements (see the *CERTIFICATE* page for more details).

Bachelor of Arts in Art (STUDIO)

Areas of study for the BA degree include:

- **Design** (Graphic Design, Web Design, App Design, Game Design, and Illustration)
- **Cinematic Arts** (Filmmaking, Animation-2D/3D, and Screenwriting)
- **3D Studio** (Sculpture, Clay, Glass, and Intermedia)
- **2D Studio** (Drawing, Painting, Photography, Printmaking, and Intermedia)

The B.A. program in Art is of a more general nature, and is more suited to those whose current academic interests and/or prior work are directed toward a broad overview of art and its relationship to other disciplines. In addition to fulfilling University and the College of Liberal Arts requirements, students

planning to graduate with a B.A. in Art degree must complete required art foundational courses and major requirements specific to their intended area of interest. Please refer to the B.A. in Art degree course listings section below for more details.

B.A. in Art students must also maintain a 2.5 GPA within the major and complete at least 18 credit hours of coursework toward a minor of the student's interest. Students are encouraged to select a minor that will further enhance their overall degree plan studies and ultimate career goals. A total of 120 credit hours will be achieved from all requirements.

Bachelor of Arts in Art History

The B.A. program in Art History emphasizes historical research, preparing students for graduate work in art history or museum studies. It is intended to provide a strong academic preparation for scholarly research and further study at the graduate level. In this degree program, a minor is required of at least 18 credit hours and may be in studio art. Other suggested fields for the minor are history, literature, anthropology, psychology, philosophy, and modern languages. Students seeking the B.A. degree in Art History must complete all requirements established by the College of Liberal Arts for the B.A. degree and an additional three hours of a 3000/4000-level history course.

In addition to fulfilling University and the College of Liberal Arts requirements, students planning to graduate with a B.A. in Art History must also fulfill required Art History foundational courses and major requirements. Students are advised to complete the foundation requirements before beginning work in 3000/4000-level art historical courses. Students are also required to take at least one advanced course in each of the three groups: Ancient to Medieval (Group I), Medieval to Modern (Group II), and Modern (Group III). Art History majors are required to complete at least one Art History course in a Non-Western Art History area. One course in a studio medium is required. Additional Art supportive elective courses are also required to satisfy accreditation standards (see advisors for more information). Art history majors may take an additional studio course in their 30 hours of 3000/4000-level art historical studies, upon faculty approval. Please refer to the B.A. in Art History degree course listings section below for more details.

B.A. in Art History students must also maintain a 3.0 GPA within the major. A total of 120 credit hours will be achieved from all requirements.

Bachelor of Fine Arts in Art Degree Requirements

Regardless of which emphasis is selected, students are required to complete specific Art Foundation requirements prior to beginning work in the concentration.

Pre-Professional Courses

General Core Requirements (p. 50) 42

Art and Art History majors should select the following courses for Communication Core. Math options and requirement below. See advisor for details.

ENGL 1301	RHETORIC AND COMPOSITION I	Required for Degree Program
ENGL 1302	RHETORIC AND COMPOSITION II	Required for Degree Program
MATH Requirement: 1301/1302/1315 and one higher		Higher Math options to discuss with advisor

Program Requirement

Students may complete Modern/Classical Language (level 1 and 2) of a single language or select 6 credit hours of Art supportive courses with the assistance of an Art advisor. 6

Professional Courses

Degree Program Requirements

ART studio support classes to satisfy accreditation standards. This will be selected with the assistance of the Art Advisor. 6

New Student Requirement	
ART 1300	FIRST YEAR SEMINAR IN ART

MAJOR

Art Foundations 21

ART 1305	TWO-DIMENSIONAL DESIGN	
ART 1306	THREE-DIMENSIONAL DESIGN	Specific sections available for Visual Communication Design majors
ART 1307	DRAWING FUNDAMENTALS	
ART 2304	DIGITAL MEDIA	Specific sections available for Visual Communication Design majors
Studio 2-D Course (2000-4000 level)		May be determined by concentration
Studio 3-D Course (2000-4000 level)		May be determined by concentration
Media Course (film/video, visual communication, photography) (2000-4000 level)		May be determined by concentration

Select two of the following: Consult with an advisor regarding satisfying Core requirements. 6

ART 1309	INTRODUCTION TO ART HISTORY I: PREHISTORIC THROUGH 16TH CENTURY
ART 1310	INTRODUCTION TO ART HISTORY II: 17TH CENTURY TO THE PRESENT
ART 1317	INTRODUCTION TO ART HISTORY III: AFRICA, ASIA, AMERICAS

Advanced Art History 6

Select two courses from two of the following groupings: Separate grouping selections required

Group I (Ancient to Medieval):

ART 3302	ART OF ANTIQUITY
ART 3304	JAPANESE ART & ARCHITECTURE
ART 3306	BYZANTINE AND MEDIEVAL ART
ART 3316	ANCIENT EGYPTIAN & NEAR EASTERN ART
ART 3319	ART & ARCHITECTURE OF INDIA
ART 3320	ART OF THE ANCIENT AMERICAS
ART 3321	CHINESE ART & ARCHITECTURE
ART 3332	ART OF SUB-SAHARAN AFRICA

Group II (Medieval to Modern):

ART 3307	THE EARLY RENAISSANCE
ART 3308	HIGH RENAISSANCE
ART 3310	FILM AS ART
ART 3312	NEO-CLASSICISM AND ROMANTICISM
ART 3313	BACKGROUNDS OF MODERN ART
ART 3315	IMPRESSIONISM
ART 3319	ART & ARCHITECTURE OF INDIA
ART 3321	CHINESE ART & ARCHITECTURE
ART 3325	STUDIES IN THE BAROQUE
ART 3331	BRITISH ART
ART 3332	ART OF SUB-SAHARAN AFRICA
ART 3391	HISTORY OF PHOTOGRAPHY
ART 4301	ART AND GENDER
ART 4306	MID-RENAISSANCE
ART 4312	TOPICS IN NINETEENTH CENTURY ART
ART 4330	18TH CENTURY ART

Group III (Modern):

ART 3310	FILM AS ART
ART 3311	AMERICAN ART
ART 3313	BACKGROUNDS OF MODERN ART
ART 3314	MODERN ART
ART 3315	IMPRESSIONISM
ART 3331	BRITISH ART
ART 3389	CONTEMPORARY ART
ART 3391	HISTORY OF PHOTOGRAPHY
ART 4301	ART AND GENDER
ART 4308	FINE ART MUSEUMS AND RESEARCH COLLECTIONS
ART 4310	TOPICS IN CINEMA STUDY
ART 4314	TOPICS IN 20TH CENTURY ART
ART 4315	ASPECTS OF CONTEMPORARY ART

The following courses will have varied topics. Group placement will be determined by that topic:

ART 4307	SPECIAL TOPICS IN ASIAN ART
ART 4317	ART AND ISLAM
ART 4396	SPECIAL STUDIES IN ART HISTORY

Art Concentration

39

At least 36 hours must be advanced courses (3000/4000 level) within the specific concentration area as approved by faculty, to include:

ART 4300	PROFESSIONAL PRACTICES *
ART 4100	SENIOR EXHIBITION

* ART 4356 Required for Visual Communication majors

Bachelor of Arts in Art (studio) Degree Requirements

Regardless of which emphasis is selected, students are required to complete specific Art Foundation requirements prior to beginning work in the concentration.

Pre-Professional Courses

General Core Requirements (p. 50) 42

Art and Art History majors should select the following courses for Communication Core. Math options and requirement below. See advisor for details.

ENGL 1301	RHETORIC AND COMPOSITION I	Required for Degree Program
ENGL 1302	RHETORIC AND COMPOSITION II	Required for Degree Program
MATH Requirement: 1301/1302/1315 and one higher ^{Higher Math options to discuss with advisor}		

Program Requirement

Modern/Classical Languages (level 1 and 2), of a single language ^{If additional languages are of interest, please see Art advisor.} 8

Professional Courses

Degree Program Requirements

ART studio support course to satisfy accreditation standards. This will be selected with the assistance of the Art Advisor. 3

ART 1300	FIRST YEAR SEMINAR IN ART
New Student Requirement	

MAJOR

Art Foundations 21

ART 1305	TWO-DIMENSIONAL DESIGN
ART 1306	THREE-DIMENSIONAL DESIGN ^{Specific sections available for Visual Communication Design majors}
ART 1307	DRAWING FUNDAMENTALS
ART 2304	DIGITAL MEDIA ^{Specific sections available for Visual Communication Design majors}
Studio 2-D Course (2000-4000 level) ^{May be determined by concentration}	
Studio 3-D courses (2000-4000 level) ^{May be determined by concentration}	
Media Course (film/video, visual communication, photography) (2000-4000 level) ^{May be determined by concentration}	

Select two of the following: ^{Consult with an advisor regarding satisfying Core requirements.} 6

ART 1309	INTRODUCTION TO ART HISTORY I: PREHISTORIC THROUGH 16TH CENTURY
ART 1310	INTRODUCTION TO ART HISTORY II: 17TH CENTURY TO THE PRESENT
ART 1317	INTRODUCTION TO ART HISTORY III: AFRICA, ASIA, AMERICAS

Advanced Art History 6

Select two courses from two of the following groupings: ^{Separate grouping selections required}	
Group I (Ancient to Medieval):	
ART 3302	ART OF ANTIQUITY
ART 3304	JAPANESE ART & ARCHITECTURE
ART 3306	BYZANTINE AND MEDIEVAL ART
ART 3316	ANCIENT EGYPTIAN & NEAR EASTERN ART
ART 3319	ART & ARCHITECTURE OF INDIA
ART 3320	ART OF THE ANCIENT AMERICAS
ART 3321	CHINESE ART & ARCHITECTURE
ART 3332	ART OF SUB-SAHARAN AFRICA
Group II (Medieval to Modern):	
ART 3307	THE EARLY RENAISSANCE
ART 3308	HIGH RENAISSANCE
ART 3310	FILM AS ART
ART 3312	NEO-CLASSICISM AND ROMANTICISM
ART 3313	BACKGROUNDS OF MODERN ART
ART 3315	IMPRESSIONISM
ART 3319	ART & ARCHITECTURE OF INDIA
ART 3321	CHINESE ART & ARCHITECTURE
ART 3325	STUDIES IN THE BAROQUE

ART 3331	BRITISH ART	
ART 3332	ART OF SUB-SAHARAN AFRICA	
ART 3391	HISTORY OF PHOTOGRAPHY	
ART 4301	ART AND GENDER	
ART 4306	MID-RENAISSANCE	
ART 4312	TOPICS IN NINETEENTH CENTURY ART	
ART 4330	18TH CENTURY ART	
Group III (Modern):		
ART 3310	FILM AS ART	
ART 3311	AMERICAN ART	
ART 3313	BACKGROUNDS OF MODERN ART	
ART 3314	MODERN ART	
ART 3315	IMPRESSIONISM	
ART 3331	BRITISH ART	
ART 3389	CONTEMPORARY ART	
ART 3391	HISTORY OF PHOTOGRAPHY	
ART 4301	ART AND GENDER	
ART 4308	FINE ART MUSEUMS AND RESEARCH COLLECTIONS	
ART 4310	TOPICS IN CINEMA STUDY	
ART 4314	TOPICS IN 20TH CENTURY ART	
ART 4315	ASPECTS OF CONTEMPORARY ART	
The following courses will have varied topics. Group placement will be determined by that topic:		
ART 4307	SPECIAL TOPICS IN ASIAN ART	
ART 4317	ART AND ISLAM	
ART 4396	SPECIAL STUDIES IN ART HISTORY	
Art Concentration: Advanced courses (3000/4000 level), to include ART 4101.		20
Minor		18
Selected with Minor advisor; at least six hours of 3000/4000 level coursework ^{Additional 3000/4000 level may be required to meet total advanced requirements}		

Bachelor of Arts in Art History Degree Requirements

Pre-Professional Courses

General Core Requirements (p. 50) 42

Art and Art History majors should select the following courses for Communication Core. Math options and requirement below. See advisor for details.

ENGL 1301	RHETORIC AND COMPOSITION I	Required for Degree Program
ENGL 1302	RHETORIC AND COMPOSITION II	Required for Degree Program
MATH Requirement: 1301/1302/1315 and one higher ^{Higher Math options to discuss with advisor}		

Program Requirement

ART 1300	FIRST YEAR SEMINAR IN ART	
Modern/Classical Languages (level 1 and 2) of a single language		8
Advanced History (HIST) course		3
Art History supportive elective, to be selected with Art History advisor		3

Professional Courses

Degree Program Requirements

ART support course to satisfy accreditation standards. This will be selected with the assistance of the Art Advisor. 3

Major

Art History majors are required to complete at least one Art History course in a Non-Western area.

Art History Foundation Requirements ^{Consult with an advisor regarding satisfying Core requirements.} 12

ART 1309	INTRODUCTION TO ART HISTORY I: PREHISTORIC THROUGH 16TH CENTURY	
ART 1310	INTRODUCTION TO ART HISTORY II: 17TH CENTURY TO THE PRESENT	
ART 1317	INTRODUCTION TO ART HISTORY III: AFRICA, ASIA, AMERICAS	

Art History Requirements

ART 3300	METHODS FOR THE STUDY OF ART HISTORY	3
Studio Art course		3
ART 4100 Senior Research Presentation Class		1
Advanced art history, with at least one course chosen from each of the following three groups: ¹		30
Group I (Ancient to Medieval):		
ART 3302	ART OF ANTIQUITY	
ART 3304	JAPANESE ART & ARCHITECTURE	
ART 3306	BYZANTINE AND MEDIEVAL ART	
ART 3316	ANCIENT EGYPTIAN & NEAR EASTERN ART	
ART 3319	ART & ARCHITECTURE OF INDIA	
ART 3320	ART OF THE ANCIENT AMERICAS	
ART 3321	CHINESE ART & ARCHITECTURE	
ART 3332	ART OF SUB-SAHARAN AFRICA	
Group II (Medieval to Modern):		
ART 3307	THE EARLY RENAISSANCE	
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ART 3315	IMPRESSIONISM	
ART 3319	ART & ARCHITECTURE OF INDIA	
ART 3321	CHINESE ART & ARCHITECTURE	
ART 3325	STUDIES IN THE BAROQUE	
ART 3331	BRITISH ART	
ART 3332	ART OF SUB-SAHARAN AFRICA	
ART 3391	HISTORY OF PHOTOGRAPHY	
ART 4301	ART AND GENDER	
ART 4306	MID-RENAISSANCE	
ART 4312	TOPICS IN NINETEENTH CENTURY ART	
ART 4330	18TH CENTURY ART	
Group III (Modern):		
ART 3310	FILM AS ART	
ART 3311	AMERICAN ART	
ART 3313	BACKGROUNDS OF MODERN ART	
ART 3314	MODERN ART	
ART 3315	IMPRESSIONISM	
ART 3331	BRITISH ART	
ART 3389	CONTEMPORARY ART	
ART 3391	HISTORY OF PHOTOGRAPHY	
ART 4301	ART AND GENDER	
ART 4308	FINE ART MUSEUMS AND RESEARCH COLLECTIONS	
ART 4310	TOPICS IN CINEMA STUDY	
ART 4314	TOPICS IN 20TH CENTURY ART	
ART 4315	ASPECTS OF CONTEMPORARY ART	
The following courses will have varied topics. Group placement will be determined by that topic:		
ART 4307	SPECIAL TOPICS IN ASIAN ART	
ART 4317	ART AND ISLAM	
ART 4396	SPECIAL STUDIES IN ART HISTORY	
Minor		18
Selected with Minor advisor; at least six hours of 3000/4000 level coursework ^{Minor suggestions should be discussed with Art History faculty}		
ART 3300	METHODS FOR THE STUDY OF ART HISTORY	3

¹ An additional three hours of studio work may be included in these 30 advanced hours with the approval of Art History faculty.

Computer and Oral Competency

Students majoring in Art or Art History are required to demonstrate computer use and oral communication competency.

Computer use proficiency can be demonstrated by completion of:

- ART 2304 (Required for Studio majors)
- ART 3300 (Required for Art History majors)
- or by completion of the University administered computer competency exam.

Oral communication competency can be demonstrated by completion of:

- ART 3300 (Required for Art History majors)
- ART 4100 (Required for Studio, Art Education², and Art History² majors) or ART 4101 (Required for BA Studio majors)
- COMS 1301, COMS 2305, or COMS 3315.

² Art Education and Art History majors will select a specific section, with the assistance of advisors, of ART 4100 for Senior Lecture and Research Presentation.

Minor in Art

The student's major department must approve any minor. Students will need to complete the University Minor Approval form, signed by their major advisor as well as other applicable applications and documents required of the department offering the minor.

Students interested in Art as a minor must consult the Art and Art History department's Minor page (<https://www.uta.edu/art/undergraduate/art-minors-for-non-art-majors/>) to determine the selection of an approved sequence of courses per eligible minor. Students will also need to reference the Art Wait List (<https://www.uta.edu/art/advising/wait-list-policies/>) policy for Non-Art majors regarding enrollment processes.

Minors in Art and Art History typically require at least 18 semester hours in Art coursework relevant to the minor, including six to nine semester hours of advanced work (*may be subject to change per minor*).

Currently, the Art and Art History Department offers the following minors:

- Applied Design & Technology
 - Animation
 - Game Development
 - Illustration
- Art (General)
 - Art Therapy (*see advisor*)
 - Museum Studies (*see advisor*)
 - Packaging (*see advisor*)
- Art History
- Photography

Additional information, to include course listings, may be found at <https://www.uta.edu/art/undergraduate/art-minors-for-non-art-majors/> (<https://www.uta.edu/art/undergraduate/art-minors-for-non-art-majors/>).

Art Education (Teacher Certification)

Texas Teacher Certification in Art entails completion of 133 credit hours earned within the Department of Art and Art History and the College of Education academic programs. It entails earning the B.F.A. degree in Art in addition to 15 hours of College of Education coursework that are required to fulfill minimum certification guidelines in Texas. Students earning the B.F.A. within this program are required to complete B.F.A. standard courses as well as:

ART 3322	INTRODUCTION TO ART EDUCATION (Lecture)	3
ART 3323	PLANNING AND CONSTRUCTING ART CURRICULA (Lecture/Studio)	3
ART 3359	APPLYING AND TEACHING ART CURRICULA (Lecture/Studio)	3
ART 4365	TECHNOLOGY IN ART EDUCATION (Lecture/Studio)	3
Total Hours		12

EDML 4300	PRE-ADOLESCENT/ADOLESCENT GROWTH AND DEVELOPMENT	3
EDUC 3301	TEACHING DIVERSE LEARNERS	3
LIST 4343	CONTENT AREA READING AND WRITING	3
EDUC 4647	CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	6

- Maintain a 3.0 GPA within the Art major.
- As of Fall 2017, the College of Education will require a minimum GPA, not less than 2.75, for any applicant that leads to a cohort average of 3.0 or higher. A student's cumulative or last 60 credit hours GPA must meet or exceed 2.75 that leads to a cohort average of 3.0 or higher. This is a cumulative GPA that includes grades earned at both UTA and other institutions of higher education.
- As of January 1, 2017, the College of Education will use the TSI status for program admission. A status of "TSI complete" replaces the previous THEA requirement. Eligible students ready to begin coursework within the College of Education will need to contact an education advisor to review eligibility and the application process. A TEAL account must be created at that time.
- Submit official transcripts for credit hours earned at ALL colleges attended prior to enrollment at UT Arlington.
- Have maintained a sufficient overall GPA at previous colleges to be considered for admission to the College of Education Teaching Program. Acceptance into the college may be delayed if the student's overall GPA does not meet the minimum GPA required by the College.
- Must complete 12 credit hours of art methods courses and a Senior Presentation class¹ within the Art major.
- Must complete 15 credit hours of certification coursework within the College of Education.

Art majors are encouraged to contact the College of Education regarding applying to the Teacher Education Program after one full semester of coursework has been completed at this university.

¹ Graduating Art Education students will be required to give a lecture open to the public based on experiences within their concentration (K-12 Education). This lecture will be structured around the student's teaching philosophy, curriculum management issues from their internship, an overview of undergraduate Art Education classroom projects and residency material, as well as examples of the student's personal portfolio.

Art Education students will still have the option to exhibit work by petitioning the media areas for faculty review in the 4100 B.F.A. exhibition during their graduating term under the same terms and conditions as established for other Studio Concentrated majors.

Consult the College of Education Advising Office for information concerning any additional application requirements and/or State of Texas requirements for certification.

Classical Studies - Undergraduate Program

Overview

Classical Studies ultimately touches upon almost every field of human inquiry. Indeed, the Western cultural tradition begins with the achievements of the ancient Greeks and Romans in a wide range of fields including politics, literature, art, and philosophy.

The Program in Classical Studies draws on the faculty of various departments in the College of Liberal Arts and acknowledges the importance of approaching the civilizations of the ancient Mediterranean world from a variety of disciplinary perspectives.

INTS Bachelor of Arts

It is also possible to develop a customized bachelor of arts degree plan using Classical Studies component courses when majoring in UT Arlington's Interdisciplinary Studies (INTS) program. See www.uta.edu/ints (<http://www.uta.edu/ints/>).

Ancient Language Courses

In addition to courses that are taught in English, the Classical Studies program also offers instruction in ancient Greek and Latin. Either of these languages satisfies the language requirement for liberal arts majors.

Minor

The Minor in Classical Studies aims to help students expand the depth and scope of their knowledge of ancient cultures and learn about different approaches to them. It will be of particular interest to those students majoring in anthropology, art, art history, history, modern languages, music, philosophy, political science, or theatre arts. In addition to these majors, students who intend to pursue graduate or professional studies in medicine, the law, art, classics, Biblical studies, ancient Near Eastern studies, or medieval studies will find a Minor in Classical Studies to their advantage.

Students seeking a minor in Classical Studies should first consult with advisors in their departments or programs for approval of the minor, then with the Director of Classical Studies. Students may combine courses in Classical Studies in various ways to comprise the following four minor options:

Option 1: Greek Language

(20 hours, at least six of which must be 3000/4000 level) Required courses:

GREK 1441	GREEK LEVEL I	4
GREK 1442	GREEK LEVEL II	4
GREK 2313	GREEK LEVEL III	3
GREK 2314	GREEK LEVEL IV	3
Two upper-level courses:		6
GREK 4335	TOPICS IN GREEK LITERATURE	
GREK 4391	CONFERENCE COURSE	
Total Hours		20

Option 2: Latin Language

(20 hours, at least six of which must be 3000/4000 level) Required courses:

LATN 1441	LATIN LEVEL I	4
LATN 1442	LATIN LEVEL II	4
LATN 2313	LATIN LEVEL III	3
LATN 2314	LATIN LEVEL IV	3
Two upper-level courses:		6
LATN 4335	TOPICS IN LATIN LITERATURE	
LATN 4391	CONFERENCE COURSE	
Total Hours		20

Option 3: Classical Civilization

(20 hours, at least six of which must be 3000/4000 level) Required:

Select one of the following:		8
GREK 1441 & GREK 1442	GREEK LEVEL I and GREEK LEVEL II	

LATN 1441 & LATN 1442	LATIN LEVEL I and LATIN LEVEL II	
Select four of the following, provided that they include 6 hours at 3000/4000 level:		12
GREK 1441	GREEK LEVEL I (if requirement above is met by LATN 1441)	
GREK 1442	GREEK LEVEL II (if requirement above is met by LATN 1442)	
GREK 2313	GREEK LEVEL III	
GREK 2314	GREEK LEVEL IV	
GREK 4335	TOPICS IN GREEK LITERATURE	
GREK 4391	CONFERENCE COURSE	
LATN 1441	LATIN LEVEL I (if requirement above is met by GREK 1441)	
LATN 1442	LATIN LEVEL II (if requirement above is met by GREK 1442)	
LATN 2313	LATIN LEVEL III	
LATN 2314	LATIN LEVEL IV	
LATN 4335	TOPICS IN LATIN LITERATURE	
LATN 4391	CONFERENCE COURSE	
CLAS 1300	INTRODUCTION TO CLASSICAL MYTHOLOGY	
CLAS 2300	HOLLYWOOD CLASSICS: THE ANCIENT WORLD IN FILM	
CLAS 2303	THE CLASSICAL ROOTS OF ENGLISH VOCABULARY	
CLAS 2307	WOMEN IN THE ANCIENT WORLD	
CLAS 3310	INTRODUCTION TO GREEK CIVILIZATION	
CLAS 3320	INTRODUCTION TO ROMAN CIVILIZATION	
CLAS 3323	TOPICS IN CLASSICAL MYTHOLOGY	
ANTH 2339	INTRODUCTION TO ARCHAEOLOGY	
ANTH 2349	HONORS PRINCIPLES OF ARCHAEOLOGY	
ANTH 3370	ARCHAEOLOGY OF THE PREHISTORIC AEGEAN	
ANTH 3371	ARCHAEOLOGY OF GREECE	
ANTH 3372	ARCHAEOLOGY OF THE ANCIENT NEAR EAST	
ANTH 3373	ARCHAEOLOGY OF EGYPT	
ART 1309	INTRODUCTION TO ART HISTORY I: PREHISTORIC THROUGH 16TH CENTURY	3
ART 3302	ART OF ANTIQUITY	
ENGL 3339	CLASSICAL BACKGROUNDS	
ENGL 3361	HISTORY OF WORLD LITERATURE I	3
HIST 3374	EAST CENTRAL EUROPE AND THE MODERN WORLD	
HIST 3375	LATIN AMERICAN HISTORY: ORIGINS THROUGH INDEPENDENCE	
HIST 4350	HISTORY OF ANCIENT SPORT	3
PHIL 3301	HISTORY OF PHILOSOPHY: ANCIENT PHILOSOPHY	
PHIL 3302	HISTORY OF PHILOSOPHY: ROMAN AND MEDIEVAL PHILOSOPHY	
POLS 4327	POLITICAL IDEAS OF THE ANCIENT WORLD	
Total Hours		29

Option 4: Ancient Studies

(18 hours, at least six of which must be 3000/4000 level) This option may be satisfied using any combination of the courses listed under Option 3, provided that they include six hours at the 3000/4000 level.

COURSES

CLAS 1300. INTRODUCTION TO CLASSICAL MYTHOLOGY. 3 Hours.

Major Greek and Roman myths and their influence, with emphasis on the visual arts from antiquity to the present, including popular films.

CLAS 2105. CLASSICAL STUDIES ABROAD. 1 Hour.

Short-term excursion to sites of importance in the ancient Greco-Roman world. Offered in summer term, Wintermester, or Maymester. May be taken more than once as topic varies.

CLAS 2300. HOLLYWOOD CLASSICS: THE ANCIENT WORLD IN FILM. 3 Hours.

Comparative study of contemporary films set in the ancient world and the literary sources on which they are based, with emphasis on the reception and reshaping of the Classical heritage by filmmakers to reflect the cultural values and interests of contemporary audiences.

CLAS 2303. THE CLASSICAL ROOTS OF ENGLISH VOCABULARY. 3 Hours.

The study of etymology (word origins) focusing on the large stock of English words derived from ancient Greek and Latin prefixes, roots and suffixes. Recommended for students seeking to improve their general vocabulary and reading comprehension, and as preparation for graduate and professional school entrance exams.

CLAS 2305. TOPICS IN CLASSICAL CIVILIZATION. 3 Hours.

Survey of a particular topic in the realm of Classical studies. May include literature, history, mythology, religion, and the visual arts. Can be offered on campus or as a study-abroad course. May be repeated as topic changes.

CLAS 2307. WOMEN IN THE ANCIENT WORLD. 3 Hours.

Exploration of roles and images of women in ancient Greece and Rome, using a variety of primary (ancient) sources: literature, legal and medical texts, visual art, and inscriptions. Offered as CLAS 2307 and WOMS 2307. Credit will be granted only once.

CLAS 3310. INTRODUCTION TO GREEK CIVILIZATION. 3 Hours.

Ancient Greek culture through the death of Alexander the Great (323 B.C.). Topics covered include politics and society, literature, art, philosophy, and religion. Credit may not be received for both CLAS 2310 (as the course was previously numbered) and CLAS 3310.

CLAS 3320. INTRODUCTION TO ROMAN CIVILIZATION. 3 Hours.

Roman life and thought through the second century A.D. A broad cultural survey including politics and society, literature, art, philosophy, religion and law. Credit may not be received for both CLAS 2320 (as the course was previously numbered) and CLAS 3320.

CLAS 3323. TOPICS IN CLASSICAL MYTHOLOGY. 3 Hours.

Advanced study of Greek and/or Roman myths, with emphasis on the cultural context and methods of myth interpretation (anthropological, psychoanalytical, structuralist, etc.). May be repeated for credit with departmental permission.

CLAS 3335. TOPICS IN CLASSICAL STUDIES. 3 Hours.

Studies in the social, political, and cultural development of the ancient Greeks and Romans, including their influence on subsequent societies. May be repeated for credit with departmental permission.

CLAS 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: consent of the department and completion of or concurrent enrollment in a 3000 level course.

CLAS 4394. SENIOR THESIS/HONORS THESIS. 3 Hours.

A thesis or project completed during the senior year under the direction of a faculty member. Required of all students in the University Honors College.

CLAS 5392. TOPICS IN CLASSICAL STUDIES. 3 Hours.

Studies in the social, political and cultural systems of the ancient Greeks and Romans, including their influence upon subsequent societies. May be repeated for credit as the topic changes.

Communication

Undergraduate Degree

- Bachelor of Arts in Communication (p. 739)
- Bachelor of Arts in Philanthropy (p. 739)

Graduate Degree

- Master of Arts in Communication (p. 735)

Certificates

- Certificate in Digital Media (p. 743)
- Certificate in Professional Communication (p. 743)

COURSES

ADVT 2337. INTRODUCTION TO ADVERTISING. 3 Hours. (TCCN = COMM 2327)

The role of advertising in society. Basic concepts include marketing message creation, budget determination, agency-client relationships, and social responsibility of advertisers.

ADVT 3304. STRATEGIC COMMUNICATION I. 3 Hours.

Introductory strategy course focusing on creative communication in advertising and marketing communication planning. The evolution and development of the strategic creative process is evaluated relative to campaign objectives and research, especially as it impacts Integrated Marketing Communication and branding programs. Students successfully completing Strategic Communication I advance to Strategic Communication II. Prerequisite: COMM 2311, ADVT 2337, and MATH 1308, all with a grade of C or better.

ADVT 3305. ADVERTISING MEDIA. 3 Hours.

Decision-making in selection and use of advertising media. Evaluation of media alternatives in terms of marketing communication objectives and strategy, audience analysis, media-market research, cost, and editorial/program content. Media plans are developed consistent with Integrated Marketing Communication and branding programs. Prerequisite: COMM 2311, ADVT 2337, and MATH 1308, all with a grade of C or better.

ADVT 3306. STRATEGIC COMMUNICATION II. 3 Hours.

Advanced strategy course building on the foundation from Strategic Communication I; assumes a basic understanding of strategy and research. Advanced critiques of existing campaigns coupled with the development of strategic communication for various media, including print, broadcast, direct mail, and Internet. Persuasive presentation of strategies and executions to others as in an agency setting; includes copywriting, basic art direction, and multimedia usage. Prerequisite: ADVT 3304 with a grade of C (2.0/4.0 scale) or better, and COMM 3303.

ADVT 3308. DIGITAL ADVERTISING DESIGN. 3 Hours.

Course covers the practice of results-oriented creative advertising and design, including both visual and copy concepts through digital execution with an emphasis on strategic development. The course also focuses on advanced applications of digital software to design and communicate targeted messages utilizing communication theory and practice. Prerequisite: COMM 3303 with a grade of C (2.0/4.0 scale) or better.

ADVT 4300. DIGITAL INTEGRATED MARKETING COMMUNICATION (IMC) MANAGEMENT. 3 Hours.

Theory and management of digital integrated marketing communication. The course focuses on using digital analytics to plan and execute successful integrated strategies that reach appropriate audiences with targeted messages. Key topics include digital advertising, social media, digital media, email marketing, and search engine optimization (SEO). Prerequisite: A grade of C (2.0/4.0 scale) or better in the following courses: ADVT 3304, PREL 3320, and COMM 3315.

ADVT 4301. ADVERTISING AND IMC CAMPAIGNS. 3 Hours.

Advanced study in the application of advertising and marketing communication theories. Advertising campaigns are developed consistent with Integrated Marketing Communication and branding programs. Student agency teams develop speculative advertising and IMC plans for organizations, products and/or brands. Prerequisite: A grade of C (2.0/4.0 scale) or better in the following courses: ADVT 3305, ADVT 3306, and ADVT 4300.

ADVT 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

ADVT 4393. SPECIAL TOPICS. 3 Hours.

Special studies in advertising. Topic varies from semester to semester. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

ADVT 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research in advertising while working with business and industry. Individual conference to be arranged. Graded Pass/Fail. Prerequisite: 60 or more hours earned and permission of the department.

COURSES

BCMNM 2347. BROADCAST WRITING AND REPORTING. 3 Hours.

Writing non-dramatic scripts for radio and television. Emphasis is on writing for time and under deadline pressure as well as writing in active voice.

BCMNM 2357. RADIO PRODUCTION I. 3 Hours. (TCCN = COMM 2303)

The fundamentals of radio broadcasting. The techniques of announcing, interviewing, script writing, programming, types of radio production, audience analysis, and vocational opportunities. Students participate in typical broadcasting activities.

BCMNM 2358. TELEVISION PRODUCTION I. 3 Hours. (TCCN = COMM 1336)

Fundamentals of television broadcasting, including camera operation, video editing, writing, lighting, and switching practices.

BCMNM 2360. INTRODUCTION TO BROADCASTING. 3 Hours. (TCCN = COMM 1335)

A survey of historical and contemporary operations and functions of broadcasting. How radio, television and streaming media operate, including understanding of stations, distribution methods and facilities, regulation and the FCC, networks, advertising agencies, audience ratings, and new technologies.

BCMNM 2370. MULTIMEDIA PRODUCTION. 3 Hours.

Audio and video production for non-broadcast majors in the Department of Communication. May not be substituted for BCMNM 2357 or BCMNM 2358.

BCMNM 3319. BROADCAST MANAGEMENT. 3 Hours.

Management procedures, policies, and responsibilities in the successful operation of telecommunication industries. Areas covered are planning, problem-solving, personnel, facilities, government, financial resources, and public service. Prerequisite: A grade of C (2.0/4.0 scale) or better in BCMNM 3340.

BCMNM 3340. ELECTRONIC NEWS. 3 Hours.

News writing and gathering for radio, television, podcasting and streaming media; use of basic audio and video electronic equipment; editing of news stories for analysis and criticism. Prerequisite: Three hours of Math, COMM 2311 (or concurrent enrollment), and a grade of C or better in the following courses: BCMNM 2347, BCMNM 2357, BCMNM 2358, and BCMNM 2360.

BCMNM 3350. TELEVISION REPORTING I. 3 Hours.

Producing and reporting of news information for the television media. Students will participate in news gathering, writing, and shoot packages for television. Prerequisite: A grade of C (2.0/4.0 scale) or better in BCMNM 3340.

BCMNM 3355. BROADCAST ANNOUNCING. 3 Hours.

Concentrated study of phrasing, timing, voice modulation, pronunciation and articulation. Analysis and interpretation of all types of broadcast copy. Integration of current industry standard announcing and performance into radio, television, podcasting and other digital productions. Prerequisite: COMM 2311 and a grade of C or better in the following courses: BCMNM 2347, BCMNM 2357, BCMNM 2358, BCMNM 2360.

BCMNM 3360. SPORTS REPORTING. 3 Hours.

Reporting on sports across multiple platforms. Credit will not be given for both BCMNM 3360 and JOUR 3360. Prerequisite: COMM 2311 (previously listed as JOUR 1345) and a grade of C or better (2.0/4.0 scale) in both BCMNM 2347 and BCMNM 2358.

BCMNM 4191. MEDIA WORKSHOP. 1 Hour.

Contemporary activities in broadcasting. Topics will vary. May be repeated up to three times. Prerequisite: Permission of the instructor.

BCMNM 4320. CURRENT ISSUES IN TELECOMMUNICATIONS. 3 Hours.

Recent and current literature in radio and television broadcasting, cablecasting, industrial video, satellite distribution, and national and international telecommunications policies. Current problems and possible solutions. Prerequisite: COMM 3315, a grade of C or better in BCMNM 3319, and BCMNM 3340.

BCMNM 4322. CORPORATE VIDEO PRODUCTION. 3 Hours.

Producing video for nonprofit, municipal, and corporate community partners. Includes professional client interaction, project proposals and contracts, team dynamics and leadership, and video distribution guidelines. Prerequisite: COMM 3315, a grade of C or better in BCMNM 3340, and a grade of C or better in either BCMNM 3319 or BCMNM 3350.

BCMNM 4350. TELEVISION REPORTING II. 3 Hours.

Production and evaluation of news programs for transmission on electronic media. Students will participate in production of newscasts for airing via broadcast and cable systems. Prerequisite: COMM 3315, a grade of C (2.0/4.0 scale) or better in BCMNM 3350.

BCMNM 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: BCMNM 3340 and 60 hours earned, and permission.

BCMNM 4393. SPECIAL TOPICS. 3 Hours.

Special studies in broadcasting. Topic varies from semester to semester. May be repeated when topics change, for a maximum of six credit hours. Prerequisite: BCMNM 3340 and 60 hours earned, and permission of department.

BCMNM 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research in broadcasting while working with business and industry. Individual conference to be arranged. Prerequisite: 60 or more hours earned and permission of department.

COURSES

COMM 1300. INTRODUCTION TO COMMUNICATION. 3 Hours. (TCCN = COMM 1307)

Application of communication theories and principles to human communication; from the oral tradition to the printing press, photography, electronic media, and information technology.

COMM 2195. COMMUNICATION CAREER PRACTICUM. 1 Hour.

Individual experience with direct supervision of a communication professional while working with approved profit and non-profit professional organizations. Individual conference should be arranged with supervising professor. See department for course qualifications. May be repeated up to a total of three times. Prerequisite: Department of Communication Majors only and permission of the department. Graded Pass/Fail.

COMM 2311. WRITING FOR MASS MEDIA. 3 Hours. (TCCN = COMM 2311)

Writing techniques in Associated Press style with practice in research and news writing. Credit will not be given for both COMM 2311 and JOUR 1345.

COMM 3300. COMMUNICATION TECHNOLOGY. 3 Hours.

Grounded on theories of mediated communication, this course examines the adoption and effects of current and emerging communication technologies. The course also examines the implications of technology convergence as well as social, economic, organizational factors that shape the design and use of communication technology. Prerequisite: 30 hours earned.

COMM 3303. COMMUNICATION GRAPHICS. 3 Hours.

History, current practice, principles and trends in typography, imaging, pre-press and production, sheet finishing, bindery, paper and ink, logo design, advertising layout, publication design, and computer layout, design, and publishing. Prerequisite: 60 hours earned.

COMM 3310. COMMUNICATION LAW & ETHICS. 3 Hours.

Study of constitutional, statutory, administrative, and ethical governance of communication and the mass media, including journalism, the Internet, advertising, and film. Rights and responsibilities of citizens, professional communicators, and corporations are addressed. Prerequisite: 60 or more hours earned.

COMM 3315. COMMUNICATION THEORY. 3 Hours.

Study of communication theories; interpersonal, organizational, mass media, and intercultural. This course also satisfies the requirements for UNIV 1101. Prerequisite: 30 hours earned.

COMM 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD. 3 Hours.

Introduces students to key concepts in Visual Anthropology. This course highlights the contribution of anthropological methods in theorizing the visual in everyday life for the construction of nationalist, gender, ethnic, and class identities. Readings are drawn from diverse geographical regions. Visual material discussed in class may include ethnographic films, art, graphic novels, comics, illustrated magazines, virtual exhibitions and soap operas. Assignments include a writing and research component, and team-based exercises. Offered as ANTH 3345 and COMM 3345; credit will be granted only in one department.

COMM 3346. DISABILITY IN MASS MEDIA. 3 Hours.

Explores how mass media frames disability and neurodiversity for the general public. Focuses on issues related to disability and mass media representation, including journalism, TV, film, advertising, photography, documentary, video games, and the Internet. Topics may include media models of representation, inspiration porn, disability blogs, accessible media, and disabled mimicry in TV and film, among others. Offered as DS 3346 and COMM 3346; credit will be granted in only one department.

COMM 4191. READINGS IN COMMUNICATION. 1 Hour.

Readings addressing contemporary issues in communication. Proficiency in writing and research skills emphasized. Primarily for Communications majors. Prerequisite: 90 or more hours earned; 12 hours of 3000/4000 level in the department.

COMM 4300. COMMUNICATION RESEARCH. 3 Hours.

Introduction to communication research, design, and methodology. Readings and criticism in interpersonal, public address, and mass communication research; project required. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4305. COMMUNICATION & SOCIETY. 3 Hours.

Readings and analysis of the role of communication in modern society; its impact on contemporary social, cultural, political, and intellectual trends. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4306. RACE, GENDER, AND MEDIA. 3 Hours.

Examines issues related to race, gender, and media. Students learn how to think critically about media patterns of representation, ways they become interwoven in media structures, and how the media produce identities. Prerequisite: COMM 3315 and 60 hours earned, or permission of the department.

COMM 4318. MEDIA SALES AND PROMOTION. 3 Hours.

Study of broadcast rating services and terminology used to determine the audience of a particular radio or television operation. Demonstrates the importance of sales skills needed in the media, and the importance of account executives to radio and television stations. Emphasizes positioning media among competitors with respect to promotional and marketing plans designed to build and maintain an audience. Relationship of media ratings to programming and sales. Credit will not be granted for both BCMN 3318 and COMM 4318. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4325. COMMUNICATION HISTORY. 3 Hours.

Evolution and trends in forms of human communication; development of symbols and media technology with attention to their effects on society. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4330. POLITICAL COMMUNICATION. 3 Hours.

Communication theories, principles, and strategies in modern political campaigns and events. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4335. INTERCULTURAL COMMUNICATION. 3 Hours.

Examination of verbal and nonverbal barriers to effective intercultural communication such as ethnocentrism, stereotyping, prejudice, racism, proxemics, kinesics, haptics, and chronemics. Developing effective communication in intercultural contexts. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4340. CORPORATE COMMUNICATION. 3 Hours.

Examines organizational communication strategies with special emphasis on how communication affects corporate constituencies. Corporate image and identity are linked to corporate advertising, press releases, financial communication, internal communication and crisis communication. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4350. HEALTH COMMUNICATION. 3 Hours.

Overview of health communication in interpersonal and organizational contexts as well as the role of mediated communication on human behavior and policy. Topics include the patient-provider relationship, mental health and illness, risky behaviors, and the role of media and technology in health communication. Prerequisite: COMM 3315 and 60 hours earned, or permission of the department.

COMM 4360. EMERGING MEDIA STRATEGY. 3 Hours.

Branding strategy for creating an effective professional presence across multiple communication platforms. Prerequisites: BCMN 2370, PREL 3320, COMM 3303, CTEC 2350, or permission of the Department.

COMM 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned, and permission.

COMM 4392. ADVOCACY AND POLITICS. 3 Hours.

An introduction to challenges individuals face when advocating for an issue, an idea, or even themselves. The goal of the course is to help students grasp concepts relevant to their internship experiences as Archer Fellows in Washington D.C. Enrollment is restricted to designated Archer Fellows. Prerequisite: POLS 2311 and POLS 2312.

COMM 4393. COMMUNICATION TOPICS. 3 Hours.

Seminar in interdisciplinary topics. May be repeated when topic changes, for a maximum of nine credit hours. Prerequisite: 60 or more hours earned.

COMM 4394. HON THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

COMM 5300. ADVANCED THEORIES IN COMMUNICATION. 3 Hours.

Advanced study of communication theories: interpersonal, organizational, mass media and intercultural.

COMM 5301. SUPERVISED TEACHING. 3 Hours.

Application of theory to the practices of teaching college courses in communication. Students will handle all aspects of the classroom including lecturing, conducting class discussions, issuing assignments, grading and assigning grades under the supervision of the course director. No unit credit will be allowed toward advanced degree.

COMM 5305. COMMUNICATION RESEARCH METHODS. 3 Hours.

Study and application of communication research, design and methodology. Students will apply statistics in communication research and complete a research project/paper.

COMM 5306. QUALITATIVE RESEARCH METHODS. 3 Hours.

Advanced study and application of qualitative communication research, design and methodology. Prerequisite: COMM 5300 and COMM 5305.

COMM 5307. HISTORICAL RESEARCH METHODS IN COMMUNICATION. 3 Hours.

This course provides students with an introduction to historical methods that are relevant to research in communication.

COMM 5310. THEORIES IN PERSUASION. 3 Hours.

A comparison of traditional with contemporary behavioral science theories of persuasive discourse and their supporting research.

COMM 5316. CORPORATION COMMUNICATION STRATEGIES. 3 Hours.

Examines organizational communication strategies with special emphasis on how communication affects corporate constituencies. Corporate image and identity are linked to corporate advertising, press releases, financial communication, internal communication and crisis communication.

COMM 5320. ADVANCED VISUAL COMMUNICATION. 3 Hours.

Theory of visual communication in technical communication. Practice includes conceptualization, development and production.

COMM 5321. ADVANCED INTERNET MARKETING COMMUNICATION. 3 Hours.

Study of the use of information technology to optimize advertising, promotion, public relations and sales functions. Examines an infrastructure of the Internet and how it affects information retrieval, Web design, Web site management and Web site security. Discusses research strategies, usage trends and social implications.

COMM 5323. COMPUTER-MEDIATED COMMUNICATION. 3 Hours.

Study of theoretical and practical issues associated with modern communication technology and computer-mediated communication in interpersonal and organizational communication contexts.

COMM 5332. ADVANCED PROFESSIONAL COMMUNICATION. 3 Hours.

Advanced study of the theory and practice in written and oral presentations with emphasis on the application of communication theory in organizational and technical professions.

COMM 5335. GLOBAL COMMUNICATION. 3 Hours.

Examination of verbal and nonverbal barriers to effective intercultural and international communication. Developing effective communication in advanced study of communication theories: interpersonal, organizational, mass media and intercultural contexts and exploring the definition and impact of global communication.

COMM 5341. MEDIA MANAGEMENT. 3 Hours.

Study of media policy and regulation; media, cultural, and management theories; media economics; accounting and finance; business strategy, management and marketing.

COMM 5345. COMMUNICATION CAMPAIGNS. 3 Hours.

Advanced study of communication theories and research with the goal of developing strategic communication plans, including the selection of the appropriate vehicles and creative tactics. Team project required.

COMM 5346. MEDIA AND PUBLIC POLICY. 3 Hours.

Advanced study of communication theories and research related to understanding the linkage between media, public opinion and public policy. Individual and/or team project required.

COMM 5347. CRISIS COMMUNICATION. 3 Hours.

Advanced study of communication theories related to crisis communication and strategies used to communicate with stakeholders before, during and after crisis situations.

COMM 5349. COMMUNICATION IN VIRTUAL ORGANIZATIONS. 3 Hours.

This course examines the communication processes in virtual organizations. Communication, organizational, and management theories related to virtual organizations will be introduced. Students will learn to critically analyze specific communication issues in virtual organizations, such as organizational trust, knowledge management, communication and knowledge networks, employee relationships, and organizational identification.

COMM 5350. HEALTH COMMUNICATION. 3 Hours.

This course provides an overview of health communication in interpersonal contexts as well as the role of mediated communication on human behavior and policy.

COMM 5351. POLITICAL COMMUNICATION. 3 Hours.

This course emphasizes theoretical perspectives while also exploring, analyzing and evaluating the applied aspects of communication in politics. Students will engage in research according to their own specific interests within communication.

COMM 5352. SOCIAL MEDIA THEORY AND PRACTICE. 3 Hours.

At the intersection of mass and interpersonal communication, social media has reshaped how millions of people experience popular culture, journalism and politics. This course will involve advanced study of networked communication, social implications of these networks and the application of professional techniques for communicating via social media and measuring progress using available platform analytics.

COMM 5353. DIGITAL MEDIA DATA ANALYTICS. 3 Hours.

Study theories and practices related to the collection, analysis, presentation, and interpretation of data for digital communication purposes. Students will work on data analytics and data visualization projects.

COMM 5391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. Can be taken no more than two times for credit. Prerequisite: permission of the department.

COMM 5392. SEMINAR. 3 Hours.

Special topics. Topic varies from semester to semester. May be repeated when topic changes.

COMM 5398. THESIS. 3 Hours.

Student completion of a research project on a subject of primarily theoretical interest, intended for an academic audience. Prerequisite: satisfactory completion of coursework and consent of thesis advisor.

COMM 5399. GRADUATE COMMUNICATION INTERNSHIP. 3 Hours.

Practical training and experience in the field of communication. Applied communication research project is required. Course counts as an elective and has a pass/fail grade. No credit will be given for current employment, previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed. Subject to departmental approval.

COMM 5698. THESIS. 6 Hours.

Student completion of a research study on a subject of primarily theoretical interest, intended for an academic audience. Prerequisite: satisfactory completion of thesis proposal defense and consent of thesis advisor.

COURSES

COMS 0185. FORENSICS. 1 Hour. (TCCN = SPCH 1144)

Preparation for and participation in intercollegiate and intersquad forensic activities. Students engage in supervised research, development of debate skills and individual speaking activities. Prerequisite: permission.

COMS 1301. FUNDAMENTALS OF PUBLIC SPEAKING. 3 Hours. (TCCN = SPCH 1315)

Stress on development of the individual's speaking abilities and confidence in a variety of speaking situations.

COMS 1302. VOICE AND DICTION. 3 Hours. (TCCN = SPCH 1342)

Designed to improve the quality of the individual's speech. Enunciation, articulation, pronunciation, and the fundamentals of voice production. The phonetic alphabet as a visual means of teaching auditory differences.

COMS 2302. PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING. 3 Hours.

Theory and practice in written and oral presentations with an emphasis on professional and technical communication for science and engineering. Prerequisites: 30 or more hours earned; ENGL 1301 and either ENGR 1300 or ENGL 1302.

COMS 2304. GROUP COMMUNICATION PRINCIPLES. 3 Hours. (TCCN = SPCH 2333)

Principles and practice of effective interaction within small groups including meeting planning, agenda setting, conflict management, and decision making.

COMS 2305. BUSINESS AND PROFESSIONAL COMMUNICATION. 3 Hours. (TCCN = SPCH 1321)

Insight into communication skills. Designed to give the student experience in interviewing, business presentations, organizational reports, and the relationship of visual and oral presentations to business.

COMS 3309. ORGANIZATIONAL COMMUNICATION. 3 Hours.

Communication functions within formally structured social systems such as business, government, and education. Emphasis on conceptual schemes for conducting analysis of training programs in organizational communication. Credit will not be given for both COMS 3309 and PCOM 3309. Prerequisite: COMS 2304 with a grade of C or better (2.0/4.0), COMS 1301, and 3 hours of Math.

COMS 3310. GROUP COMMUNICATION THEORY. 3 Hours.

Characteristics of group communication including group function and formation, norms, cohesion, problem solving, leadership, and ethics. Prerequisite: COMS 2304 with a grade of C or better (2.0/4.0) and 3 hours of Math.

COMS 3312. BACKGROUNDS OF PUBLIC ADDRESS. 3 Hours.

Traditional works pertinent to theories of communication. Emphasis on discovering the traditional bases shared by empirical and critical studies of rhetorical communication. Prerequisite: COMS 1301 and COMS 2304 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 3315. COMMUNICATION FOR EDUCATORS. 3 Hours.

Basic concepts, theories, research and processes relevant to formal and informal instructional situations. Units of study will focus on intrapersonal, interpersonal, small group, and presentational communication. Prerequisite: COMS 1301 and COMS 2304 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 3316. COMMUNICATION IN HUMAN RELATIONS. 3 Hours.

The human communication process within social, business, and family contexts. Theories and principles of interpersonal communication. Prerequisites: COMM 3315 and COMS 1301. COMS 2304 with a grade of C or better (2.0/4.0).

COMS 3320. INTERVIEW PRINCIPLES. 3 Hours.

Theory and practice in interviewing as it relates to information-gathering, questioning, and response analysis in probing, persuasive, employment, and survey interviews; practical and legal application in employment interviews; preparation of resume and cover letter. Prerequisite: One of the following: COMS 1301, COMS 2302, or COMS 2305.

COMS 3321. ORAL INTERPRETATION OF LITERATURE. 3 Hours.

The fundamental principles of oral interpretation and techniques of interpretation. Stresses background research concerning author and type of material. Prerequisite: COMS 1301. COMS 2304 with a grade of C or better (2.0/4.0).

COMS 3323. ORAL INTERPRETATION OF CHILDREN'S LITERATURE. 3 Hours.

Traditional oral interpretation principles and performance techniques as applied to various genres of children's literature. Prerequisite: COMS 1301, COMS 2304 with a grade of C or better (2.0/4.0).

COMS 4300. PERSUASIVE COMMUNICATION. 3 Hours.

Analysis of the means by which persuasive communication affects individuals and society. Extensive reading of theories of techniques of persuasion. Study of the adaptation of motivational appeals, structural strategies, and other persuasive techniques in interpersonal and public contexts. Prerequisite: COMM 3315 and COMS 1301; COMS 2304 with a grade of C or better (2.0/4.0).

COMS 4302. MODERN PUBLIC ADDRESS. 3 Hours.

Analysis of major 20th-century forms of public address and speakers. Application of various models for criticism and public address. Prerequisite: COMM 3315 and COMS 1301. COMS 2304 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 4315. BUSINESS PRESENTATIONS. 3 Hours.

The role of internal and external informative and persuasive presentations in business organizations. Extensive readings and practice with an emphasis on research, development, organization, and critical evaluation of oral and visual presentations. Credit will not be given for both COMS 4315 and PCOM 4315. Prerequisite: COMS 1301 and a grade of C or better (2.0/4.0) in COMS 2302 or COMS 2305.

COMS 4320. MANAGERIAL COMMUNICATION. 3 Hours.

Analysis of the role of the business manager; readings in research and theory with emphasis on problem-solving and motivation. Credit will not be given for both COMS 4320 and PCOM 4320. Prerequisite: COMM 3315 and COMS 3309 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 4321. READERS THEATRE. 3 Hours.

Readers interpret various kinds of literature for an audience. Analysis and criticism of literature are stressed. Prerequisite: COMM 3315, a grade of C or better (2.0/4.0) in COMS 3321 or COMS 3323, or permission of the department.

COMS 4322. COMMUNICATION TRAINING AND DEVELOPMENT. 3 Hours.

The process of analyzing communication problems and providing training skills for businesses and organizations. Emphasizes practical knowledge of facilitating skill improvement in verbal and nonverbal communication. Prerequisite: COMS 1301 and a grade of C or better (2.0/4.0) in COMS 2302 or COMS 2305.

COMS 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis, covering research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission.

COMS 4393. COMMUNICATION TOPICS. 3 Hours.

Special studies in speech. Topics will vary from semester to semester. May be repeated once when topics vary. Prerequisite: 60 hours earned, and permission.

COMS 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research while working with business and industry. Individual conference to be arranged. Graded Pass/Fail. Prerequisite: 60 or more hours earned, and permission.

COURSES

CTEC 2350. WEB COMMUNICATION DESIGN AND DEVELOPMENT 1. 3 Hours.

Overview of theoretical principles of communication, organization, human-computer interaction, and user experience research for effective communication over the Internet. This course provides an introduction to essential elements of Web design and development, including using markup and style sheet languages, developing information architecture, and assessing usability.

CTEC 3320. MULTIMODAL COMMUNICATION AND DESIGN. 3 Hours.

Application of contemporary communication theories to examine how meaning is constructed, interpreted and produced through multiple communication modalities. Students are expected to complete a theoretically informed, personal portfolio and accumulate skills in digital workflows, graphic creation and manipulation, audio-video editing, storyboarding, and compositing. Prerequisite: COMM 3303.

CTEC 3350. WEB COMMUNICATION DESIGN AND DEVELOPMENT 2. 3 Hours.

A continuation of CTEC 2350. This course provides in-depth examination of usability, accessibility, online rhetoric, and branding. Content also includes current Web communication technology including markup language, scripting and style sheet, for effective communication on the Web across multiple technological platforms. Prerequisite: CTEC 2350 with a grade of C (2.0/4.0 scale) or better, and 3 hours of Math.

CTEC 4309. INTERNET MARKETING COMMUNICATION. 3 Hours.

Course examines best practices in marketing communication; considers electronic commerce conducted via current communication and information technology. Discussion of theories, research strategies, usage trends, and current development. Prerequisite: COMM 3300, COMM 3315, a grade of C (2.0/4.0) or better in COMM 2311, and one of the following: ADVT 4300, CTEC 3350, PREL 3355, or COMM 4318.

CTEC 4321. DIGITAL COMMUNICATION MANAGEMENT. 3 Hours.

Study of corporate and organizational communication theories through a user-centered approach. Students will design, analyze, and evaluate the organization and structure of digital communication via the development of Web-based, database-supported interactive applications. Prerequisite: COMM 3315, a grade of C or better (2.0/4.0) in the following: COMM 2311, CTEC 2350, and CTEC 3350.

CTEC 4323. USER EXPERIENCE RESEARCH AND DESIGN. 3 Hours.

Study of contemporary theories of user experience research including human-computer interaction, interaction design, multimodal communication, and industrial design. Prerequisites: COMM 3315 and a grade of C or better (2.0/4.0) in the following: COMM 2311, CTEC 2350, CTEC 3320, CTEC 3350, or, for non-CTEC majors, permission of the department.

CTEC 4350. WEB COMMUNICATION DESIGN AND DEVELOPMENT 3. 3 Hours.

This capstone course of the CTEC sequence reviews and applies theoretical principles of communication, human-computer interaction, user experience research, and information architecture for effective communication over the Internet. The course includes web design, implementation, development and project management. Prerequisites: A grade of C (2.0/4.0) or better in the following courses: CTEC 2350, CTEC 3320, CTEC 3350, CTEC 4309, and either CTEC 4321 or CTEC 4323.

CTEC 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

CTEC 4393. SPECIAL TOPICS. 3 Hours.

Special studies in communication technology. Topic varies from semester to semester. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission.

CTEC 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research while working with business and industry. Individual conference to be arranged. Prerequisite: 60 or more hours earned and permission.

COURSES

JOUR 2330. INTRODUCTION TO JOURNALISM. 3 Hours. (TCCN = COMM 2302)

Providing an overview of ethics, history, principles and fundamentals of journalism as reflected in current practices.

JOUR 2340. PHOTOJOURNALISM I. 3 Hours. (TCCN = COMM 1316)

Basic theory and techniques of photojournalism; introduction to electronic digital photography and editing; professional, technical, and aesthetic values. Prerequisite: A grade of C or better in both COMM 2311 and JOUR 2330.

JOUR 2346. REPORTING. 3 Hours. (TCCN = COMM 2310)

Complex journalistic stories with emphasis on ethics, researching, interviewing, and writing of general news stories, news features, and specialized stories. Prerequisite: COMM 2311 with a grade of C or better. JOUR majors and JOUR intended: COMM 2311 and JOUR 2330 both with a grade of C or better.

JOUR 3330. DATA JOURNALISM. 3 Hours.

Use of data management skills and software to report stories, using journalistic principles and writing style as well as visualization. Prerequisite: JOUR 2346 with a C or better.

JOUR 3341. PHOTOJOURNALISM II. 3 Hours.

Advanced electronic imaging techniques as applied to newspapers, magazines, and public relations. Prerequisite: JOUR 2340 with a grade of C (2.0/4.0) or better.

JOUR 3345. COPY EDITING. 3 Hours.

Focus on the function of editors, copy editors and copy editing for journalistic and other publications in print and online formats. Prerequisite: A grade of C or higher in both JOUR 2330 and JOUR 2346, or permission of the department.

JOUR 3360. SPORTS REPORTING. 3 Hours.

Reporting on sports across multiple platforms. Credit will not be given for both BCMN 3360 and JOUR 3360. Prerequisite: A grade of C or better in both JOUR 2340 and JOUR 2346.

JOUR 4325. SPECIALIZED REPORTING. 3 Hours.

This course focuses on the unique demands of a specialized form of journalism. Subjects include such topics as sports reporting, business reporting, health and science reporting, travel reporting and writing for new media. Prerequisite: JOUR 2346 with a grade of C or higher and COMM 3315.

JOUR 4326. FEATURE AND OPINION WRITING. 3 Hours.

Nature, function, and structure of articles for print and online media. Prerequisite: JOUR 2346 with a grade of C or better and COMM 3315.

JOUR 4341. DIGITAL STORYTELLING. 3 Hours.

Creating multimedia packages in news, illustrative, and narrative formats. Conducting social media journalism. Readings in newsroom practices, law, and ethics of digital communication. Prerequisites: COMM 3315, and a grade of C (2.0/4.0) or better in JOUR 2340 and JOUR 2346.

JOUR 4346. PUBLIC AFFAIRS REPORTING. 3 Hours.

Research in planning and writing techniques required for covering such public affairs news sources as governmental offices, bureaus, and agencies. Experience in covering local government agencies, including agency budgets. Investigative and in-depth methods of news gathering; extensive practice in news writing. Prerequisite: COMM 3315, JOUR 2346 with a grade of C or higher, and completion or concurrent enrollment in JOUR 3330.

JOUR 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

JOUR 4393. SPECIAL TOPICS. 3 Hours.

Special studies in journalism. Topic varies from semester to semester. May be repeated as topics vary. Prerequisite: JOUR 2346, 60 or more hours earned, and permission of the department.

JOUR 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research while working with business and industry. Individual conference to be arranged. Graded P/F. Prerequisite: 60 or more hours earned and permission of the department.

COURSES

PREL 2338. INTRODUCTION TO PUBLIC RELATIONS. 3 Hours. (TCCN = COMM 2330)

Principles and methods of building goodwill and obtaining publicity; process of influencing public opinion; analysis of media; implementation of public relations programs.

PREL 3320. STRATEGIC SOCIAL MEDIA COMMUNICATION. 3 Hours.

Developing strategy and content for social media, engaging in audience analysis, understanding the unique attributes of various platforms, and communicating ethically and effectively across those platforms. Credit will not be given for both PCOM 3320 and PREL 3320.

PREL 3339. PUBLIC RELATIONS METHODS I. 3 Hours.

The theory and practice of selecting the appropriate mass media channels to reach and influence specialized groups with introductory practice in public relations writing. Prerequisite: A grade of C or higher (2.0/4.0 scale) in the following courses: PREL 2338, COMM 2311, and MATH 1308, and 60 or more hours earned.

PREL 3340. PUBLIC RELATIONS METHODS II. 3 Hours.

The theory and advanced practice of selecting the appropriate mass media channels to reach and influence specialized groups with strategic public relations writing. Prerequisite: PREL 3339 with a grade of C or higher (2.0/4.0 scale).

PREL 3355. PUBLIC RELATIONS CASE STUDIES. 3 Hours.

The use of case studies to study the techniques of goal-setting and strategy-selection as applied in actual programs and under varying information conditions. Prerequisite: PREL 2338 with a grade of C or higher (2.0/4.0 scale), JOUR 2346, 60 or more hours earned and MATH 1308, Elementary Statistical Analysis, with a course grade of C or higher (2.0/4.0 scale).

PREL 4316. PUBLIC RELATIONS CAMPAIGNS. 3 Hours.

The study of advanced public relations campaign strategies based on research techniques; campaign development, implementation and assessment. Prerequisite: PREL 3339 and PREL 3340 with a grade of C (2.0/4.0) or better. COMM 3315, COMM 3303, and ECON 2305, and completion or concurrent enrollment in PREL 4320.

PREL 4320. PUBLIC RELATIONS MANAGEMENT CASE STUDIES. 3 Hours.

The use of case studies to study public relations management decision-making in areas of operation, personnel, content, promotion, finance, and governmental regulations. Prerequisite: COMM 3315, A grade of C (2.0/4.0) or better in PREL 3340.

PREL 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

PREL 4393. SPECIAL TOPICS. 3 Hours.

Special studies in public relations. Topic varies from semester to semester. May be repeated when topic changes for a maximum of six credit hours. Prerequisite: 60 or more hours earned, and permission of the department.

PREL 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research in public relations while working with business and industry. Individual conference to be arranged. Prerequisite: 60 or more hours earned and permission of the department.

Communication - Graduate Program

Objective

The Master of Arts in Communication program includes the areas of Communication Studies and Mass Communication. It is designed to meet the educational needs of recent graduates and professionals.

The program's curriculum emphasizes the integrated nature of the communication discipline. For example, the program offers education in the management of media resources, the changing role of media and technology in an information society, and a theoretical and ethical framework for considering the impact of media on society.

Educational and organizational professionals can focus on working with both external and internal constituencies and communication processes of management, training and development, and human resources. A broader knowledge of communication processes at the interpersonal, organizational, and mass media levels provides the opportunity for career enhancement and/or further graduate studies.

Admission Standards

Prospective students must apply for admission through, and supply all information required by the Graduate School. In addition, the following information will be considered in determining admission status into the program: undergraduate GPA, GRE scores, letters of recommendation and an essay. All criteria are considered together; no single factor will eliminate a prospective student from consideration.

The following table outlines specific requirements for unconditional and probationary admission.

Graduate Admission Standards

Admissions Criteria	Unconditional	Probationary
GPA on last 60 hours of Undergraduate Program (as calculated by Graduate School of UT Arlington)	3.0	under 3.0
GRE	Evaluated	Evaluated
3 letters of recommendation	Evaluated	Evaluated
Essay	Evaluated	Evaluated

¹ Minimum undergraduate GPA requirement for unconditional admission is a 3.0 on a 4.0 scale.

Students not meeting unconditional criteria will be reviewed by a committee of Chair of the Department of Communication, Graduate Advisor, and Graduate Program Committee. The committee will review the following: undergraduate GPA (in last 60 hours of undergraduate work); GRE scores (verbal, analytical and quantitative); letters of recommendation; and essay. An applicant who performs successfully on a majority of these criteria may be admitted on probation. While taking the GRE is encouraged, this requirement may be waived for UTA communication graduates with a cumulative GPA of 3.2 or higher. The committee will make a final admission decision and document that decision for the student record.

Unconditional Admission

Criteria for unconditional admission status are designated in the previous table. Decisions on unconditional admission are made after considering the minimum GPA noted in the graduate admission standards and all other criteria noted in the preceding paragraph.

Probationary Admission

Criteria for probationary admission status are designated in the previous table. When on probation, students can make no grade lower than a 3.0 in their first 12 semester hours of graduate coursework.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements.

Deferred Status

Deferred decision is granted when a file is incomplete or when a denied decision is not appropriate.

Denial of Admission

An applicant will be denied admission if he or she has less than satisfactory performance on a majority of admission criteria listed in the previous table.

Fellowship Criteria

Fellowship selection will be based on the highest GPA in the last 60 hours of the bachelor's degree program. Candidates for fellowships must meet the following criteria:

1. New students coming to UT Arlington in the fall of each semester.
2. Have a GPA of at least 3.0 in their last 60 hours of their bachelor's degree program.
3. Minimum 3.0 GPA in graduate credit hours.
4. Enrolled in a minimum of 6 semester hours in the long semesters.

Degree Requirements

The Master of Arts in Communication degree offers non-thesis/coursework and thesis options. The non-thesis/coursework option will require 36 hours of coursework. The thesis option will require 30 hours that will include 24 credit hours of coursework and a 6-credit-hour thesis. A final comprehensive examination will be required of students in all options.

Courses required of all students in the program in the first semester: 6

COMM 5300	ADVANCED THEORIES IN COMMUNICATION
COMM 5305	COMMUNICATION RESEARCH METHODS

Course required of all students in the program in the second semester: 3

COMM 5306	QUALITATIVE RESEARCH METHODS ¹
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Courses students may elect to take: 6-18

Thesis Option: Select at least two of the following communication electives:

Non-Thesis/coursework Option: Select at least six of the following communication electives:

COMM 5307	HISTORICAL RESEARCH METHODS IN COMMUNICATION
COMM 5310	THEORIES IN PERSUASION
COMM 5316	CORPORATION COMMUNICATION STRATEGIES
COMM 5320	ADVANCED VISUAL COMMUNICATION
COMM 5321	ADVANCED INTERNET MARKETING COMMUNICATION
COMM 5323	COMPUTER-MEDIATED COMMUNICATION
COMM 5332	ADVANCED PROFESSIONAL COMMUNICATION
COMM 5335	GLOBAL COMMUNICATION
COMM 5341	MEDIA MANAGEMENT
COMM 5345	COMMUNICATION CAMPAIGNS
COMM 5346	MEDIA AND PUBLIC POLICY
COMM 5347	CRISIS COMMUNICATION
COMM 5349	COMMUNICATION IN VIRTUAL ORGANIZATIONS
COMM 5350	HEALTH COMMUNICATION
COMM 5351	POLITICAL COMMUNICATION
COMM 5352	SOCIAL MEDIA THEORY AND PRACTICE
COMM 5353	DIGITAL MEDIA DATA ANALYTICS
COMM 5391	CONFERENCE COURSE
COMM 5392	SEMINAR
COMM 5399	GRADUATE COMMUNICATION INTERNSHIP

The following three courses are not electives

COMM 5398	THESIS
COMM 5698	THESIS
COMM 5301	SUPERVISED TEACHING

Total Hours 15-27

¹ An advanced quantitative research methods course from another department may be substituted for this course with the permission of the communication graduate advisor.

Graduate courses outside the department may be taken with the approval of the Graduate Studies Committee. Students should submit a letter to the graduate advisor including course title, course description, and statement of value to the program of study.

Non-Thesis Option. (36 semester hours total) 36 semester credit hours of coursework are given. The final comprehensive examination will consist of a written and oral exam covering the coursework. Additional remedial work may be required if deemed necessary by the student's committee. Students failing the examination will not be allowed to test again.

Thesis Option. (30 semester hours total) 24 semester credit hours of coursework and a thesis, for which 6 semester hours are given. The final comprehensive examination will consist of an oral defense of the thesis prospectus and an oral defense of the thesis. Additional remedial work may be required if deemed necessary by the student's committee.

Communication - Undergraduate Programs

Overview

The Department of Communication offers two bachelor's degrees: Bachelor of Arts in Communication and Bachelor of Arts in Philanthropy.

The degree Bachelor of Arts in Communication is offered with multiple specializations. The department curricula provide students with an overview of the role and function of communication in society. These courses present a broad academic exposure, including theories, skills, techniques, critical analysis, historical perspectives, and aesthetic appreciation.

The Department of Communication seeks to emphasize theories and techniques which give students the ability to adapt to rapid changes in communication technology.

Within the major disciplines, specializations are available in advertising, broadcasting, communication technology, journalism, public relations, organizational communication, and speech communication.

The Bachelor of Arts in Philanthropy is offered in collaboration with the College of Business. Students will be presented with theoretical frameworks and practical knowledge about voluntary action and organizations that support giving in society.

The major courses offered by the Department of Communication provide students with communication skills in the areas of communication, communication studies, multi-media communication, and public relations, which will equip students with key skills in the field of communication as they relate to philanthropy and the nonprofit sector.

As a part of the degree plan, students will be required to complete a certificate (12 hours) or minor (18 hours) in Business Philanthropy in the College of Business. The Minor/Certificate will address a variety of business perspectives related to the management and operation of philanthropic organizations through courses in marketing, management, accounting, and finance.

All majors in the Department of Communication must complete the following core courses. The department math requirement must be completed before reaching 60 hours

COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3

Declaring a Major in the Department of Communication

I. Admission to Major

All undergraduate students seeking to declare a major in the Department of Communication (ADVT, BCMN, COMS, CTEC, JOUR, PCOM, PREL) must meet the following criteria:

Completion of a minimum of 12 hours in residence at The University of Texas at Arlington with a minimum cumulative GPA of 2.25/4.0.

Students that do not meet these minimum requirements can request to be admitted as a COMM Intended PCOM intended major. Please see restrictions below.

II. Admission as a COMM Intended or PCOM Intended Major

1. Completion of a minimum of 12 hours in residence at The University of Texas at Arlington with a minimum cumulative GPA of 2.0/4.0.
2. COMM Intended or PCOM Intended majors may enroll in up to a total of 18 hours in the Department of Communication (ADVT, BCMN, COMS, CTEC, JOUR, PCOM, PREL)
3. Students who do not achieve a cumulative UT Arlington GPA of 2.25/4.0 by the completion of 18 hours in the Department of Communication will not be cleared to continue in the department.

III. Dismissal from Department of Communication COMM Intended or PCOM Intended Status

Students who do not meet the requirements for declaring a Department of Communication major after completing eighteen (18) hours of communication course work will not be allowed to take additional communication courses at UT Arlington. The student will be suspended from the Department of Communication COMM Intended or PCOM Intended status and must choose a major not offered by the Department of Communication at that time in order to remain enrolled at UT Arlington.

General Academic Standards in the Department of Communication

1. Graduation as a major in the Department of Communication must meet the UT Arlington graduation standard of a minimum GPA of 2.0/4.0.
2. Graduation as a major in the Department of Communication must meet the department graduation standard of a minimum cumulative GPA of 2.0/4.0 in all department courses (ADVT, BCMN, COMS, CTEC, JOUR, PCOM, PREL).

Requirements for a Bachelor of Arts Degree in Communication

Pre-Professional Courses	
General Core Requirements (p. 50)	42
Students must take ENGL 1301 RHETORIC AND COMPOSITION I and ENGL 1302 RHETORIC AND COMPOSITION II (Note: These courses also fulfill requirements in the General Core) Students should see their individual sequence for the specific COMS requirement. For students pursuing a degree in Nonprofit and Philanthropic Management it is recommended that they take PHIL 1304 to fulfill the Language, Philosophy, Culture requirement, and GEOG 2302 or GEOG 2303 to satisfy the Social and Behavioral Sciences requirement of the Common Core.	
The College of Liberal Arts has a modern and classical languages requirement for the B.A. degree. Students must demonstrate proficiency in a modern or classical language at the first-year college level (1441 and 1442) unless the degree pursued does not require a modern or classical language.	8
Student Success requirement: UT Arlington's first year experience courses are designed to orient students to life on the Maverick campus. Freshman and transfer students are required to receive credit for one of these two classes (UNIV 1101 or UNIV 1131) or an equivalent course. The required course for the degree plan for a program of study will be determined by the college/school/department faculty.	1
Professional Courses	
Major	
A minimum of 45 semester hours, with 18 at the 3000/4000 level. A student must complete the requirements for one of the departmental specializations.	45
Minor, Certificate, or Electives	
Students may complete an optional minor consisting of 18 hours, six of which must be at the 3000/4000 level. The minor will be selected after consulting with an advisor. Students may also complete the Certificate in Digital Media, the Certificate in Professional Communication, or the minor may be combined with the Certificate. Students must also take electives as needed to bring the total number of credit hours to 120.	24
Total Hours	120

Department of Communication Degree Programs

Advertising

COMM 2311	WRITING FOR MASS MEDIA ¹	3
COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3303	COMMUNICATION GRAPHICS ¹	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	3
PREL 2338	INTRODUCTION TO PUBLIC RELATIONS ¹	3
PREL 3320	STRATEGIC SOCIAL MEDIA COMMUNICATION ¹	3
ADVT 2337	INTRODUCTION TO ADVERTISING ¹	3
ADVT 3304	STRATEGIC COMMUNICATION I ¹	3
ADVT 3305	ADVERTISING MEDIA ¹	3
ADVT 3306	STRATEGIC COMMUNICATION II ¹	3
ADVT 4300	DIGITAL INTEGRATED MARKETING COMMUNICATION (IMC) MANAGEMENT ¹	3
ADVT 4301	ADVERTISING AND IMC CAMPAIGNS ¹	3
Elective within the department at the 3000/4000 level.		3
Total Hours		45

¹ ADVT majors must obtain a minimum grade of C (2.0/4.0 scale) or higher in all of these classes.

Advertising majors must meet the following math requirement: MATH 1308, with a grade of C (2.0/4.0 scale) or higher and the following Social Science requirement: ECON 2305.

Broadcasting

COMM 2311	WRITING FOR MASS MEDIA ¹	3
COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3
BCMNM 2347	BROADCAST WRITING AND REPORTING ¹	3
BCMNM 2357	RADIO PRODUCTION I ¹	3
BCMNM 2358	TELEVISION PRODUCTION I ¹	3
BCMNM 2360	INTRODUCTION TO BROADCASTING ¹	3
BCMNM 3340	ELECTRONIC NEWS ¹	3
BCMNM 3350	TELEVISION REPORTING I ¹	3
or BCMNM 3319	BROADCAST MANAGEMENT	
BCMNM 3355	BROADCAST ANNOUNCING ¹	3
or COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	
BCMNM 4350	TELEVISION REPORTING II ¹	3
or BCMNM 4322	CORPORATE VIDEO PRODUCTION	
Electives in the department at the 3000/4000 level		9
Total Hours		45

¹ BCMNM majors must obtain a minimum grade of C (2.0/4.0 scale) or higher in all of these classes including COMS 2305 and BCMNM 4322.

Communication Studies: Organizational Communication

COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3303	COMMUNICATION GRAPHICS	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	3
COMS 2304	GROUP COMMUNICATION PRINCIPLES ¹	3
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION ¹	3
COMS 3309	ORGANIZATIONAL COMMUNICATION ¹	3
COMS 4315	BUSINESS PRESENTATIONS ¹	3
Select two of the following:		6
COMS 3310	GROUP COMMUNICATION THEORY ¹	
COMS 3315	COMMUNICATION FOR EDUCATORS ¹	
COMS 3316	COMMUNICATION IN HUMAN RELATIONS ¹	
COMS 3320	INTERVIEW PRINCIPLES ¹	
Select three of the following: ²		9
COMS 4300	PERSUASIVE COMMUNICATION ¹	
COMS 4320	MANAGERIAL COMMUNICATION ¹	
COMS 4322	COMMUNICATION TRAINING AND DEVELOPMENT ¹	
COMM 4300	COMMUNICATION RESEARCH ¹	
COMM 4350	HEALTH COMMUNICATION ¹	
COMS 4395	PROFESSIONAL INTERNSHIP ¹	
Electives in the department at the 3000/4000 level		3
Total Hours		45

Communication Studies: Interpersonal Communication

COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3303	COMMUNICATION GRAPHICS	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	3

COMS 2304	GROUP COMMUNICATION PRINCIPLES ¹	3
COMS 3310	GROUP COMMUNICATION THEORY ¹	3
COMS 3312	BACKGROUNDS OF PUBLIC ADDRESS ¹	3
or COMS 4302	MODERN PUBLIC ADDRESS	
COMS 3315	COMMUNICATION FOR EDUCATORS ¹	3
COMS 3316	COMMUNICATION IN HUMAN RELATIONS ¹	3
Select one of the following:		3
COMS 3321	ORAL INTERPRETATION OF LITERATURE ¹	
COMS 3323	ORAL INTERPRETATION OF CHILDREN'S LITERATURE ¹	
Select three of the following: ²		9
COMS 4300	PERSUASIVE COMMUNICATION ¹	
COMS 4315	BUSINESS PRESENTATIONS ¹	
COMS 4321	READERS THEATRE ¹	
COMM 4300	COMMUNICATION RESEARCH ¹	
COMM 4350	HEALTH COMMUNICATION ¹	
COMS 4395	PROFESSIONAL INTERNSHIP ¹	
Electives in the department at the 3000/4000 level		3
Total Hours		45

¹ COMS majors must obtain a minimum grade of C (2.0/4.0 scale) or higher in all of these classes including COMS 4302.

² COMS majors must select at least two COMS courses from the list.

Communication Technology

COMM 2311	WRITING FOR MASS MEDIA	3
COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3303	COMMUNICATION GRAPHICS	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	3
CTEC 2350	WEB COMMUNICATION DESIGN AND DEVELOPMENT ¹	3
CTEC 3320	MULTIMODAL COMMUNICATION AND DESIGN ¹	3
CTEC 3350	WEB COMMUNICATION DESIGN AND DEVELOPMENT ² ¹	3
CTEC 4309	INTERNET MARKETING COMMUNICATION ¹	3
CTEC 4321	DIGITAL COMMUNICATION MANAGEMENT ¹	3
or CTEC 4323	USER EXPERIENCE RESEARCH AND DESIGN	
CTEC 4350	WEB COMMUNICATION DESIGN AND DEVELOPMENT ³ ¹	3
Electives in the department at the 3000/4000 level		9
Total Hours		45

¹ CTEC majors must obtain a minimum grade of C (2.0/4.0 scale) or higher in all of these classes including CTEC 4323.

Journalism

COMM 2311	WRITING FOR MASS MEDIA ¹	3
COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3
JOUR 2330	INTRODUCTION TO JOURNALISM	3
JOUR 2340	PHOTOJOURNALISM I	3
JOUR 2346	REPORTING ¹	3
JOUR 3330	DATA JOURNALISM ¹	3
JOUR 3345	COPY EDITING ¹	3
JOUR 4326	FEATURE AND OPINION WRITING ¹	3
JOUR 4341	DIGITAL STORYTELLING ¹	3

JOUR 4346	PUBLIC AFFAIRS REPORTING ¹	3
Electives in the department at the 3000/4000 level		9
Total Hours		45

¹ JOUR majors must obtain a minimum grade of C (2.0/4.0 scale) or higher in all of these classes.

Public Relations

COMM 2311	WRITING FOR MASS MEDIA ¹	3
COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3303	COMMUNICATION GRAPHICS	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3315	COMMUNICATION THEORY	3
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	3
ADVT 2337	INTRODUCTION TO ADVERTISING	3
PREL 2338	INTRODUCTION TO PUBLIC RELATIONS ¹	3
PREL 3320	STRATEGIC SOCIAL MEDIA COMMUNICATION ¹	3
PREL 3339	PUBLIC RELATIONS METHODS I ¹	3
PREL 3340	PUBLIC RELATIONS METHODS II ¹	3
PREL 4316	PUBLIC RELATIONS CAMPAIGNS ¹	3
PREL 4320	PUBLIC RELATIONS MANAGEMENT CASE STUDIES ¹	3
Electives in the department at the 3000/4000 level		6
Total Hours		45

¹ PREL majors must obtain a minimum grade of C (2.0/4.0 scale) or higher in all of these classes.

Public relations majors must meet the following math requirement: MATH 1308, with a grade of C (2.0/4.0 scale) or higher, and the following Social Science requirement: ECON 2305.

Requirements for a Bachelor of Arts Degree in Philanthropy

Pre-Professional Courses

General Core Requirements (p. 50) 42

Students must take the following courses. These courses also fulfill requirements in the General Core.

ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	

Student Success requirement: UT Arlington's first year experience courses are designed to orient students to life on the Maverick campus. 1

Freshman and transfer students are required to receive credit for one of these two classes (UNIV 1101 or UNIV 1131) or an equivalent course.

The required course for the degree plan for a program of study will be determined by the college/school/department faculty.

Subtotal 43

Professional Courses

Students must complete the professional courses as listed below.

PCOM 2301	INTRODUCTION TO NONPROFITS AND PHILANTHROPY ¹	3
COMS 2304	GROUP COMMUNICATION PRINCIPLES ¹	3
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION ¹	3
COMM 3315	COMMUNICATION THEORY	3
BCMN 2370	MULTIMEDIA PRODUCTION	3
PCOM 3301	FUNDRAISING AND DEVELOPMENT ¹	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
COMM 3300	COMMUNICATION TECHNOLOGY	3
COMM 3303	COMMUNICATION GRAPHICS	3
PCOM 3309	ORGANIZATIONAL COMMUNICATION ¹	3
PCOM 4315	BUSINESS PRESENTATIONS ¹	3
PCOM 3320	STRATEGIC SOCIAL MEDIA COMMUNICATION ¹	3

PCOM 4301	NONPROFIT MANAGEMENT ¹	3
PCOM 4395	DIRECTED INTERNSHIP IN NONPROFITS AND PHILANTHROPY ¹	3
ENGL 2338	TECHNICAL WRITING	3
ENGL 3379	GRANT AND PROPOSAL WRITING	3
Select two of the following:		6
COMS 4300	PERSUASIVE COMMUNICATION	
PCOM 4320	MANAGERIAL COMMUNICATION ¹	
COMM 4350	HEALTH COMMUNICATION	
COMM 4305	COMMUNICATION & SOCIETY	
PCOM 4393	SPECIAL TOPICS ¹	
Subtotal		54

¹ PCOM majors must obtain a minimum grade of C (2.0/4.0 scale) or higher in all of these classes.

Required Certificate (12 HOURS) or Minor (18 HOURS) in Business Philanthropy (College of Business)

Students must complete a certificate or minor in Business Philanthropy in the College of Business. For the minor option, students must take all 12 or of the following courses. For the certificate option, students must take four of the following courses. 18

MARK 3321	PRINCIPLES OF MARKETING
MARK 3332	PHILANTHROPY, FUNDRAISING, AND PROFESSIONAL SELLING
MARK 3342	MARKETING AND PHILANTHROPIC STRATEGY
MANA 3321	NONPROFIT AND VOLUNTEER MANAGEMENT
FINA 4326	WEALTH AND EXCHANGE
ACCT 2303	ACCOUNTING AND COMPLIANCE OF NON-PROFIT ORGANIZATIONS

Electives

Students must take electives as needed to bring the total number of credit hours to 121. For students selecting the minor in Business Philanthropy, 6 hours of electives are needed. For students selecting the certificate in Business Philanthropy, 12 hours of electives are needed. 6 or 12

Following are recommended electives.

HIST 4308	GLOBAL HISTORY OF PHILANTHROPY
POLS 3301	INTRODUCTION TO GLOBAL ISSUES
POLS 3303	INTRODUCTION TO PUBLIC ADMINISTRATION
POLS 4320	CIVIC ENGAGEMENT, CIVIL SOCIETY, AND COMMUNITY
MODL 1441	TOPICS IN MODERN LANGUAGE LEVEL I
MODL 1442	TOPICS IN MODERN LANGUAGE LEVEL II
MODL 2313	TOPICS IN MODERN LANGUAGE LEVEL III
MODL 2314	TOPICS IN MODERN LANGUAGE LEVEL IV

Total Hours 121

Certificate in Digital Media

This certificate provides students with expertise in using and managing digital media to communicate effectively to audiences in a variety of situations, across multiple platforms.

To earn this certificate students must complete four of the classes listed below with a grade of C or better. **Broadcast majors must take BCMN 2358 instead of BCMN 2370.**

Select four of the following:

ADVT 3308	DIGITAL ADVERTISING DESIGN
BCMN 2370	MULTIMEDIA PRODUCTION (Broadcast majors must take BCMN 2358)
COMM 3303	COMMUNICATION GRAPHICS
CTEC 2350	WEB COMMUNICATION DESIGN AND DEVELOPMENT 1
CTEC 3320	MULTIMODAL COMMUNICATION AND DESIGN
JOUR 3330	DATA JOURNALISM
JOUR 4341	DIGITAL STORYTELLING

PREL 3320 STRATEGIC SOCIAL MEDIA COMMUNICATION

Total Hours	12
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Certificate in Professional Communication

This certificate develops students' professional communication competency including oral and written proficiency, effective messaging and presentation, and teamwork and collaboration skills in various work and organizational contexts.

To earn this certificate students must complete **two lower-division courses and two upper-division courses** from the options listed below with a grade of C or better.

Select two lower-division courses from the following options:	6
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COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING
or COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION
COMS 2304	GROUP COMMUNICATION PRINCIPLES

Select two upper-division courses from the following options:	6
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COMS 3310	GROUP COMMUNICATION THEORY
COMS 3320	INTERVIEW PRINCIPLES
COMS 4300	PERSUASIVE COMMUNICATION
COMS 4315	BUSINESS PRESENTATIONS
COMS 4322	COMMUNICATION TRAINING AND DEVELOPMENT

Total Hours	12
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Criminology and Criminal Justice

Undergraduate Degree

- Bachelor of Arts in Criminology and Criminal Justice (p. 753)
- Minor in Criminology and Criminal Justice (p. 755)
- Minor in Forensic Applications of Science and Technology (p. 755)

Graduate Degree

- Criminology and Criminal Justice, M.A. (p. 750)

COURSES

CRCJ 2334. INTRODUCTION TO THE CRIMINAL JUSTICE SYSTEM. 3 Hours. (TCCN = CRIJ 1301)

An overview of the entire criminal justice system; history and development, law enforcement, prosecution and defense, courts and trial processes, and corrections. Formerly CRCJ 3334; credit will not be granted for both CRCJ 3334 and CRCJ 2334.

CRCJ 2335. ETHICS AND THE CRIMINAL JUSTICE SYSTEM. 3 Hours.

An examination of ethical issues confronted by criminal justice personnel and organizations. The course explores the standards and professional responsibilities of criminal justice practitioners, including law enforcement officers, officers of the courts, and juvenile and corrections officials.

CRCJ 2340. CRIMINAL INVESTIGATION. 3 Hours. (TCCN = CRIJ 2314)

Fundamentals of criminal investigation, including theory and history, conduct at crime scenes, sources of information, collection and preservation of evidence, case and trial preparation. Formerly CRCJ 2314; credit will be given for CRCJ 2340 or CRCJ 2314, but not both.

CRCJ 2350. INTRODUCTION TO LAW ENFORCEMENT. 3 Hours.

An overview of the historical and organizational development of police systems. Emphasis is placed on the function and organizational structure of law enforcement agencies and how these agencies interface with other components of the criminal justice system.

CRCJ 3300. THEORETICAL CRIMINOLOGY. 3 Hours.

The methodological and theoretical perspectives of the social and biological sciences as integrated into the criminal justice system.

CRCJ 3307. INTRODUCTION TO SECURITY SYSTEMS. 3 Hours.

Historical development of private security, its form and practice in modern society. Emphasis on three major divisions within the field: industrial, commercial and governmental security organizations and issues.

CRCJ 3310. PROFESSIONAL WRITING FOR CRCJ MAJORS. 3 Hours.

Designed to develop or enhance skills in varied writing styles used in the study of criminology and criminal justice. Legal, technical, and academic writing requirements are presented with emphasis on purpose, form and content. Specific focus is on technical reports for law enforcement agencies, legal research, field investigations, as well as proper citation and reference style. Open to CRCJ majors or minors only.

CRCJ 3320. CYBERCRIME. 3 Hours.

The course presents a conceptual overview of cybercrime and information security. Topics include: history of cybercrime, cybercrime techniques, cyberterrorism, forensics, and information security fundamentals.

CRCJ 3330. FUNDAMENTALS OF LAW. 3 Hours.

This course introduces students to areas of the law that affect the daily lives of U.S. residents. Emphasis is on fundamental criminal law and constitutional law principles which provide a platform for consideration of important public policy issues concerning crime, discrimination, health care, and immigration.

CRCJ 3336. POLICE MANAGEMENT AND ADMINISTRATION. 3 Hours.

Examines the principles of administration, management, politics and leadership with emphasis on their applicability to police planning, organization, direction, control and personnel management.

CRCJ 3337. ADVANCED CRIMINAL PROCEDURE. 3 Hours.

The processes involved in the criminal justice system; the rules of evidence; the laws of arrest, search and seizure; and the judicial process from offense to conviction.

CRCJ 3338. JUVENILE JUSTICE SYSTEMS. 3 Hours.

Organization, processes, and functions of the juvenile justice system in the United States, its historical antecedents, and contemporary challenges. Consideration also given to sociopolitical factors in juvenile justice decision-making. This course satisfies the requirements for UNIV 1101.

CRCJ 3340. CRIMINAL JUSTICE STATISTICS. 3 Hours.

An introduction to basic concepts and techniques necessary for a preliminary and proficient understanding of criminal justice research. Focus is on analyzing and interpreting research findings including types of data, central tendency, and both descriptive and inferential statistics. Prerequisite: CRCJ 2334 and CRCJ 3350 or equivalent.

CRCJ 3350. INTRODUCTION TO RESEARCH METHODS IN CRIMINOLOGY AND CRIMINAL JUSTICE. 3 Hours.

This course introduces students to the research methodology used in criminological research. Emphasis is on the development of a general understanding of why and how research can be and is conducted in the field of criminology and criminal justice. Other dimensions of research are discussed including the nature of scientific thought, the link between research methods and criminological theory, and the various ethical issues concerning research in the field of criminology.

CRCJ 3370. INTRODUCTION TO FORENSICS. 3 Hours.

This course provides an overview of forensic science. Emphasis is on crime scene investigation, physical evidence, organic and inorganic analysis, forensic toxicology and use of DNA in investigations.

CRCJ 3371. CRIME SCENE INVESTIGATION. 3 Hours.

Provides an in-depth examination of the principles of crime scene investigation. Aspects of forensic crime scene investigation from receiving the call, arriving at the scene, processing of the scene, evidence collection, and safety protocols are examined from scientific, procedural, and legal perspectives. In addition, the tools, techniques, and protocols necessary to perform systematic and thorough crime scene investigation will be presented. Prerequisite: CRCJ 3370.

CRCJ 3380. RACE, CRIME, AND JUSTICE. 3 Hours.

An examination of race in the context of the criminal justice system. Emphasis is on social construction of crime; and the treatment of racial minorities as victims and offenders by law enforcement, courts, and corrections. Offered as CRCJ 3380 and MAS 3380; credit will be granted only once. Offered as AAST 3380 and CRCJ 3380; credit will be granted in only one department.

CRCJ 3385. WOMEN AND CRIME. 3 Hours.

This course examines criminology and criminal justice issues as they relate specifically to women. The three major areas of coverage include (1) women and girls as victims of crime, (2) women and girls as criminal offenders; and (3) women working in the criminal justice system. Offered as DIVR 3385, CRCJ 3385 and WOMS 3385; credit will be granted only once.

CRCJ 3390. VICTIMOLOGY. 3 Hours.

The relationship between victims of crime and the criminal justice system. Includes an analysis of the characteristics of crime victims, victim reporting and nonreporting patterns, treatment of victims by the various segments of the criminal justice system, victim assistance programs, and the issue of compensation and/or restitution for victims of crime.

CRCJ 3395. DRUG USE AND ABUSE. 3 Hours.

An examination of the description, classification, and analysis of the problem of illegal drug use. Focus is on current drug policies in the United States, and a comparison of worldwide drug policies, and critical analysis of each.

CRCJ 4191. CONFERENCE COURSE. 1 Hour.

Directed individual study; research and study on a topic agreed upon by instructor and student. No more than six hours credit will be granted for conference courses in criminal justice. Prerequisite: permission of the instructor.

CRCJ 4291. CONFERENCE COURSE IN CRIMINAL JUSTICE. 2 Hours.

Directed individual study; research and study on a topic agreed upon by instructor and student. No more than six hours credit will be granted for conference courses in criminal justice. Prerequisite: permission of the instructor.

CRCJ 4301. THE AMERICAN JUDICIAL SYSTEM. 3 Hours.

Federal, state, and local judicial systems, with special emphasis on state trial courts having criminal jurisdiction. Court structure and function, court management, and judicial behavior.

CRCJ 4302. MOCK TRIAL I. 3 Hours.

The purpose of this course is to enhance the student's knowledge of the American adversarial judicial system through in-depth study of trial procedure and evidentiary rules. The primary teaching vehicle is a simulated trial based on the official hypothetical case published by the American Mock Trial Association for the current school year. Cases alternate between criminal and civil cases. The current state of our nation affords us a unique opportunity to explore ways to incorporate digital modalities of jury trials and their impact on our justice system.

CRCJ 4303. MOCK TRIAL II. 3 Hours.

In-depth examination of the structure, functions and operations of U.S. civil and criminal trials, with special attention to modern jury decision making and its impact on the criminal justice process by learning practical skillsets related to the voir dire and trial court process.

CRCJ 4309. PRIVATE SECURITY ADMINISTRATION. 3 Hours.

The essentials of governmental and proprietary security development and program planning; including personnel recruitment and training, developing and conducting security audits, records and information protection, and general applications of modern management techniques to security organization. Prerequisite: CRCJ 3307.

CRCJ 4315. WHITE-COLLAR AND CORPORATE CRIME. 3 Hours.

Study and analysis of criminal syndicates, corporate crime, computer crime, criminal corporations, organized crime, and transnational criminal operations.

CRCJ 4325. GANGS. 3 Hours.

An examination of historical and contemporary street and correctional institutional gangs. Addresses the nature and definition of gangs, types and diversity of membership of gangs, theoretical explanations, criminal and deviant behavior, law enforcement responses, intervention and prevention strategies, and public policy issues.

CRCJ 4332. COMMUNITY CORRECTIONS. 3 Hours.

Evaluation of practices, issues, and trends in community corrections. Emphasis is on the de-institutionalization movement, probation, parole, intermediate punishments, and other community alternatives to incarceration.

CRCJ 4333. INSTITUTIONAL CORRECTIONS. 3 Hours.

Examination and evaluation of practices, issues, and trends in institutional corrections. Emphasis is on administration, organization, and effectiveness of incarceration.

CRCJ 4340. FORENSIC DEATH INVESTIGATION. 3 Hours.

An exploration of death investigations including an overview of protocols utilized to investigate a death as well as autopsy perspectives. Focus is on the numerous causes of death and the working relationship of police investigators, death investigators, forensic pathologists, and forensic laboratories. Prerequisite: CRCJ 3370.

CRCJ 4341. FORENSIC EXAMINATION OF IMPRESSION EVIDENCE. 3 Hours.

Explores how impression evidence is formed, how to collect and enhance impression evidence and how to compare this type of evidence. The student will also learn how impression evidence is presented and utilized in a courtroom setting. Prerequisites: CRCJ 3370 and CRCJ 3371 or permission of the instructor.

CRCJ 4342. FORENSIC HAIR AND FIBER IDENTIFICATION. 3 Hours.

Introduces the student to forensic hair and fiber examination by microscopy, including the presentation of the techniques, skills, and limitations of the hair and fiber examiner in a modern crime laboratory setting. Collection techniques utilized at the crime scene and from items of evidence will also be examined. The impact of these techniques on the criminal justice system, in particular the court system, will be explored. Prerequisite: CRCJ 3370 or permission of the instructor.

CRCJ 4343. FORENSIC EXPERT TESTIMONY. 3 Hours.

Survey of the techniques for providing testimony as an expert witness in a court of law, including proper physical appearance, demeanor, qualifications, presentation of evidence, offering opinion, and ethics of providing testimony. Prerequisite: CRCJ 3370.

CRCJ 4344. CRIME ACROSS THE LIFE COURSE. 3 Hours.

This course will introduce students to developmental and life-course criminology, which seeks to understand the development of offending over time. In particular, the class will focus on early precursors to criminal behavior, stability and factors impacting change in criminal behavior, and how genetics and the environment may impact criminal behavior.

CRCJ 4345. CRIME AND THE CRIMINAL JUSTICE SYSTEM IN THE MEDIA. 3 Hours.

An examination of crime and the criminal justice system as depicted in the media; special emphasis on the roles of the media in influencing individual and societal perceptions of, and reactions to, crime and the criminal justice system.

CRCJ 4352. TERRORISM AND MASS VIOLENCE. 3 Hours.

Examination of historic and current trends in civil disruption from domestic/international perspectives. Considers literature and philosophical basis of political terrorism; costs of terrorism; future trends and deterrence by civil or military intervention. Formerly CRCJ 3352; credit will not be granted for both CRCJ 4352 and CRCJ 3352.

CRCJ 4355. ORGANIZED CRIME: NATIONAL AND INTERNATIONAL. 3 Hours.

An examination of organized crime in the United States and internationally, including history, development, ethnic links, impact upon society and the economy, and international cooperation aimed at eradicating the occurrence and proliferation of this form of criminality.

CRCJ 4357. FORENSIC FIREARMS IDENTIFICATION. 3 Hours.

This course introduces students to the field of forensic firearm and tool mark identification. Topics include development, manufacture, evaluation and comparison of firearms, ammunition and tool mark evidence. Students will also acquire an understanding of the firearm examiner's responsibilities as they impact the criminal justice system. Prerequisite: CRCJ 3370.

CRCJ 4365. CAPITAL PUNISHMENT. 3 Hours.

An examination of historic and current trends in capital punishment. Considers the literature and philosophical basis of capital punishment, the costs of capital punishment, and future trends of capital punishment. Provides an in-depth examination of capital punishment from a criminal justice policy perspective.

CRCJ 4380. COMPARATIVE CRIMINAL JUSTICE SYSTEMS. 3 Hours.

An overview of criminal justice systems in other countries. Includes an intensive study and analysis of materials on their law enforcement, judicial, and corrections components; review of comparative studies on a variety of criminal justice topics.

CRCJ 4386. TOPICS IN CORRECTIONS. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4387. TOPICS IN CRIME AND CRIMINOLOGY. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4388. TOPICS IN LAW AND JUDICIAL PROCESSES. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4389. TOPICS IN LAW ENFORCEMENT AND PRIVATE SECURITY. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4390. INTERNSHIP IN CRIMINAL JUSTICE. 3 Hours.

Provides the student with an opportunity to apply academic experience to practical situations by serving for a specified number of hours as participant-observer in a criminal justice agency. May be taken for a total of six semester hours. Internships must be arranged with internship supervisor in the semester prior to enrolling for this course. Prerequisite: permission of the instructor.

CRCJ 4391. CONFERENCE COURSE IN CRIMINAL JUSTICE. 3 Hours.

Directed individual study; research and study on a topic agreed upon by instructor and student. No more than six hours credit will be granted for conference courses in criminal justice. Prerequisite: permission of the instructor.

CRCJ 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

CRCJ 5196. CONFERENCE COURSE CRJU. 1 Hour.**CRCJ 5301. PROSEMINAR IN CRIMINOLOGY AND CRIMINAL JUSTICE. 3 Hours.**

This course is a comprehensive introduction to the discipline, with particular emphasis on the specialties of department faculty, academic research, and writing style. Classic and contemporary literature will be used to examine criminal behavior and the structure, function, operation, and interaction of the criminal justice system components as well as current practices and future trends in criminology and criminal justice.

CRCJ 5309. RESEARCH METHODS IN CRIMINAL JUSTICE. 3 Hours.

Examination of research methodology in criminal justice. Special emphasis on methods and techniques for conducting research in criminal justice, including a review of problems encountered in sampling and survey research, field research, public policy implementation, and program evaluation.

CRCJ 5310. STATISTICS & RESEARCH PRACTICES IN CRIMINAL JUSTICE. 3 Hours.

Advanced methods and techniques of research and research design in criminology and criminal justice. Course will cover pure and applied research and expose students to contemporary methodological and analytical issues. Students will be instructed on the use of existing CRCJ databases as well as the collection of new data and particular aspects of SPSS (Statistical Package for the Social Sciences software) and advanced data analysis. Prerequisite: CRCJ 5309 or equivalent.

CRCJ 5318. CRIMINAL JUSTICE PERSONNEL ADMINISTRATION. 3 Hours.

Personnel administration and management in criminal justice agencies and institutions; analyzes functions of recruitment, selection, hiring, placement, evaluation, dismissal, benefits systems, minority recruitment, training, education, promotion, career development, and retirement.

CRCJ 5319. ISSUES IN POLICING. 3 Hours.

In-depth analysis of historical, current, and future issues in policing and police administration. Emphasis will be placed on the role of police in society, police-citizen relationships, and empirical evaluations of police effectiveness, police behavior, and programs and strategies.

CRCJ 5327. CONSTITUTIONAL ISSUES IN THE CRIMINAL JUSTICE SYSTEM. 3 Hours.

Examination of a variety of legal issues critical to a thorough understanding of the various aspects of the criminal justice system. Special attention is given to contemporary constitutional issues and court decisions and their impact on the criminal justice process.

CRCJ 5332. CORRECTIONAL THEORY AND PRACTICE. 3 Hours.

Examination of social, psychological, political, and historical bases of interventions in the control and disposition of offenders. Emphasis on contemporary policies, practices, and problems in institutional, semi-institutional, and community-based corrections.

CRCJ 5342. ETHICS IN CRIMINAL JUSTICE. 3 Hours.

This course focuses on the ethical decisions and dilemmas encountered in the criminal justice system. Topics covered include criteria for ethical decision making, professional codes of ethics, and ethical and legal dilemmas faced by criminal justice professionals.

CRCJ 5350. THEORETICAL CRIMINOLOGY. 3 Hours.

Explores the etiology of crime, theory development and crime causation. Emphasis is on theoretical perspectives and policy implementation.

CRCJ 5351. TERRORISM AND CRIME. 3 Hours.

This course examines the origins, nature, and operational characteristics of terrorist groups. Students are exposed to topics ranging from the definition of "terrorism" to the unique characteristics of terrorist cells in the United States and abroad. Particular emphasis is on historical and contemporary terrorist attacks against the United States.

CRCJ 5352. WOMEN, CRIME & CRIMINAL JUSTICE. 3 Hours.

A summary of issues related to women as criminal offenders, victims of crime, and professionals in the criminal justice system. The course focuses on crimes women are most likely to commit and/or be processed through the criminal justice system for, the punishment of female offenders, the types of victimizations most often experienced by women, and employment issues unique to women employed in the criminal justice system. While the main emphasis of the course will be on the experiences of women in the U.S., attention will also be given to women on a global scale.

CRCJ 5353. CRIMINAL JUSTICE ORGANIZATIONAL THEORY & MANAGEMENT THOUGHT. 3 Hours.

An examination of organizational theory with specific application to the operation and management of criminal justice agencies. The historical precedents and emergence of contemporary perspectives are presented with their implication for effective functioning of the criminal justice system.

CRCJ 5354. COMPARATIVE CRIMINAL JUSTICE SYSTEMS. 3 Hours.

This course is an overview of crime, criminal behavior, and criminal justice systems throughout the world. This course includes an intensive study and analysis of materials on law enforcement, judicial, and corrections components; a review of comparative studies on a variety of criminal justice topics; and a basic worldwide understanding of philosophies of law and justice. This is a global learning course.

CRCJ 5360. RACE, CRIME JUSTICE & THE LAW. 3 Hours.

This course explores the role of race and ethnicity within the juvenile and criminal justice system. Emphasis is on the social construction of crime, racial and ethnic inequalities, the law and policies/practices that impact blacks and other racial minorities.

CRCJ 5364. CRIME AND THE MEDIA. 3 Hours.

Utilizing a social constructionist perspective, the course examines the mass media's role in engendering and cultivating American society's perception of crime. This course examines factors influencing the social reality of crime, and attempts to deconstruct perceptions of crime-related mass media events.

CRCJ 5366. JUVENILE DELINQUENCY AND JUVENILE CORRECTIONS. 3 Hours.

Correctional modes are discussed and applied to juvenile offenders. Theoretic approaches to causation, modification, and control of delinquent behaviors are presented, and policy implications and limitations are discussed. Historical and contemporary perspectives and approaches are presented in the context of evolving and emerging practices and procedures.

CRCJ 5370. PRACTICUM. 3 Hours.

Professional or pre-professional experience in a criminal justice related agency or institution with the approval and direction of the student's supervising professor; intended for non-thesis option students who do not have professional experience related to criminal justice.

CRCJ 5373. WHITE-COLLAR AND CORPORATE CRIME. 3 Hours.

This course exposes students to the basic concepts associated with incorporation and corporate liability, the definitional complexity of white-collar crime and the idea of crime as a socially constructed phenomenon. The types of behaviors encompassed by the terms "white-collar crime" and "corporate crime", the similarities and differences between white-collar and street-level offenders, and various theoretical explanations for white-collar crime are explored. In addition, the course includes an examination of the physical and economic costs of white-collar crime, landmark cases and issues related to detection, enforcement, and sentencing of white-collar offenders. This course has been offered previously as CRCJ 5393-Special Topics. To be cross-listed with CRCJ 4373. White-Collar and Corporate Crime. Prerequisite: CRCJ 5301.

CRCJ 5380. CRIMINAL JUSTICE SEMINAR. 3 Hours.

Synthesis course for advanced graduate students. Special emphasis on examination of constructs of crime/criminals, justice and systems. Requires individual research in area of particular concern to student.

CRCJ 5381. CRIME & PUBLIC POLICY. 3 Hours.

This course addresses crime and criminal justice policy. Emphasis is on the examination of media and political forces that shape criminal justice responses and policy initiatives. In the context of theoretical paradigms, the impact of race, class, economics, and gender on development of criminal justice public policy is examined.

CRCJ 5382. COMPREHENSIVE ISSUES IN CRIME AND JUSTICE. 3 Hours.

An advanced course covering a broad array of issues related to criminology, crime, and the justice system. This course is designed to review topics related to the comprehensive examination.

CRCJ 5393. TOPICS IN CRIME AND CRIMINOLOGY. 3 Hours.

May be repeated for credit as the topic changes.

CRCJ 5394. TOPICS IN JUSTICE ISSUES. 3 Hours.

May be repeated for credit as the topic changes.

CRCJ 5396. CONFERENCE COURSE IN CRIMINAL JUSTICE. 3 Hours.

Reading and research in a specialized area of criminal justice under the direction of a member of the graduate faculty.

CRCJ 5398. THESIS. 3 Hours.**CRCJ 5698. THESIS. 6 Hours.**

Criminology & Criminal Justice - Graduate Program

Overview

The program leading to the MA degree in criminology and criminal justice offers a comprehensive examination of the criminal justice system, an exploration of criminal and delinquent behaviors, a foundation in research and statistics, and an opportunity to explore other relevant topics of interest to the student.

It is designed for:

1. Pre-professional students who wish to pursue a career in some aspect of criminal justice, or in a related field, and to develop the perspectives and knowledge appropriate to doing so;
2. In-service professionals who wish to enhance and broaden their knowledge in this and related areas of study;
3. Students pre-professional or in-service who wish to pursue further relevant post-graduate studies, whether academic or professional.

To meet these objectives, and to develop a broadly educated student, the program offers both thesis and non-thesis options. Both options require the student to complete 18 hours of core courses within the department.

The coursework (non-thesis) option is generally recommended for students who do not intend to pursue doctoral-level studies. It does not require applicants to have prior criminal justice employment and is designed to provide a base of knowledge and skills necessary to enter and/or administer criminal justice related programs.

The non-thesis option requires students to research, analyze, and present recommendations on a criminal justice related policy. Students must be enrolled in the semester in which they complete and present their policy research and recommendations. Student presentations to the faculty are scheduled once each long semester, typically in mid November and again in mid April.

The thesis option is generally recommended for students wishing to pursue further education in professional schools or doctoral level studies. It is designed to prepare students to conduct research in criminology and criminal justice and actively participate in the development of knowledge. Students choosing the thesis option are required to take a six-hour thesis course during the semester in which the thesis is defended. Non-thesis students take two additional courses constituting six credit hours. Students are required to defend their thesis proposal at least one semester prior to defending their final thesis and before submission of materials to IRB.

With the approval of the Graduate Advisor, students may also use their elective hours to concentrate on a particular field of study, such as sociology, political science, corrections, policing, or a multidisciplinary approach to a particular focus, such as administration-or research. Thesis students take 12 hours of elective courses and non-thesis students take 18 hours.

Admission Requirements

The criminology and criminal justice graduate program adheres to the following admission criteria.

Unconditional Admission

In addition to having satisfied the basic graduate admission requirements of UT Arlington outlined in this Catalog in the Admissions section under University Requirements & Procedures, applicants seeking unconditional admission to the CRCJ graduate program are required to meet the following four criteria:

1. Must have successfully completed a baccalaureate degree in criminology/criminal justice or related discipline.
2. A minimum GPA of 3.0 in the last 60 hours of undergraduate work as calculated by the Graduate School.
3. A minimum of 149 on both verbal and quantitative subtests of the GRE (minimum of 440 on both verbal and quantitative subsets under old scoring system). The GRE is not required of an applicant who satisfies all of the following requirements:
 - Has three or more years of professional experience with increasing responsibility in a criminal justice (or closely related) occupation and provides a detailed work history documenting this experience.
 - Submits an acceptable sample of professional writing authored solely by the applicant. This will be evaluated to assess writing and analytical skills.
 - Successfully completes a personal interview with the graduate advisor, where credentials, goals and objectives of graduate studies, and views related to the study and profession of Criminology/Criminal Justice will be discussed.
4. Must submit three letters of recommendation addressing the applicant's potential for success in the graduate program from persons knowledgeable of the applicant's abilities.

Applicants meeting all four of the criteria will be granted unconditional admission into the CRCJ Graduate Program. Applicants who lack one of the above criteria may be considered for probationary admission.

Probationary Admission

Applicants who fail to meet the four criteria for unconditional admission may be considered for probationary admission. Applicants who fail to meet the GPA or GRE requirements for unconditional admission may be granted probationary admission if any of the following three conditions is met:

1. the GPA falls between 2.5 and 3.0 and the remainder of the application package is satisfactory;
2. the GPA falls between 2.25 and 2.49, the remainder of the application package is satisfactory, and the applicant has five years of professional experience in a criminal justice (or closely related) occupation and a detailed work history documenting this experience; or
3. the GPA fall between 2.00 and 2.24, the remainder of the application package is satisfactory, and the applicant has 10 or more years of professional experience in a managerial or administrative position within a criminal justice (or closely related) occupation and a detailed work history documenting that experience.

In addition to providing a work history, applicants using their work history for admission must also provide a writing sample and complete a personal interview. Applicants admitted on probation will remain in that status until completing 12 hours of graduate coursework with no grade lower than a B.

Deferred Admission

In the event an applicant does not meet the minimum criteria established for unconditional or probationary admission, yet nonetheless is judged by the graduate advisor, in consultation with the CRCJ Graduate Studies Committee, to show promise, the admission decision may be deferred, with instructions provided to the student indicating the course of action to be taken prior to subsequent review. Admission decisions may also be deferred if the application package is incomplete.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements may be granted provisional admission.

Denial

Applicants who do not satisfy all of the criteria for any of the above categories will be denied admission.

Fellowships

Fellowships, when available, will be awarded on a competitive basis. Nominees for the Graduate School Master's Fellowship in the criminology/criminal justice graduate program will be selected based on the following criteria:

- Candidates must be new students entering in the fall semester, with a minimum of 6 hours of enrollment in both long semesters to retain their fellowships.
- The minimum undergraduate GPA requirement is 3.00, as calculated by the Graduate School, plus a GPA of 3.0 for any graduate credit hours.
- Transcript of a completed bachelor's degree in criminology/criminal justice (or appropriate related field) from an accredited institution.
- Three letters of recommendation (may use the same letters submitted for consideration into the criminology/criminal justice graduate program).
- A written statement explaining the applicant's reasons for graduate study in criminology/criminal justice.

MA Degree Requirements

The MA degree in criminology and criminal justice requires a minimum of 36 semester hours, regardless of the option selected, and includes 18 semester hours of required core coursework.

Core		
CRCJ 5301	PROSEMINAR IN CRIMINOLOGY AND CRIMINAL JUSTICE	3
CRCJ 5309	RESEARCH METHODS IN CRIMINAL JUSTICE	3
CRCJ 5310	STATISTICS & RESEARCH PRACTICES IN CRIMINAL JUSTICE	3
CRCJ 5342	ETHICS IN CRIMINAL JUSTICE	3
CRCJ 5381	CRIME & PUBLIC POLICY	3
CRCJ 5350	THEORETICAL CRIMINOLOGY	3
Electives		
The number of semester hours available for electives ranges from a minimum of 12 to 18, depending on the option selected (thesis or non-thesis). Ordinarily, elective hours are taken in areas of particular interest to the student, with the advice and approval of the Graduate Advisor.		12-18
Thesis		
CRCJ 5698	THESIS	6
Students opting for the Thesis track must take 6 hours of thesis credits the semester they plan to defend their thesis and graduate.		6

All candidates for the graduate degree must pass a final comprehensive examination, written, oral, or both written and oral. The scope, content, and form of this examination will be determined by the student's supervising committee.

Dual Degree Requirements

The M.A. degree in criminology and criminal justice requires 36 semester hours and includes 18 semester hours of required core coursework. Up to 9 hours of courses outside of CRCJ may be allocated as electives for the CRCJ degree, with the prior approval of the graduate advisor.

Core

CRCJ 5301	PROSEMINAR IN CRIMINOLOGY AND CRIMINAL JUSTICE	3
CRCJ 5309	RESEARCH METHODS IN CRIMINAL JUSTICE	3
CRCJ 5310	STATISTICS & RESEARCH PRACTICES IN CRIMINAL JUSTICE	3
CRCJ 5342	ETHICS IN CRIMINAL JUSTICE	3
CRCJ 5381	CRIME & PUBLIC POLICY	3
CRCJ 5350	THEORETICAL CRIMINOLOGY	3

Electives

The number of semester hours available for electives is 12 hours in the Thesis track and 18 hours in the non-thesis track. Upon approval of the graduate advisor, up to 9 hours of electives may be taken outside of CRCJ. 12-18

Thesis

CRCJ 5698	THESIS	6
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Students opting for the thesis track within CRCJ must take 6 hours of thesis credits the semester they plan to defend their thesis and graduate.

Criminology and Criminal Justice - Undergraduate Programs

The Criminology and Criminal Justice Department provides students with an academically sound education in criminal justice and prepares them for management positions with municipal, state and federal agencies. Students who are new to the discipline have opportunities for internships with local criminal justice agencies and law offices.

The Department strives to achieve academic excellence through its outstanding faculty. Experts in areas such as corrections, criminological theory, victimology, management, strive to challenge students while caring for their academic formation. The criminal justice faculty helps students understand the etiology of crime who are then able to develop paradigms that are useful and beneficial in the understanding of crime.

This tradition of excellence serves to produce competitive criminal justice managers who are prepared for the challenges of employment with private, state, or federal agencies. The academic excellence of the UTA Department of Criminology and Criminal Justice is well known in the Dallas/Fort Worth metroplex.

Requirements to Major in Criminology and Criminal Justice

Students admitted to UT Arlington from high school or transfer students who have completed less than 30 hours of transferable college credit will be admitted as Criminology and Criminal Justice (CRCJ)-intended majors, and will be allowed to declare CRCJ as their major based on the following criteria:

- Completed at least 15 hours of the University core courses with a minimum 2.0 GPA.
- Completed both CRCJ 2334 (Introduction to the Criminal Justice System) and one other CRCJ core course with at least a C, and earned at least 15 grade points in the two courses combined (2.5 GPA).

Students admitted to UT Arlington who have completed 30 or more hours of transferable college credit will be allowed to declare CRCJ as their major based on the following criteria:

- Achieved a minimum 2.25 GPA for all college credit earned, and
- Completed CRCJ 2334 (Introduction to the Criminal Justice System) or an equivalent course, and one other UT Arlington CRCJ core course, or equivalent course with at least a C, and earned at least 15 grade points in the two courses combined (2.5 GPA).

Students already admitted to UT Arlington, who previously declared a major other than CRCJ, who desire to change to CRCJ as their major will be accepted based on the following criteria:

- Completed at least 15 hours of the College of Liberal Arts core courses,
- Achieved a minimum 2.25 GPA in all hours completed at UT Arlington, and
- Completed both CRCJ 2334 (Introduction to the Criminal Justice System) and one other CRCJ core course with at least a C, and earned at least 15 grade points in the two courses combined (2.5 GPA).

Requirements for a Bachelor of Arts Degree in Criminology and Criminal Justice

Pre-Professional Courses

General Core Requirements (p. 50) 42

Program Requirements (These courses also fulfill requirements in the General Core).

UNIV 1131	STUDENT SUCCESS (UNIV 1131 OR UNIV 1101)	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3

Mathematics (MATH 1301 or higher; MATH 1301 and MATH 1308 are recommended)

Modern and Classical Languages: 1441, 1442, (Must be one language for a total of 8 hours). 8

Total # of hours before major (54)

MAJOR

A CRCJ major consists of 57 hours, including 36 hours of required CRCJ core courses and 21 hours of major electives (See additional requirements below). The total number of hours must be 120 or more.

CRCJ Core (Required)

CRCJ 2334	INTRODUCTION TO THE CRIMINAL JUSTICE SYSTEM ¹	3
CRCJ 2335	ETHICS AND THE CRIMINAL JUSTICE SYSTEM	3
CRCJ 2350	INTRODUCTION TO LAW ENFORCEMENT	3
CRCJ 3300	THEORETICAL CRIMINOLOGY	3
CRCJ 3338	JUVENILE JUSTICE SYSTEMS	3
CRCJ 3380	RACE, CRIME, AND JUSTICE	3

CRCJ 3340 or SOCI 3352	CRIMINAL JUSTICE STATISTICS SOCIAL STATISTICS	3
CRCJ 3350	INTRODUCTION TO RESEARCH METHODS IN CRIMINOLOGY AND CRIMINAL JUSTICE	3
CRCJ 3370	INTRODUCTION TO FORENSICS	3
CRCJ 4301	THE AMERICAN JUDICIAL SYSTEM	3
CRCJ 4332 or CRCJ 4333	COMMUNITY CORRECTIONS INSTITUTIONAL CORRECTIONS	3
CRCJ 4380	COMPARATIVE CRIMINAL JUSTICE SYSTEMS	3
CRCJ Major Electives (of which at least 15 hours must be CRCJ-prefix courses):		21
CRCJ 2340	CRIMINAL INVESTIGATION	
CRCJ 3307	INTRODUCTION TO SECURITY SYSTEMS	
CRCJ 3320	CYBERCRIME	
CRCJ 3330	FUNDAMENTALS OF LAW	
CRCJ 3336	POLICE MANAGEMENT AND ADMINISTRATION	
CRCJ 3337	ADVANCED CRIMINAL PROCEDURE	
CRCJ 3370	INTRODUCTION TO FORENSICS	
CRCJ 3371	CRIME SCENE INVESTIGATION	
CRCJ 3385	WOMEN AND CRIME	
CRCJ 3390	VICTIMOLOGY	
CRCJ 3395	DRUG USE AND ABUSE	
CRCJ 4309	PRIVATE SECURITY ADMINISTRATION	
CRCJ 4315	WHITE-COLLAR AND CORPORATE CRIME	
CRCJ 4325	GANGS	
CRCJ 4332 or CRCJ 4333	COMMUNITY CORRECTIONS INSTITUTIONAL CORRECTIONS	
CRCJ 4340	FORENSIC DEATH INVESTIGATION	
CRCJ 4341	FORENSIC EXAMINATION OF IMPRESSION EVIDENCE	
CRCJ 4342	FORENSIC HAIR AND FIBER IDENTIFICATION	
CRCJ 4343	FORENSIC EXPERT TESTIMONY	
CRCJ 4345	CRIME AND THE CRIMINAL JUSTICE SYSTEM IN THE MEDIA	
CRCJ 4352	TERRORISM AND MASS VIOLENCE	
CRCJ 4355	ORGANIZED CRIME: NATIONAL AND INTERNATIONAL	
CRCJ 4365	CAPITAL PUNISHMENT	
CRCJ 4386	TOPICS IN CORRECTIONS	
CRCJ 4387	TOPICS IN CRIME AND CRIMINOLOGY	
CRCJ 4388	TOPICS IN LAW AND JUDICIAL PROCESSES	
CRCJ 4389	TOPICS IN LAW ENFORCEMENT AND PRIVATE SECURITY	
CRCJ 4390	INTERNSHIP IN CRIMINAL JUSTICE	
CRCJ 4191	CONFERENCE COURSE	
CRCJ 4291	CONFERENCE COURSE IN CRIMINAL JUSTICE	
CRCJ 4391	CONFERENCE COURSE IN CRIMINAL JUSTICE	
CRCJ 4394	HONORS THESIS/SENIOR PROJECT	
To satisfy CRCJ Additional Electives, up to 9 hours of these course may be used:		
ECON 3302	THE ECONOMICS OF CRIME	
HIST 3391	MOOT COURT	3
POLS 3333	JURISPRUDENCE	
POLS 4316	WOMEN IN THE POLITICAL PROCESS	3
POLS 4331	U.S. CONSTITUTIONAL LAW: GOVERNMENT POWER	3
POLS 4332	U.S. CONSTITUTIONAL LAW: FUNDAMENTAL RIGHTS	
PSYC 3303	DRUGS AND BEHAVIOR	3
SOCI 3320	DEVIANCE: SOCIAL AND PERSONAL	
SOCI 3336	SOCIAL INEQUALITY	3

SOCI 3337	RACIAL & ETHNIC GROUPS IN US	3
SOCI 4306	QUALITATIVE RESEARCH METHODS	3
Other courses may be used for elective credit with advisor approval.		

Minor

A minor is not required, but is optional. A minor, if chosen, consists of 18 hours, with at least six hours at the 3000/4000 level.

Oral Proficiency and Computer Proficiency Required (COMS 1301)

Hours of Open Electives	6
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Total Hours	141
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Requirements for a Minor in Criminology and Criminal Justice

A minor in CRCJ consists of 18 semester hours, of which at least 12 must be 3000/4000 level. CRCJ 2334 INTRODUCTION TO THE CRIMINAL JUSTICE SYSTEM, and CRCJ 4301 THE AMERICAN JUDICIAL SYSTEM, are required courses for a CRCJ minor. Students must earn a 2.0 GPA in all CRCJ courses taken toward the minor.

Requirements for a Minor in Forensic Applications of Science and Technology

The CRCJ minor in *Forensic Applications of Science and Technology* (FAST) provides a multidisciplinary approach designed for criminology and criminal justice majors pursuing professional careers in non-laboratory-based areas of forensic science, such as crime scene investigation and where a working knowledge of the basic concepts of forensic science and technology would prove beneficial. Science majors pursuing laboratory-based careers in forensic science may also find this minor advantageous. Students must complete 18 credit hours from the courses listed below, with at least six hours at the 4000 level.

To earn a FAST minor students must earn a GPA of 3.0 or better in those courses. Courses required for the minor cannot be utilized for double credit in the student's major. An academic minor may only be awarded upon current completion of a baccalaureate degree at the University of Texas at Arlington.

Required Entry Course:

CRCJ 3370 INTRODUCTION TO FORENSICS

Electives:

CRCJ 3307 INTRODUCTION TO SECURITY SYSTEMS

CRCJ 3371 CRIME SCENE INVESTIGATION (Prerequisite: 3370)

CRCJ 3320 CYBERCRIME

CRCJ 4357 FORENSIC FIREARMS IDENTIFICATION (CURRENTLY BEING TAUGHT AS CRCJ 4387. TOPICS IN CRIME AND CRIMINOLOGY) (Prerequisite: 3370)

CRCJ 4340 FORENSIC DEATH INVESTIGATION (Prerequisite: 3370)

CRCJ 4341 FORENSIC EXAMINATION OF IMPRESSION EVIDENCE (Prerequisite: 3370 AND 3371)

CRCJ 4342 FORENSIC HAIR AND FIBER IDENTIFICATION (Prerequisite: 3370)

CRCJ 4343 FORENSIC EXPERT TESTIMONY (Prerequisite: 3370)

CRCJ 4390 INTERNSHIP PRACTICUM IN A DEPARTMENT APPROVED FORENSIC, CRIME SCENE OR DIGITAL TECHNOLOGY SETTING (Participation in CRCJ 4390 requires a minimum GPA of 3.0 in both CRCJ courses and in all courses completed at UTA.)

With departmental approval, courses offered by other academic units that have an applied forensic focus may be considered for the FAST minor. Such courses could include:

BIOL 3352 INTRODUCTION TO FORENSIC LAB SCIENCE

BIOL 4352 FORENSIC BIOLOGY

BIOL 4406 HUMAN OSTEOLOGY (Also offered as ANTH 4406)

ANTH 3308 FORENSIC ANTHROPOLOGY

PSYC 3308 FORENSIC PSYCHOLOGY

This minor would be appropriately combined with the following majors: Criminology and Criminal Justice, Biology, Chemistry, Nursing, Psychology, or Computer Science.

Minor in Legal Studies

Requirements (<https://www.uta.edu/academics/schools-colleges/liberal-arts/departments/prelaw/academics/law-legal-studies-minor/>)

Disability Studies

Minor in Disability Studies

The interdisciplinary field of disability studies explores the experiences of people with disabilities—one of the largest minorities in the United States and worldwide—as well as the ways in which conceptions and representations of disability and “the normal” have shaped human experiences more generally. Treating disability as a crucial element of human diversity, the Minor in Disability Studies approaches disability as a social, cultural, and political construct rather than just a medical condition (as it is commonly viewed). Taught by faculty from the Colleges of Liberal Arts, Nursing and Health Innovation, Business, and Education as well as the School of Social Work, this flexible and multidisciplinary minor prepares students for a variety of graduate programs and for careers in law, education, public health, engineering, nursing, architecture, medicine, social work, communication, public history and museums, and sports management and coaching, among other fields.

Students seeking to minor in Disability Studies should first consult with advisors in their major departments or programs for approval, then meet with the director and advisor of the Minor in Disability Studies. A minor in Disability Studies consists of 18 hours, including two required courses: History of Disability (DS 3307/HIST 3307) and Disability Studies Internship (DS 4395). Students also take two to four core disability studies courses and can take up to two approved electives. No more than four courses may be completed in a single discipline.

The Disability Studies Internship (DS 4395) is a supervised internship/capstone course through which students apply the academic skills they have acquired in Disability Studies courses. Interns work at an approved business, academic, or non-profit site that focuses on adapted sports, disability history, assistive technology, disability rights and policy, or universal design and accessibility; they also complete a capstone essay. Students should complete DS 4395 as one of their final courses for the minor and must have already taken or be taking DS 3307/HIST 3307.

Some of the electives change focus from term to term and may therefore not be relevant to the minor during a particular semester. Credit will only be given when the topic of the course (or a substantial portion) focuses on issues related to disability. Other relevant courses not listed below may also be used to fulfill the minor, with approval from the director of the Minor in Disability Studies. For that reason and for the purposes of planning the internship, it is important that students consult with the advisor for the minor before registering each semester.

Required courses (two courses)

HIST 3307	HISTORY OF DISABILITY	3
or DS 3307	HISTORY OF DISABILITY	
DS 4395	DISABILITY STUDIES INTERNSHIP	3

Core Disability Studies courses (at least two courses)

DS 2301	TOPICS IN DISABILITY STUDIES	3
DS 3312	DISABILITY & SOCIAL WORK	3
or SOCW 3312	DISABILITY & SOCIAL WORK	
DS 3321	TOPICS IN DISABILITY STUDIES	3
DS 3327	CYBORGS AND PROSTHETICS	3
or HIST 4327	CYBORGS AND PROSTHETICS	
DS 3346	DISABILITY IN MASS MEDIA	3
or COMM 3346	DISABILITY IN MASS MEDIA	
DS 3331	RESEARCH IN DISABILITY STUDIES	3
DS 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	3
or THEA 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	
DS 3399	DISABILITY & ART	3
DS 4329	DISABILITY & WORK	3
DS 4391	CONFERENCE COURSE	3
KINE 3304	ADAPTED PHYSICAL EDUCATION & SPORT	3

Core courses requiring prior approval from director

HIST 4395	HISTORY SEMINAR	3
ART 4304	ART AND THE HUMAN CONDITION	3

Electives (up to two courses)

ASL 1441	BEGINNING AMERICAN SIGN LANGUAGE I	4
ASL 1442	BEGINNING AMERICAN SIGN LANGUAGE II	4
ASL 2313	INTERMEDIATE AMERICAN SIGN LANGUAGE I	3
ASL 2314	INTERMEDIATE AMERICAN SIGN LANGUAGE II	3
ANTH 3369	MEDICAL ANTHROPOLOGY	3
HEED 3330	CONSUMER HEALTH AND PUBLIC HEALTH SYSTEMS	3

HIST 4307	HISTORY OF MEDICINE	3
HIST 4309	SOCIAL DARWINISM AND EUGENICS	3
HIST 4333	COMPARATIVE CIVIL RIGHTS HISTORY	3
HUMA 3300	MEDICAL HUMANITIES	3
HUMA 3360	AMERICAN HEALTHCARE THROUGH FILM	3
KINE 3307	SPORT AND SOCIETY: ISSUES AND DEBATES	3
LING 2371	LANGUAGE IN A MULTICULTURAL USA	3
MANA 4326	DIVERSITY IN ORGANIZATIONS	3
MODL 4310	GRAPHIC NOVELS AND THE MEDICAL WORLD	3
POLS 3309	HEALTH POLITICS, POLICY, AND ADVOCACY	3
POLS 4340	FEDERAL SOCIAL POLICY	3
POLS 4350	HEALTH POLITICS AND POLICY	3
SOCI 3318	SELF AND SOCIAL IDENTITY	3
SOCI 3342	SOCIOLOGY OF THE HUMAN BODY	3
or KINE 3342	SOCIOLOGY OF THE HUMAN BODY	
SOCI 4320	MEDICAL SOCIOLOGY	3
THEA 3351	ROBOTS, DIGITAL HUMANITIES, AND THEATRE	3
Electives requiring prior approval from director		
ANTH 3330	CULTURAL DIVERSITY AND IDENTITY	3
ART 4396	SPECIAL STUDIES IN ART HISTORY	3
COMM 4350	HEALTH COMMUNICATION	3
ECON 3301	THE ECONOMICS OF HEALTH	3
ENGL 3347	TOPICS IN MULTICULTURAL AMERICAN LITERATURES	3
ENGL 4345	TOPICS IN CRITICAL THEORY	3
HIST 3330	U.S. LEGAL AND CONSTITUTIONAL HISTORY, COLONIAL TO 1877	3
HIST 3331	U.S. LEGAL AND CONSTITUTIONAL HISTORY, 1877 TO PRESENT	3
HUMA 3340	TOPICS IN HUMANITIES	3
HUMA 3350	CLINICAL MEDICINE AND THE HUMAN EXPERIENCE	3
KINE 2351	HEALTH ISSUES IN DIVERSE & VULNERABLE POPULATIONS	3
KINE 3350	URBANIZATION AND VULNERABLE POPULATIONS	3
PHIL 3319	BIOMEDICAL ETHICS	3
PHIL 3341	TOPICS IN BIOETHICS	3
SCIE 4304	DIAGNOSIS OF HUMAN DISEASE	3
SOCI 3336	SOCIAL INEQUALITY	3
SOCW 3307	DIVERSE POPULATIONS	3
SPED 3301	CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES	3
SPED 4304	ASSISTIVE TECHNOLOGY	3

COURSES

DS 2301. TOPICS IN DISABILITY STUDIES. 3 Hours.

Special topics of interest in the field of Disability Studies. May be repeated for credit when the topic changes.

DS 3307. HISTORY OF DISABILITY. 3 Hours.

Examines the history of ideas about disability, the historical lives of people with disabilities, and the history of disability policy. The growth of asylums, the rise of the eugenics movement, a historical look at freak shows, the impact of industrialization on experiences of disability, the evolution of special education, the role of ideas about disability in colonialism, the historical treatment of disabled veterans, and the development of the disability rights movement. Geographic focus will vary. Offered as HIST 3307 and DS 3307; credit will only be granted once. Prerequisite: HIST 1311 and HIST 1312.

DS 3312. DISABILITY & SOCIAL WORK. 3 Hours.

Examines major themes in disability and social work. Topics include basic understandings of disability, lived experiences of people with disabilities, legal and policy perspectives, working with adults and children with a variety of disabilities, history of disability policy and disability rights, disability advocacy, and resources in the community, among others. Offered as DS 3312 and SOCW 3312; credit will only be granted in one department.

DS 3321. TOPICS IN DISABILITY STUDIES. 3 Hours.

Special topics of interest in the field of disability studies. May be repeated for credit when the topic changes.

DS 3327. CYBORGS AND PROSTHETICS. 3 Hours.

Explores the history, theories, and evolving representations of prosthetics, bionics, cyborgism, and the post-human. Investigates the origins and development of the prosthetics industry, historical experiences of prosthetics users, and cultural depictions and debates about human-technology interactions. Offered as DS 3327 and HIST 4327 and previously as DS 3321 and HIST 4388; credit will only be granted once.

DS 3331. RESEARCH IN DISABILITY STUDIES. 3 Hours.

Introduction to the theories and methods that disability studies scholars use to conduct research and present their findings in written and oral form. Recommended: HIST 3307 or DS 3321.

DS 3346. DISABILITY IN MASS MEDIA. 3 Hours.

Explores how mass media frames disability and neurodiversity for the general public. Focuses on issues related to disability and mass media representation, including journalism, TV, film, advertising, photography, documentary, video games, and the Internet. Topics may include media models of representation, inspiration porn, disability blogs, accessible media, and disabled mimicry in TV and film, among others. Offered as DS 3346 and COMM 3346; credit will be granted in only one department.

DS 3355. UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS. 3 Hours.

Explores the principles of Universal Design using the performing arts as a case study: creating environments, events, buildings, and products to accommodate the broadest spectrum of human ability, size, age, and other characteristics. Investigates how to put into practice the accessibility guidelines of the Americans with Disabilities Act of 1990. Performing is not required. Offered as THEA 3355 and DS 3355; credit will only be granted in one department.

DS 3399. DISABILITY & ART. 3 Hours.

Explores the many connections between disability and art, including both art created by people with disabilities and the wide variety of artistic representations about disability. Examines the purposes of art-making by people with disabilities: for therapeutic reasons, as a means of self-expression, to achieve professional goals, or as an act of activism. Investigates historical depictions of disability in art as well as art's role as a visual voice for the disability rights movement. Offered as DS 3399 and ART 3399; credit will only be granted once. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor or Disability Studies.

DS 4191. CONFERENCE COURSE. 1 Hour.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the director of the minor.

DS 4291. CONFERENCE COURSE. 2 Hours.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the director of the minor.

DS 4329. DISABILITY & WORK. 3 Hours.

Explores the complex relationship between disability and work within the United States from a current and historical perspective. Topics include study of the Americans with Disabilities Act; research on the diversity, population, and changes in proportions of people with disabilities; employment rates and experiences of people with disabilities; attitudes and perspectives surrounding and affecting the employment opportunities and experiences of people with disabilities; and ways to provide inclusive, non-discriminatory workplaces. Offered as MANA 4329 and DS 4329; credit will only be granted once. Prerequisite: 60 hours or MANA 4326 or Disability Studies permission.

DS 4391. CONFERENCE COURSE. 3 Hours.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. Course may be repeated for credit once with a change in faculty. Prerequisite: permission from the director of the Minor in Disability Studies.

DS 4395. DISABILITY STUDIES INTERNSHIP. 3 Hours.

Supervised internship in which students apply the academic skills they have acquired in Disability Studies courses by working in a related non-profit or business environment. Prerequisite: HIST 3307 or 3 hours of core disability studies courses; permission of the instructor.

English

Undergraduate Degrees, Minors, and Certificate Program

- Bachelor of Arts in English (<http://catalog.uta.edu/liberalarts/english/undergraduate/#bachelorstext/#ba>)
- Bachelor of Arts in English with Teacher Certification (<http://catalog.uta.edu/liberalarts/english/undergraduate/#bachelorstext/#bacertification>)
- Minor in English (<http://catalog.uta.edu/liberalarts/english/undergraduate/#minorstext/#englishminor>)
- Minor in Writing (<http://catalog.uta.edu/liberalarts/english/undergraduate/#minorstext/#writingminor>)
- Minor in Creative Writing (<http://catalog.uta.edu/liberalarts/english/undergraduate/#minorstext/#creativewritingminor>)
- Minor in Technical Writing and Professional Design (<http://catalog.uta.edu/liberalarts/english/undergraduate/#minorstext/#twpcminor>)
- Minor in Sound Studies (<http://catalog.uta.edu/liberalarts/english/undergraduate/#minorstext/#soundstudiesminor>)
- Certificate in Technical Writing and Professional Design (<http://catalog.uta.edu/liberalarts/english/undergraduate/#minorstext/#twpccertificate>)

Graduate Degrees

- MA in English (p. 775)
- PhD in English (p. 776)

COURSES

ENGL 0100. INTEGRATED READING AND WRITING WORKSHOP. 1 Hour.

A corequisite developmental course that focuses on the rhetorical knowledge, critical thinking skills, and writing and revising processes required in ENGL 1301. Students work with an instructor to review assigned readings and revise essays. This course fulfills Texas Success Initiative (TSI) requirements for reading and/or writing. This course may not substitute for any other English course, and credit in this course does not fulfill any degree requirements. Prerequisite: Concurrent enrollment in the associated section of ENGL 1301 required.

ENGL 0300. INTRODUCTION TO CRITICAL READING AND WRITING. 3 Hours.

Offers additional preparation in academic reading and writing. Focus is on comprehending college-level reading material and writing academic essays in standard written English. Fulfills Texas Success Initiative (TSI) requirements. This course may not substitute for any other English course, and credit in this course does not fulfill any degree requirement.

ENGL 0301. INTEGRATED READING AND WRITING FUNDAMENTALS. 3 Hours.

A corequisite developmental course that focuses on the rhetorical knowledge, critical thinking skills, and writing and revising processes required in ENGL 1301. Students work with an instructor to closely analyze assigned readings and assignment prompts, thoroughly revise and edit essays, and review ENGL 1301 lectures. This course fulfills Texas Success Initiative (TSI) requirements for reading and/or writing. This course may not substitute for any other English course, and credit in this course does not fulfill any degree requirements. Prerequisite: Concurrent enrollment in the associated section of ENGL 1301 required.

ENGL 1200. ENGLISH STUDIES PROFESSIONALIZATION AND STUDENT SUCCESS. 2 Hours.

Introduces students to the profession of English Studies at the college level. Teaches student success skills that will assist new students in their transition to college. Helps students identify their individual needs, determine what resources are appropriate to address those needs, recognize the role faculty play in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Will be taught by Peer Academic Leaders (PALs) and faculty, staff, and/or graduate students, who will provide guidance, raise awareness and understanding of the English and English with Teaching Certification majors and related minors, and help support collaborative and co-curricular opportunities available within the College of Liberal Arts. Reserved exclusively for students planning to major in the English BA or English BA with Teacher Certification degree tracks. Fulfills the University requirement for UNIV 1131.

ENGL 1301. RHETORIC AND COMPOSITION I. 3 Hours. (TCCN = ENGL 1301)

Introduction to college reading and writing. Emphasizes recursive writing processes, rhetorical analysis, synthesis of sources, and argument.

ENGL 1302. RHETORIC AND COMPOSITION II. 3 Hours. (TCCN = ENGL 1302)

Continues ENGL 1301, but with an emphasis on advanced techniques of academic argument. Includes issue identification, independent library research, analysis and evaluation of sources, and synthesis of sources with students' own claims, reasons, and evidence. Prerequisite: Grade of C or better in ENGL 1301.

ENGL 1350. WRITING ABOUT FILM. 3 Hours.

Introduces students to the technical language and elements specific to film criticism. Develops appreciation of two artistic crafts: making film and writing about it. Considers how both professional critics and academics watch and write about what they see on their screens and fosters critical engagement with ethical and social issues by teaching students how to appraise and analyze film in innovative ways in order to communicate a specific argument or point of view.

ENGL 1375. INTRODUCTION TO CREATIVE WRITING. 3 Hours.

This course introduces students to genres of creative writing through modes that are common to all of them, including language, sound, character, setting, exposition, and voice. Students will learn to appreciate, synthesize, and analyze contemporary poetry, short fiction, and creative non-fiction essays, first by learning to closely read these works as writers and then by using these learned techniques to compose creative writings of their own in various genres. Individual and class criticism of these works in a workshop setting, as well as lecture on and discussion of literary forms and techniques, will allow students to more fully comprehend revision techniques. This course satisfies the University of Texas at Arlington core curriculum requirement in creative arts.

ENGL 2303. TOPICS IN LITERATURE. 3 Hours. (TCCN = ENGL 2341)

Focuses on a particular genre, theme, or issue to enable comparison and analysis of several texts. Emphasizes critical thinking, reading, and writing. Topics may include disability in comics, working-class literature, magical realism, or environmental literature and film. May be repeated for credit when course content changes. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisite: C or better in ENGL 1301.

ENGL 2309. WORLD LITERATURE. 3 Hours. (TCCN = ENGL 2331)

Covers significant works of world literature chosen from various national and cultural traditions, focusing on cross-cultural issues. Topics may include moral ambiguities across cultures, the transition from colonial to postcolonial literatures, or the nature of translation; the course may also be structured as a chronological survey. Examines at least three genres and six authors. Emphasizes critical thinking, reading, and writing. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisite: C or better in ENGL 1301.

ENGL 2319. BRITISH LITERATURE. 3 Hours. (TCCN = ENGL 2321)

Concentrates on how cultural, geographic, and political issues shape and are shaped by British literature. Topics may include the nature of empire, Romantic conceptions of heroism, or literary representations of the sciences; the course may also be structured as a chronological survey. Examines at least three genres and six authors. Emphasizes critical thinking, reading, and writing. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisite: C or better in ENGL 1301.

ENGL 2329. AMERICAN LITERATURE. 3 Hours. (TCCN = ENGL 2326)

Concentrates on how cultural, geographic, and political issues shape and are shaped by American literature. Topics may include the struggle to discover a national identity, the transition from war to postwar periods, or the tensions of a multicultural society; the course may also be structured as a chronological survey. Examines at least three genres and six authors. Emphasizes critical thinking, reading, and writing. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisites: C or better in ENGL 1301.

ENGL 2338. TECHNICAL WRITING. 3 Hours. (TCCN = ENGL 2311)

Covers the processes of researching, drafting, designing, editing, and revising technical reports, proposals, instructions, resumes, and professional correspondence for specific audiences. Prerequisites: C or better in ENGL 1301 and ENGL 1302.

ENGL 3300. TOPICS IN LITERATURE. 3 Hours.

May include such topics as Utopian literature, the American short story, literature and philosophy, introduction to theatre, and modern British fiction. May be repeated for credit when content changes. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Russian authors during the period from the beginning of Russian literature until the 1917 Revolution, focusing on the interrelationship of various literary movements and philosophies. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3301 and RUSS 3301; credit will be granted in only one department. Prerequisites: ENGL 3301-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3306. TOPICS IN SOVIET AND POST-SOVIET LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Soviet and post-Soviet authors from 1917 to the present against the background of unfolding social and political development in the USSR and post-USSR. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3306 and RUSS 3306; credit will be granted in only one department. Prerequisites: ENGL 3306-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3333. DYNAMIC TRADITIONS IN LITERATURE. 3 Hours.

An introduction to literary study that focuses primarily on changes over time to a movement, genre, or motif, such as Romanticism, detective fiction, or animals. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3339. CLASSICAL BACKGROUNDS. 3 Hours.

Literature of the Greco-Roman world including, but not limited to, The Odyssey, selected Greek tragedies, The Aeneid, Metamorphoses, and selected lyrics, epigrams, and satires. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3340. HISTORY OF AMERICAN LITERATURE. 3 Hours.

American literature from its beginnings as related to the development of American culture; may include the study of canon formation. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3342. AMERICAN POETRY. 3 Hours.

Examines the forms, traditions, and cultural contexts of the poetry of the United States. May include the relationship between American poetry and poetry written in English elsewhere, and/or poetry written in other languages. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3343. LATINO/A LITERATURE. 3 Hours.

Explores Latino/a literature of the United States from the nineteenth century through the present as conditioned by the intersections of race, class, gender, sexuality, and regional variation. Texts may include novels, poetry, drama, short fiction, and non-fiction by and about peoples in the U.S. with heritage from South America, Central America, the Caribbean, and Mexico. Offered as ENGL 3343 and MAS 3343; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3344. NATIVE AMERICAN LITERATURES. 3 Hours.

Examines selected oral and written texts composed by Native peoples of North America. Includes selections of oral narratives, autobiography, fiction, and poetry, and may include drama and film. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3345. AFRICAN-AMERICAN LITERATURE. 3 Hours.

Examines African-American literature in its various traditions, forms, and cultural and historical contexts. Offered as AAST 3345 and ENGL 3345; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3346. MEXICAN AMERICAN AND CHICANO/A LITERATURE. 3 Hours.

Surveys Mexican American literature from 1848 to the present, including literature of the Chicano movement, focusing on important genres, themes, and historical developments. Offered as ENGL 3346 and MAS 3346; credit will be granted in only one department. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3347. TOPICS IN MULTICULTURAL AMERICAN LITERATURES. 3 Hours.

Focuses on literature produced within one or more ethnic communities in the U.S. in order to trace a theme or to explore issues such as intersectionality, hybridity/mestizaje, diaspora, or immigrant experiences. Topics may include Afro-Latino poetry, third-world feminist writing, multicultural literature of the Southwest, cultural memory and the Jewish literary tradition, or Asian-American fiction. Offered as ENGL 3347, AAST 3347, and MAS 3347; credit will be granted in only one department, and credit for MAS 3347 will be granted only once. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3350. ANALYSIS AND INTERPRETATION. 3 Hours.

Teaches students to identify characteristics of genres, to recognize and understand critical and literary terms, and to develop and use methods and strategies for analyzing and interpreting texts. Required for English and English/Education majors. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3351. HISTORY OF BRITISH LITERATURE I. 3 Hours.

Examines British literature from its origins through the eighteenth century, focusing on the relationship between literature and its social and historical contexts. Covers the emergence of major genres and modes of the time period, which may include epic, pastoral, lyric, sonnets, drama, and satire. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3352. HISTORY OF BRITISH LITERATURE II. 3 Hours.

Examines British literature from Romanticism to the present, focusing on the relationship between literature and its social and historical contexts. Texts may include poetry, novels, plays, essays, and short stories. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3353. GOTHIC LITERATURE. 3 Hours.

Examines the established conventions, cultural contexts, and theoretical underpinnings of gothic literature. May focus on a particular region and/or time period, such as the gothic literature of the British Empire during the fin de siècle, or on a major theme, such as identity construction in gothic literature. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3355. POST-COLONIAL LITERATURE IN ENGLISH. 3 Hours.

Examines twentieth and twenty-first-century literature produced in formerly colonized nations. May include literature from the Indian subcontinent; various countries in Africa; Korea; Australia; New Zealand; Canada; and/or Latin America. Emphasizes critical and theoretical methods, examining such themes as identity, belonging, exile, place, language, sovereignty, and hybridity, and considers the pervasive artistic, psychological, and political impacts of colonization. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3361. HISTORY OF WORLD LITERATURE I. 3 Hours.

Examines major texts from early oral and manuscript traditions through the first centuries of printing. Texts and authors studied may include the Bible, Homer, the Greek dramatists, Vergil and other Roman poets, medieval epic and romance, Dante, Petrarch, Ariosto, Montaigne, and Cervantes. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3362. HISTORY OF WORLD LITERATURE II. 3 Hours.

Examines major literary texts from the mid-seventeenth century to the present. Material might cover Neoclassicism, Romanticism, Realism, Modernism, Postcolonial literature, Magical Realism, and the literature of globalization, as well as various theoretical problems involved in such a study of world literature, including delimiting the field, translation, and English as a global language. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3363. BOOK HISTORY AND PRINT CULTURE. 3 Hours.

Examines the creation, production, distribution, and reception of books, serials, and ephemera across history, with a focus on the shifts from orality to literacy, writing to printing, and analog to digital media. Draws upon theories and concepts from rhetoric, material culture, sociology, economics, and graphic design, as well as studies in reading, literacy, and the creation and transmission of meaning. Introduces students to principles of bibliographical description and analysis. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3364. TOPICS IN LGBTQIA+ LITERATURE AND THEORY. 3 Hours.

Studies representations of the sexual and/or gender identities of LGBTQIA+ people and the intersectionality among them through a variety of texts. Specific topics may include the history of marginalized sexualities, crossdressing in literature, or transvestite saints; the texts may be philosophical, political, literary, and/or scientific. Offered as ENGL 3364 and WOMS 3364; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3366. TOPICS IN LITERATURE AND ENVIRONMENT. 3 Hours.

Investigates the relationship between literature and the environment, considering how texts and other cultural practices represent and engage with the natural world. Topics may include nature writing, animal studies, plant studies, environmental justice, climate change, or posthumanism. May be repeated for credit when course content changes. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3368. TOPICS IN FEMINIST THEORY, GENDER, AND SEXUALITY. 3 Hours.

Examines issues of gender and sexuality through literary, theoretical, and philosophical texts that foreground questions feminist theory raises about desire, sexual identity, and gender asymmetry. Considers how gender and sexuality shape and are shaped by race, ethnicity, class, ability/disability, religion, and age. May be repeated for credit as course content changes. Offered as ENGL 3368 and WOMS 3368; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3370. HISTORY OF WOMEN'S WRITING. 3 Hours.

Examines women's writing in English from the Medieval period to the present. Offered as ENGL 3370 and WOMS 3370; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3371. ADVANCED EXPOSITION. 3 Hours.

An advanced writing course emphasizing writing that explains, demonstrates, or explores a subject. Attention given to audience, invention, arrangement, style, and revision. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3372. COMPUTERS AND WRITING. 3 Hours.

An advanced writing course taught in a computer classroom. Emphasizes rhetorical analyses of electronic discourse and writing in electronic environments. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3373. ADVANCED TECHNICAL WRITING. 3 Hours.

An advanced writing course, taught in a computer classroom, that focuses on writing in technical, scientific, and/or professional subject matters. Examines technical writing theory and style for producing documents for genre-specific audiences. Assignments may include the creation of a knowledge base, a data visualization, a reference guide, a usability testing report, and/or a video or multimedia tutorial. Prerequisite: C or better in ENGL 2338.

ENGL 3374. WRITING, RHETORIC, AND MULTIMODAL AUTHORING. 3 Hours.

Analyzes the rhetorical structure of multimodality (linguistic, visual, oral, gestural, and spatial modes of communication). Emphasizes composing writing-intensive and research-oriented projects for academic, business, and/or creative audiences. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3375. FORMS IN CREATIVE WRITING. 3 Hours.

Covers the craft of creative writing in the genres of poetry, fiction, and creative non-fiction. Prerequisites: C or better in ENGL 1301.

ENGL 3376. BUSINESS AND PROFESSIONAL WRITING. 3 Hours.

An advanced writing course, taught in a computer classroom, that focuses on writing in the workplace. Emphasizes producing business and professional documents based on current, standardized formats; considering the role of audience; writing in a clear, concise, and appropriate style; and revising texts to improve their effectiveness. Prerequisite: C or better in ENGL 2338 or concurrent enrollment in ENGL 2338.

ENGL 3377. TECHNICAL EDITING. 3 Hours.

Editing at different scales of document design, including copyediting, proofreading, and developmental editing. Editing and designing drafts of technical and professional documents. Applying rules and style guides governing technical writing for organizations. Prerequisite: C or better in ENGL 2338 or concurrent enrollment in ENGL 2338.

ENGL 3378. TECHNICAL PROCEDURES AND MANUALS. 3 Hours.

Principles of technical communications for developing procedural documentation and manuals. Extensive practice in writing technical procedures and manuals. Students are encouraged to take ENGL 2338: Technical Writing before enrolling. Prerequisite: C or better in ENGL 2338.

ENGL 3379. GRANT AND PROPOSAL WRITING. 3 Hours.

Explores how foundational principles of technical communication for user-centered design and document design may be applied to writing persuasive grant applications and proposals relevant for business, philanthropy, the humanities, and/or the sciences, including medicine. Individual and collaborative assignments may include identifying elements of successful and unsuccessful grant applications and proposals, creating a proposal for a client, writing a mock grant application, and/or engaging in service-learning for a local non-profit organization to assist its preparation of a grant application. Prerequisite: C or better in ENGL 2338.

ENGL 3380. RHETORIC AND WRITING WITH SOUND. 3 Hours.

An introduction to rhetorical engagement with recorded sound. Includes work with digital audio tools for writing with sound, critical writing about sound recordings, and readings in the interdisciplinary field of sound studies. May also consider histories and ethnographies of listening, studies of built and natural soundscapes, sound media, sound art, and the nature of listening. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 3381. RHETORICAL MAKING. 3 Hours.

Examines the rhetorical impact of designing and developing objects using makerspaces (collaborative technological workshops). Uses modern rhetorical theory to analyze the persuasive and communicative dimensions of fabrication and coding. Projects may include making objects using the university's FabLab, technical writing about and rhetorical analysis of those objects, and website coding and design. Emphasizes student-led collaboration throughout iterative design cycles. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3382. LISTENING TO LITERATURE. 3 Hours.

Focuses on literary works in the form of audiobooks and podcasts. These increasingly popular and influential forms invite us to consider how the longstanding traditions of oral storytelling and performance are sustained and reimagined through new media. Whether written works of literature that are adapted to audio formats, in the case of audiobooks, or original audio productions, in the case of short- and longform fiction podcasts, this body of literature demands new interpretive strategies. In this course, we explore how listening to literature compares to reading literature, including learning and applying the analytical method of critical listening or close listening. Moreover, students will learn the skills of making audiobooks or podcasts, in order to produce their own audio interpretations or performances of literary texts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 3383. INFORMATION DESIGN. 3 Hours.

Covers the theory and practice of information design for professional and technical projects. Focuses on developing critical and rhetorical digital literacies in order to analyze and create effective information design. Students will analyze, design, and redesign print and web materials. Intermediate computer proficiency required for learning the basics of the industry standard software for desktop publishing. Prerequisite: C or better in ENGL 2338 and permission of instructor.

ENGL 3384. STRUCTURE OF MODERN ENGLISH. 3 Hours.

Explores Modern English grammar at the level of the word, phrase, and sentence, not to teach "proper" English but to discover and understand the unique structure of the language. Required for English and English/Education majors. Prerequisites: C or better in ENGL 1301 and ENGL 1302.

ENGL 3385. TOPICS IN RHETORIC AND COMPOSITION. 3 Hours.

Examines a topic in the history, theory, and practice of rhetoric and composition, such as digital rhetoric and composition, environmental rhetoric, history of writing instruction, rhetoric of science, and rhetoric of sound. May be repeated for credit as course content changes. Prerequisites: C or better in ENGL 1301 and ENGL 1302.

ENGL 3386. WRITING ABOUT MUSIC. 3 Hours.

Provides a foundation in sound studies, lyric theory, and close-listening practices that students will use to analyze and produce various genres and modalities of writing about music, including music criticism, liner/album notes, and/or music in literature. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 4191. LITERATURE CONFERENCE COURSE. 1 Hour.

Requires permission of the department chair and the instructor.

ENGL 4301. HISTORY OF THE ENGLISH LANGUAGE. 3 Hours.

Examines the sounds and structure of the English language from pre-history to the present. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4311. EARLY AMERICAN LITERATURE. 3 Hours.

Investigates the earliest literature and cultures of the peoples inhabiting the North American continent from prehistory to the end of the eighteenth century. May focus on oral and written narratives by Native Americans, Puritans, and/or other non-indigenous settlers who colonized the North American continent. Genres may include oral tales, letters, autobiography, fiction, poetry, drama, journalism, and/or scientific writing. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4312. NINETEENTH-CENTURY AMERICAN LITERATURE. 3 Hours.

Covers American literature across the nineteenth century, including such literary topics as sentimental fiction, the American Renaissance, Gothic fiction, realism, and regionalism. The course may address various historical contexts, such as slavery and abolition, the Civil War, the women's rights movement, immigration and urbanization, and westward expansion and the frontier. Genres may include fiction, poetry, essays, autobiography, and letters. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4313. TWENTIETH- AND TWENTY-FIRST-CENTURY AMERICAN LITERATURE. 3 Hours.

Examines literature written in the United States from the turn of the twentieth century to the present. Focuses on major figures and literary movements such as Realism, Modernism, and Postmodernism as they were shaped by historical, cultural, and political contexts including the World Wars, movements for civil rights, the Cold War, and globalization. Genres may include the novel, poetry, and drama, as well as emerging genres such as graphic fiction. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4321. MEDIEVAL LITERATURE. 3 Hours.

Examines various aspects of Western literature from the fifth to the end of the fifteenth century. May focus on major figures and their cultural and historical contexts or on particular genres, themes, or topics. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4322. EARLY MODERN LITERATURE. 3 Hours.

Investigates Western European literature and culture of the sixteenth and seventeenth centuries. May focus on Petrarchan and anti-Petrarchan, Platonic and anti-Platonic poetry and essays; meditative poetry; epic poetry; drama by Shakespeare or his contemporaries; manuscript or coterie writing; women's writing; early scientific writing; or the relationship between literature and the arts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4324. RESTORATION AND EIGHTEENTH-CENTURY LITERATURE. 3 Hours.

Examines literature from the 1660s through the end of the eighteenth century. Focuses on the tenets of Neoclassicism, the rise of the Enlightenment, and the emergence of Romanticism, expressed in genres that may include drama, coterie writing, satire, essays, journals and diaries, poetry, and epic works. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4325. CHAUCER. 3 Hours.

Examines the works of the fourteenth-century English poet Geoffrey Chaucer, their historical and cultural contexts, and his literary influences. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4326. SHAKESPEARE. 3 Hours.

Examines selected plays and poetry by Shakespeare in their historical, cultural, and literary contexts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4328. J. R. R. TOLKIEN. 3 Hours.

Examines the mythology created in the fantasy writings of J. R. R. Tolkien, especially *The Lord of the Rings* and *The Silmarillion*, along with its roots in culture, history, language, literature, and religion. May cover some of Tolkien's lesser-known creative or critical texts as well as recent appropriations of Tolkien's work, such as in film, music, fan fiction, and gaming. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4330. TOPICS IN CREATIVE WRITING. 3 Hours.

A creative writing course that focuses on a topic spanning one or more literary genres. Topics may include flash fiction, memoir, narrative poetry, speculative fiction, or screenwriting. May be repeated for credit as course content changes. When the topic is screenwriting, 4330 will be cross-listed with ART 3350: Screenwriting I; credit will be granted in only one department. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4331. BRITISH ROMANTICISM. 3 Hours.

Covers the British Romantic period (roughly 1789-1837), with special attention to the relationship between literature and culture. Genres may include lyric and epic poetry; novels and romances; essays and journals; science fiction and the Gothic. Topics may include nature and the imagination, science and industry, travel and empire, and revolutions in politics, culture, and the arts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4332. THE VICTORIAN ERA. 3 Hours.

Covers the literature of Britain from 1837 to 1901, a period shaped by the literary movements of Realism and Naturalism. Genres may include the novel, poetry, drama, scientific writing, or essays. Focuses on major themes or issues in social, ethical, and aesthetic thought, such as Darwinism, democracy, class conflict, and empire. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4333. LITERARY GENRES. 3 Hours.

Examines one or more literary genres, such as the epistolary novel, the epic, the diary, or historical fiction. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4334. TOPICS IN BRITISH LITERATURE. 3 Hours.

Concentrates on a topic, on a particular historical era, or on significant British authors. May address important themes, movements, regions, genres, or cross-cultural comparisons. Examples include country and city, the Bloomsbury Group, and Jane Austen. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4335. TOPICS IN NATIVE AMERICAN LITERATURES. 3 Hours.

May focus on a period, women writers, film studies, transnational indigenous comparative studies, or a genre of written or oral literature. Topics may include the challenges of translation and mediation, as well as the identity politics of "Indian" authorship. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4336. TOPICS IN AMERICAN LITERATURE. 3 Hours.

Concentrates on a topic, on a particular historical era, or on one to three significant American authors. May address important themes, movements, regions, genres, or cross-cultural comparisons. Examples include work and the workplace, the Beat Generation, and Henry James and Edith Wharton. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4337. TOPICS IN COMPARATIVE LITERATURE. 3 Hours.

Concentrates on a topic, a genre, a particular historical era, a movement, or a group of significant authors in order to illuminate cross-cultural comparisons. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4338. TWENTIETH- AND TWENTY-FIRST-CENTURY BRITISH LITERATURE. 3 Hours.

Covers the literature of Britain, and possibly the Republic of Ireland, from the turn of the twentieth century. Focuses on major figures, literary movements, and the social and political developments that continue to preoccupy writers, such as women's rights, class conflict, and postcolonialism. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4339. TOPICS IN AFRICAN-AMERICAN LITERATURE. 3 Hours.

Concentrates on a topic or theme within the canon of African-American literature, such as a particular genre or era, significant authors, or a philosophical movement. Examples include the Harlem Renaissance, the Civil-Rights/Black-Power era, African-American autobiography, short fiction, and Afrofuturism. Offered as AAST 4339 and ENGL 4339; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4340. TOPICS IN WOMEN'S WRITING. 3 Hours.

Focuses on women's writing in a particular genre or historical period or on a concept or issue of importance to women writers. May be repeated for credit as course content changes. Offered as ENGL 4340 and WOMS 4340; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4341. RHETORIC AND COMPOSITION: HISTORY, THEORY, AND PRACTICE I. 3 Hours.

Surveys the history of rhetorical theory and practice from their earliest formulations in Greek and Roman antiquity to the early modern period. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4342. RHETORIC AND COMPOSITION: HISTORY, THEORY AND PRACTICE II. 3 Hours.

Surveys the history of rhetorical theory and practice from the early modern period to the present. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4343. TOPICS IN SOUND STUDIES. 3 Hours.

Investigates culture and the environment through sound. Topics may include histories and ethnographies of listening, studies of built and natural soundscapes, machine listening, sound media, sound art, and the nature of listening. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 4344. TOPICS IN ENGLISH LANGUAGE STUDY. 3 Hours.

Examines texts primarily for their use of language or their engagement with linguistic issues. May include such topics as Old English, the emergence of the vernacular, literature and dialect, global English, or slang. May be repeated for credit when course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4345. TOPICS IN CRITICAL THEORY. 3 Hours.

May include the study of major figures (e.g., Agamben, Barthes, Derrida, Foucault, Heidegger, Levinas, Said, Spivak) or topics (e.g., aesthetics, digital technology, disability studies, feminist views of science, film theory). May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4346. TOPICS IN THEORIES OF LANGUAGE AND DISCOURSE. 3 Hours.

May include the study of a major theorist or a broader survey of related theories (e.g., discourse analysis; evolutionary theories of language and mind; integrational linguistics; speech-act theory) that investigate "language-in-general" and/or "language-in-use" and that question the limitations of these terms. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4347. ADVANCED CREATIVE WRITING: FICTION. 3 Hours.

A workshop-intensive course on writing fiction. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4348. ADVANCED CREATIVE WRITING: POETRY. 3 Hours.

A workshop-intensive course on writing poetry. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4349. ADVANCED CREATIVE WRITING: CREATIVE NON-FICTION. 3 Hours.

A workshop-intensive course on writing creative non-fiction. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4350. TOPICS IN FILM AND LITERATURE. 3 Hours.

Studies film and the methods for comparing films to literary or other texts, considering them in relation to history, critical theory, and culture. May include such topics as ecohorror, adaptations of Shakespeare and/or Austen, or Native American cinema. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4351. THE BUSINESS OF WRITING. 3 Hours.

Prepares students for the professional and practical aspects of being a creative writer, such as submitting work for publication, organizing and conducting public readings, and developing effective daily writing practices. Students must already have a preliminary portfolio of prose (a minimum of 30 pages) or poetry (a minimum of 15 pages) ready to be intensively workshopped and edited in small peer groups, culminating in the production of a polished final collection. Prerequisite: May be taken only by Creative Writing minors who have earned a grade of C or above in 15 hours of advanced creative writing courses and who have the permission of the instructor or the Coordinator of the Creative Writing minor.

ENGL 4352. ADVANCED CREATIVE WRITING: SCREENWRITING. 3 Hours.

Focuses on the format, styles, structures, and syntax of writing narrative film for television, online, and theatrical platforms. Students will study screenplays, analyze films, and learn about the conventions of various narrative film genres as well as principles for film adaptations. Students will complete one or more original screenplays, including at least one feature-length screenplay, as well as other assignments. Offered as ART 4378; credit will be granted in only one department. Prerequisite: C or better in ENGL 1301.

ENGL 4355. LITERARY CRITICISM AND THEORY I. 3 Hours.

Examines classics of literary criticism from Greek antiquity through the nineteenth century, focusing on the nature, function, and history of criticism. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4356. LITERARY CRITICISM AND THEORY II. 3 Hours.

Examines twentieth-century and contemporary methodologies, such as New Criticism; formalism; structuralism; poststructuralism; hermeneutics; semiotics; reader response; psychoanalysis; Marxism; theories of gender, sexuality, and race; and cultural studies. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4365. CHILDREN'S LITERATURE. 3 Hours.

Examines literature for children, with attention to theoretical perspectives and cultural contexts. May present a history of the genre or focus on specific issues, such as gender, social class, disability, or the environment. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4366. YOUNG ADULT LITERATURE. 3 Hours.

Examines literature for young adults, with attention to theoretical perspectives and cultural contexts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4370. RHETORIC AND COMPOSITION FOR SECONDARY SCHOOL TEACHERS. 3 Hours.

Surveys recent scholarship in rhetoric and composition as it applies to middle school and high school settings. Focuses on the development of reading and writing assignments, formative response to student writing, and assessment of student writing. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4371. ADVANCED ARGUMENTATION. 3 Hours.

Examines classical and contemporary theories of argumentation and applies them to academic and nonacademic writing. Assignments focus on the analysis and production of argumentative discourse in various forms (e.g., academic essays, advertising, editorials, political speeches, etc.). Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 4372. PROFESSIONAL PRACTICE IN TECHNICAL COMMUNICATION. 3 Hours.

Covers the professional practices of technical and professional writers and designers, as informed by histories, theories, and methods of the field. Addresses historical and current trends in technical communication, including communicating for transnational audiences, writing for social justice, and multimodal design. Includes professionalization for careers in the field of professional and technical communication. Assignments may include a professional portfolio, a professional development plan, or a case study of an historical or current issue relevant to the field. Prerequisite: C or better in ENGL 2338.

ENGL 4375. TOPICS IN DIGITAL STUDIES. 3 Hours.

Advanced, theoretical work in digital studies in areas such as data analytics, social networking, videogame studies, or sound studies. May be repeated for credit when course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4376. DESIGNING TECHNICAL DOCUMENTS. 3 Hours.

Builds on the topics of designing and creating effective technical documents as taught in Technical Writing (ENGL 2338). Covers foundations of user centered design, including both single and multipage design, using professional design software (e.g. Adobe InDesign, Photoshop), typography, color theory, basic information architecture (IA), and user experience (UX). Assignments could include identifying successful design elements in sample texts, selecting appropriate colors and typefaces to enhance document content and message, producing a single and multi-page redesign, editing raster graphics in an ethical manner, editing vector graphics for publication, and producing a professional portfolio. Prerequisite: C or better in ENGL 2338.

ENGL 4377. TOPICS IN SCIENCE AND TECHNOLOGY. 3 Hours.

Explores issues in the rhetorical, cultural, and aesthetic dimensions of science and technology. May include such topics as the medical humanities, speculative fiction, or theories of cultural spaces. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4385. MODERNISM. 3 Hours.

Covers major works of the early and mid-twentieth century in Europe and/or the Americas that belong to the movement known as Modernism. May also include the study of Freud and literature, Impressionism, Surrealism, and Existentialism. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4387. CONTEMPORARY LITERATURE. 3 Hours.

Examines contemporary literary movements and forms such as postmodernism, magical realism, dystopian fiction, and the graphic novel. Works may be from a single national tradition or several. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4390. INTERNSHIP IN ENGLISH. 3 Hours.

Provides an opportunity to apply academic skills learned in English classes to practical situations by working in a business, government, or non-profit organization in a role related to the discipline. May be repeated once for credit if internship duties change. Prerequisite: English majors: C or better in ENGL 3333, ENGL 3350, and ENGL 3384 and permission of instructor. Non-majors: C or better in ENGL 1301 and ENGL 1302, 60 hours toward their degree, and permission of instructor.

ENGL 4391. LITERATURE CONFERENCE COURSE. 3 Hours.

An independent study of a topic not otherwise available. Requires permission of the department chair and the instructor. May be repeated once for credit as long as the topics differ. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department.

ENGL 4399. SENIOR SEMINAR. 3 Hours.

Capstone course for English majors. A writing-intensive, seminar-style, in-depth study of a topic. Content may consist of a figure or figures, a period, a literary movement, a theme, or a critical theory. Offerings have included modern American poetry, Heidegger, existentialism, Negro expressionism, early modern manuscripts, race in science fiction, and American literature and animal studies. Prerequisite: C or better in ENGL 3333, ENGL 3350, and ENGL 3384 and completion of 18 hours of required 3000 - 4000 level English courses.

ENGL 5191. INDEPENDENT STUDY. 1 Hour.

Supervised independent study at the M.A. or Ph.D. level.

ENGL 5300. THEORY AND PRACTICE IN ENGLISH STUDIES. 3 Hours.

Core graduate course, introduction to graduate study in English. Covers a wide range of methodological and theoretical approaches to, as well as current issues in, criticism, rhetoric, and literary studies. Enrollment requires the approval of the Graduate Advisor in English.

ENGL 5301. MEDIEVAL ENGLISH LITERATURE. 3 Hours.

English literature of the period before 1500. May include Old English poetry, Anglo-Latin prose, William Langland, the alliterative revival, romances, Malory, and Chaucer.

ENGL 5302. 16TH CENTURY BRITISH LITERATURE. 3 Hours.

Non-dramatic literature of the 16th century, including works by Thomas More, Sir Philip Sidney, Sir Walter Raleigh, John Skelton, Edmund Spenser, and Elizabeth I.

ENGL 5303. 17TH CENTURY ENGLISH LITERATURE. 3 Hours.

Poetry and prose of the 17th Century. May include a study of Milton and/or a study of writers and motifs of the period.

ENGL 5304. RESTORATION AND 18TH CENTURY BRITISH LITERATURE. 3 Hours.

Drama, poetry, fiction, and essays from 1660 to 1798. Includes writers such as John Dryden, Aphra Behn, Alexander Pope, Samuel Johnson, Henry Mackenzie, Ignatio Sancho, and Maria Edgeworth, as well as issues of the period such as the nature of reason.

ENGL 5305. ROMANTIC BRITISH LITERATURE. 3 Hours.

Poetry and fiction from 1798 to 1837. Includes writers such as William and Dorothy Wordsworth, Mary and Percy Shelley, Felicia Hemans, and Walter Scott, as well as issues such as the meaning of nature.

ENGL 5306. VICTORIAN ENGLISH LITERATURE. 3 Hours.

Concepts and problems in texts by Victorian novelists, poets, and essayists (writers will vary). Attention to historical and cultural as well as literary issues.

ENGL 5307. 19TH CENTURY BRITISH LITERATURE AND CULTURE. 3 Hours.

An overview of the writings and culture of the long 19th century in Britain from 1798 to 1914. Makes connections between Romantic and Victorian periods, covers literary and other relations with the empire, and includes significant non-literary figures such as Darwin and Freud.

ENGL 5308. STUDIES IN SHAKESPEARE. 3 Hours.

Representative works of Shakespeare and contemporary Shakespeare criticism. May vary from comprehensive readings in the dramatic literature to intensive examination of certain plays, or to other related topics and plays of the period.

ENGL 5311. FOUNDATIONS OF RHETORIC AND COMPOSITION. 3 Hours.

An intellectual and institutional history of rhetoric and composition studies. Special attention will be given to the history and ethics of writing instruction; the importation of classical rhetoric into contemporary composition classrooms; the institutional formation of the field and its ambiguous status in the academy; and the major contemporary pedagogical approaches (e.g., expressivism, cognitivism, social constructionism). May also address recent topics that have attracted the attention of the field (e.g., dialogism, institutional critique, plagiarism, post-process theory, service learning, writing across and beyond the curriculum).

ENGL 5313. 20TH CENTURY BRITISH LITERATURE. 3 Hours.

A study of English and Irish writing in the 20th Century; may focus on major authors, themes, or topics.

ENGL 5320. EARLY AMERICAN LITERATURE. 3 Hours.

Explores significant authors, texts, and movements within literary, historical, and cultural contexts. Writers examined may include established figures as well as noncanonical authors, and a range of topics and genres, such as Native American and comparative Indigenous literatures, Puritan writing, captivity narratives, early national literature, the rise of the novel, and autobiographical narrative.

ENGL 5322. 19TH CENTURY AMERICAN LITERATURE. 3 Hours.

Considers significant authors, texts, and movements within literary, historical, and cultural contexts. Writers examined may include established figures as well as noncanonical authors, and a range of topics and genres, such as the domestic novel, nineteenth-century American poetry, the American Renaissance, slave narratives, realism, and naturalism.

ENGL 5323. 20TH CENTURY AMERICAN LITERATURE. 3 Hours.

Explores significant authors, texts, and movements within literary, historical, and cultural contexts. Writers examined may include established figures as well as noncanonical authors, and a range of topics and genres, such as modern American poetry and fiction, the Harlem Renaissance, regionalism, the Beats, and post-war fiction.

ENGL 5324. TOPICS IN AMERICAN LITERARY GENRES. 3 Hours.

Concentrates on a significant genre within American literary history. Genres examined may include, but are not limited to, poetry, fiction, autobiography, oral narratives, and American Gothic literature. May be repeated when content changes.

ENGL 5326. TOPICS IN AMERICAN LITERATURE BEFORE 1900. 3 Hours.

May focus on one to three writers such as Whitman and Dickinson, or Douglass, Stowe, and Melville, or a significant topic such as realism, African American literature, gender and sexuality, American literature and the environment, sentimental fiction, or women's writing. May be repeated when content changes.

ENGL 5327. TOPICS IN AMERICAN LITERATURE AFTER 1900. 3 Hours.

May focus on one to three writers such as Wharton, Faulkner, or Morrison, or a significant topic such as modernism and postmodernism, Mexican American literature, multicultural narrative, or feminist theory/feminist fiction. May be repeated when content changes.

ENGL 5330. TOPICS IN CRITICISM. 3 Hours.

Studies in critical topics such as textual criticism, psychoanalytic criticism, philosophy and criticism, Renaissance poetics and literature, critical movements, or focus on a major theorist in criticism. May be repeated when content changes.

ENGL 5331. TOPICS IN LANGUAGE OR DISCOURSE STUDIES. 3 Hours.

Concentration on historical and theoretical approaches to the study of language and the specific discursive practices of its users. May be repeated for credit when content changes.

ENGL 5337. SEMINAR IN TEACHING LITERATURE. 3 Hours.

Study of recent scholarship in English Studies and other disciplines pertaining to the teaching of literature. Comparative analysis of methods and objectives for the teaching of literature. Course will include a practicum component in which students observe the teaching of experienced faculty, teach particular texts, design syllabi and write statements of teaching philosophy. The course is intended to prepare graduate students to teach literature courses at the university, college or community college level, and to provide a range of pedagogical models to enhance the skills of secondary school teachers.

ENGL 5340. CRITICAL THEORY: THE MAJOR TRADITIONAL TEXTS. 3 Hours.

A study of literary and cultural theory and practice from the Greco-Roman period to the early 20th Century. May include such theorists as Plato, Aristotle, Horace, Longinus, Dante, Sidney, B. Jonson, Dryden, Pope, Johnson, Coleridge, Arnold, Richards, Eliot, and others.

ENGL 5350. HISTORY OF RHETORIC I: CLASSICAL RHETORIC. 3 Hours.

A study of the theory and practice of Greco-Roman rhetoric from its pre-Socratic origins to the Second Sophistic. Attention will be given to major theorists, such as Gorgias, Protagoras, Plato, Aristotle, Isocrates, Hermagoras, Hermongenes, Cicero, Quintilian and the transitional figure of St. Augustine.

ENGL 5351. HISTORY OF RHETORIC II: MEDIEVAL AND RENAISSANCE RHETORIC. 3 Hours.

A study of the theory and practice of western rhetoric from the early medieval period through the Renaissance. Attention will be given to major theorists, such as St. Augustine, Geoffrey of Vinsauf, Robert of Basevorn, Christine de Pizan, Desiderius Erasmus, Baldesar Castiglione, Juan Luis Vives, Sir Philip Sidney, Peter Ramus and Francis Bacon.

ENGL 5352. HISTORY OF RHETORIC III: MODERN AND CONTEMPORARY RHETORIC. 3 Hours.

A study of the theory and practice of western rhetoric from the 18th century to the present. Attention will be given to major theorists, such as Whatley, Blair, Bain, Campbell, Spencer, Richards, Burke, Weaver, Toulmin, Perelman, Bitzer, Vatz, Harriman, Leff, Farrell, McGee, Gaonkar, Kinneavy, Scott, Crosswhite, Meyer, Gross, Miller, Fuller and Kent.

ENGL 5353. RHETORIC AND SOUND. 3 Hours.

An introduction to rhetorical engagement with recorded sound. Includes critical engagement with sound recordings (sonic data and archives, podcasting, field recording, etc.), work with digital audio tools for writing with sound, as well as studies in the interdisciplinary field of sound studies. May also consider work in areas that include histories and ethnographies of listening, studies of built and natural soundscapes, sound media, sound art, and the nature of listening.

ENGL 5355. STUDIES IN ENGLISH DISCOURSE. 3 Hours.

Analysis of English grammatical structures above the level of the clause, including the sentence, the paragraph, and the whole text; examination of the work of major discourse theorists Dik, Harris, Halliday, Longacre, Pike and van Dijk.

ENGL 5356. COMPOSING PROCESSES. 3 Hours.

Study of research about writing processes and examination of the available methods of conducting research; special attention given to major researchers and theorists.

ENGL 5357. READING PROCESSES. 3 Hours.

Contemporary theories of interpretation and empirical research into reading processes; special attention given to major researchers and theorists.

ENGL 5358. WRITING ASSESSMENT, EVALUATION, AND RESPONSE. 3 Hours.

Study of the methods and ethics of assessing, evaluating, and responding to the writing of students individually or collectively.

ENGL 5359. ARGUMENTATION THEORY. 3 Hours.

Emphasis on theories of argumentation and persuasion that further the rhetorical aims of convincing or achieving agreement through identification and consensus. Attention to classical and contemporary approaches to issue analysis, invention, audience analysis, building common ground, stasis theory, types of proofs and tests of validity, organizational strategies, and style. Special attention to argument on the Internet. Assignments may include constructing Web sites related to argument. Study of such theorists as Aristotle, Perelman, Toulmin, Ong, K. Burke, Brockreide and Ehninger, Bitzer, Young, Becker and Pike, and others.

ENGL 5360. CONTEMPORARY CRITICAL THEORY. 3 Hours.

Study of contemporary theories of interpretation, concentrating on one or more schools of critical and cultural theory may include, New Criticism, the Neo-Aristotelians, Marxist Critical Theory, Hermeneutics, psychoanalysis, Russian Formalism, semiotics, speech-act theory, phenomenology, structuralism, and post-structuralism. May be repeated when content changes.

ENGL 5370. SCHOLARLY ARGUMENT. 3 Hours.

An introduction to the research for the writing of argumentative scholarly essays. Surveys research skills, materials, forms of scholarly argument, and involves the writing of a research-based essay.

ENGL 5380. TEXTUAL THEORIES OF CULTURE. 3 Hours.

Study of the interpretations of culture yielded by the traditions of semiotics and hermeneutics and cultural studies may include works by the following: Lyotard, Foucault, Habermas, Derrida, Pierce, Barthes, Deleuze, Gadamer, Levi-Strauss, Butler, Haraway, and Hall.

ENGL 5381. PRIVACY MATTERS WITH DIGITAL TECHNOLOGIES. 3 Hours.

Examines the critical, ethical, and rhetorical dimensions of surveillance and privacy due to digital technologies and data analytics. May focus on the effects of bias, discrimination, fairness, manipulation, and transparency.

ENGL 5382. THE LIFE AND TIMES OF S. CARTER. 3 Hours.

Explores the trajectory of Jay-Z's musical career and connects him to a larger continuum of African American literary expression. Building on earlier generations of computational approaches to humanities research, this course uses Jay-Z as a model to structure different types of data in order to analyze his career from a digital perspective. Students will compile quantitative and qualitative datasets on Jay-Z in order to produce thematic data visualizations, literary timelines, and a list of key terms that pinpoint intellectual and cultural components of rap music.

ENGL 5383. DATA MINING BLACK SHORT FICTION. 3 Hours.

Illuminates an important mode of Black literary art by interpreting writers' depictions of characters navigating distinct social and physical environments. Examines the role of anthologies in the transmission of these literary works. Teaches students technical skills associated with data analytics methodologies, such as formulating useful research questions, scraping data from websites, organizing and cleaning data, analyzing data, and creating useful data visualizations.

ENGL 5388. GTA PREPARATION. 3 Hours.**ENGL 5389. TOPICS IN TEACHING COMPOSITION. 3 Hours.**

Seminar for investigating problems of and approaches to teaching composition. Special attention given to current compositional theorists. May be repeated when content changes.

ENGL 5391. INDEPENDENT STUDY. 3 Hours.

Supervised independent study at the M.A. or Ph.D. level.

ENGL 5398. THESIS. 3 Hours.

The graduate student must be registered for this course (a) when in consultation over the thesis with the supervisory committee, and (b) in the semester or term in which the Master of Arts degree will be conferred.

ENGL 5698. THESIS. 6 Hours.

The graduate student must be registered for this course (a) when in consultation over the thesis with the supervisory committee, and (b) in the semester or term in which the Master of Arts degree will be conferred.

ENGL 5998. THESIS. 9 Hours.

The graduate student must be registered for this course (a) when in consultation over the thesis with the supervisory committee, and (b) in the semester or term in which the Master of Arts degree will be conferred.

ENGL 6191. INDEPENDENT STUDY. 1 Hour.

Independent study at the M.A. or Ph.D. level. May be repeated as needed. Prerequisite: permission of instructor.

ENGL 6329. TOPICS AND THEMES IN COMPARATIVE LITERATURE. 3 Hours.

The study of a theme or topic, such as primitivism, utopianism, representations of the unconscious, or the quest, within different literary traditions. May be repeated as content changes.

ENGL 6330. GENRE STUDIES IN BRITISH LITERATURE. 3 Hours.

Intensive study of a genre in any period(s) of British Literature; may focus on autobiography, history of the novel, Restoration and eighteenth-century drama, nineteenth-century British fiction, or other. May be repeated when course content changes.

ENGL 6333. GENRES IN COMPARATIVE LITERATURE. 3 Hours.

Theory of literary forms or types and the conventions they embody. May focus on the epic, the novel, lyric poetry, autobiography, drama, or magical realism, across different literary traditions. May be repeated as course content changes.

ENGL 6335. TOPICS IN ENGLISH LITERATURE. 3 Hours.

Focus on writers or issues in literature written in English, including colonial and postcolonial literatures. May include poetry, drama, fiction, or non-fiction. May be repeated when content changes.

ENGL 6339. TOPICS IN AMERICAN LITERATURE. 3 Hours.

Topics not bound by particular historical periods, for example, women's writing, canon formation, Native American and comparative Indigenous literatures, African American literature, Latina/o literature, utopian literature, science fiction, popular literature and culture, and queer literature. May be repeated when content changes.

ENGL 6340. METACRITICAL THEORY. 3 Hours.

A study of theories of literature from the point of view of their systems-theoretical character. Focuses on the writing of selected metatheorists such as Barbour, Braithwaite, Bruss, Harr, Lakotos, Popper, Rescher, and others, on questions of the genesis, nature, function, validity, and potential of literary theory. May be repeated for credit as course content changes.

ENGL 6350. TOPICS IN THE HISTORY AND THEORY OF RHETORIC. 3 Hours.

An intensive study of specific problems or issues in classical, medieval, Renaissance, modern, or contemporary rhetoric, (e.g., civic functions of rhetoric, logic and rhetoric, rhetoric of science, theories of invention), especially those that involve the connections and collisions between rhetoric and other intellectual traditions (e.g., critical theory, cultural studies, feminist theory, history, literary studies, non-western rhetoric, philosophy). May focus on the work of a major theorist. May be repeated for credit when content changes.

ENGL 6351. TOPICS IN COMPOSITION STUDIES. 3 Hours.

An intensive study of specific problems or issues in contemporary composition studies (e.g., authorship and intellectual property, computers and composition, the ideologies of writing instruction, the role of empirical research, service learning), especially those that involve connections and collisions between composition studies and other intellectual traditions (e.g., cognitive science, critical theory, cultural studies, feminist theory, hermeneutics, history, linguistics, literary study, rhetoric, philosophy, psychology, sociology). May focus on the work of a major researcher or theorist. May be repeated for credit when content changes.

ENGL 6360. TOPICS IN FEMINIST THEORY. 3 Hours.

Study of interdisciplinary feminist theories of language, power, knowledge, culture, identity, gender, and sexuality. Course may focus on Marxist feminism, postmodern/poststructuralist feminism, feminist cultural studies, postcolonial feminism, material feminisms, feminist science studies, queer theory, or other topics. Course may include such theorists as Wollstonecraft, Woolf, Beauvoir, Irigaray, Spillers, Spivak, Anzaldua, Bordo, Haraway, Butler, Grosz, Sedgwick, Wynter, and Halberstam.

ENGL 6370. TOPICS IN LITERATURE AND THE ENVIRONMENT. 3 Hours.

Introduces interdisciplinary theories and methods of the environmental humanities while investigating how literature, film, and other cultural texts, media, and practices represent and engage with the natural world. Topics may include animal studies, plant studies, food studies, environmental science studies, science fiction, environmental justice, post-humanism, extinction, climate change, and the anthropocene. May be repeated for credit when course content changes.

ENGL 6375. TOPICS IN CREATIVE WRITING. 3 Hours.

A workshop course in creative writing focusing on the study of craft, the works of published writers, and the production of original creative works. In addition, the course will cover pedagogical and professional concerns. The course may focus on a single genre, such as poetry, fiction, creative nonfiction or drama, or may be taught as a multi-genre course. May be repeated as content changes.

ENGL 6389. TECHNICAL WRITING ACROSS THE DISCIPLINES. 3 Hours.

Offers an integrated-language approach to technical writing across the disciplines designed to improve critical reading, writing, and thinking skills. Provides ESL-integrated feedback for writing projects. Focuses on writing research or grant proposals, but may also include writing abstracts, summaries, reports, and/or literature reviews. ENGL 6389 cannot be counted toward completing the requirements of any graduate degree plan in English.

ENGL 6391. GRADUATE READINGS. 3 Hours.

Supervised reading for the Ph.D. exam.

ENGL 6399. DISSERTATION. 3 Hours.

The graduate student must be registered for this course (a) when in consultation over the dissertation with the supervisory committee, and (b) in the semester or term in which the Ph.D. will be conferred. A minimum of 9 hours of dissertation credit is required for the Ph.D. Graduate teaching assistants must take ENGL 6699. ENGL 6999 must be taken during the final semester of the Ph.D.

ENGL 6691. GRADUATE READINGS. 6 Hours.

Independent Reading for the Comprehensive Exam.

ENGL 6699. DISSERTATION. 6 Hours.

The graduate student must be registered for this course (a) when in consultation over the dissertation with the supervisory committee, and (b) in the semester or term in which the Ph.D. will be conferred. A minimum of 9 hours of dissertation credit is required for the Ph.D. Graduate teaching assistants must take ENGL 6699. ENGL 6999 must be taken during the final semester of the Ph.D.

ENGL 6991. GRADUATE READINGS. 9 Hours.

Independent Reading for the Comprehensive Examination.

ENGL 6999. DISSERTATION. 9 Hours.

The graduate student must be registered for this course (a) when in consultation over the dissertation with the supervisory committee, and (b) in the semester or term in which the Ph.D. will be conferred. A minimum of 9 hours of dissertation credit is required for the Ph.D. Graduate teaching assistants must take ENGL 6699. ENGL 6999 must be taken during the final semester of the Ph.D.

ENGL 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

English - Graduate Programs

Objectives

The Department of English offers a wide variety of graduate courses to meet the needs of students with a diversity of interests and academic backgrounds who wish to enhance their awareness of their literary and cultural environment by additional formal instruction or to increase their professional competence.

The MA in English is designed to enable students to learn about, critique, and work in teaching, scholarship, writing, or other fields which value a strong background in language, rhetoric, and the study of culture through texts.

Early in the program, each student takes one core course that serves as an introduction to theory as it is currently used in English scholarship. Each student plans an individual program of coursework with the help of the Graduate Advisor (english.gradadvisor@uta.edu (matheson@uta.edu)). This program draws on the Department's varied courses, which offer students ways to study literature, rhetoric, and criticism, as well as methods of studying culture through texts and traditions of discourse.

The MA in English provides a strong grounding in scholarly methods and in theory, making it an ideal preparation for doctoral study in disciplinary or interdisciplinary programs. MA graduates in English pursue careers in journalism, educational administration and services, publishing, and many business fields that demand writing and communication skills. The MA in English is also useful for prospective or experienced teachers who want both to sharpen their ability to teach literature and writing and to advance professionally.

The PhD in English prepares students at the most advanced stage in the interpretation and composition of texts. The program emphasizes rigorous critical study in the fields of rhetoric, composition, critical theory, cultural studies, pedagogy, and literary studies. Rather than offering separate tracks, the program allows students, in consultation with the Graduate Advisor and the dissertation committee, to design a program of work that best suits their particular scholarly interests and career goals. The combination of a diversity of course offerings, required and elected courses, and the requirement that each student define a focus that reflects his or her intellectual and career interests provides students with the flexibility to adapt to changes in English studies. Specifically, the PhD in English prepares students for careers in writing, including electronic and technical writing, as well as in teaching at community colleges, small colleges, or research universities. The Department trains students for college-level teaching in several ways, including graduate courses in the teaching of literature and of composition. Doctoral students in English present papers at scholarly conferences, publish essays in scholarly journals, and participate in other professional activities.

Graduate Teaching Assistantships

Please consult the Director of First Year Writing, Dr. Justin Lerberg (jlerberg@uta.edu), for more information on Graduate Teaching Assistantships.

Admissions Requirements

Admission Procedures

In addition to the basic graduate admission requirements of UT Arlington described in this Catalog in the Admission section under University Policies & Requirements, the Department of English requires all international students to have speaking, reading, and writing competence in English. For both the MA and the PhD, we consider four different admission criteria:

1. GPA
2. GRE
3. Writing sample
4. Letters of recommendation

Prospective students must submit all the required materials and scores—i.e., official transcripts, GRE scores, a writing sample, and recommendation letters—in order for their application to be processed. All criteria are considered together, in a holistic way, and no single factor will eliminate a prospective student from consideration. For unconditional admission, candidates must meet the following standards for at least three of the four criteria.

Criteria for Admission: MA Program

1. A minimum GPA of 3.0 in undergraduate work, with a minimum of 3.4 in the English major or upper-level English courses. Applicants who did not major in English should have at least 12 hours of upper-level undergraduate coursework in English. Non-majors who do not meet the upper-level English coursework requirement may still apply, but will likely need to take leveling courses (see below).
2. GRE scores: a minimum of 153 on the verbal scale and 4.5 on analytic writing. We will not consider the math scores. We do not require the English subject test.
3. A writing sample of 10 to 15 pages that demonstrates a sophisticated prose style and the ability to construct complex arguments.
4. Three letters of recommendation that attest to the prospective student's intellectual and scholarly potential. At least two of these should be from former professors.

GRE Waiver

UT Arlington undergraduates whose GPA equals or exceeds the minimum described above and who have graduated in the last three years with a major in English (or closely related program) qualify for a waiver of the GRE admissions requirement.

Deferred Decision

A deferred decision may be granted when a file is incomplete or when a denial is not appropriate.

Provisional Admission

An applicant who is unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Probationary Admission

For both the MA and PhD programs, students may be admitted on probation under one of two scenarios:

1. The prospective student's application materials do not meet two of the four standards, but are outstanding in the remaining two categories; or
2. The prospective student's materials come extremely close to meeting the standards in at least three of the four areas.

Students on academic probation must make no grade lower than a B in the first 12 hours of their graduate work in order to remain in the program.

Denial

Admission will be denied if the application materials:

1. Do not meet the standards in three of the four categories; or
2. Do not meet the standards in two of the categories, and in the remaining two categories meet the standards but in an unexceptional manner.

Leveling Courses

Students who wish to pursue the MA but who do not have an undergraduate major in English may be required to take between 3 and 12 hours in specified advanced undergraduate courses and make no grade lower than a B. These courses will not be counted for graduate credit, but instead will provide the necessary background for pursuit of the advanced degree.

Degree Requirements

Master of Arts

1. ENGL 5300 THEORY AND PRACTICE IN ENGLISH STUDIES is required. It must be taken within a student's first 12 hours of study.
2. The program has thesis and non-thesis options.
3. The thesis option is a 30 credit-hour program and requires 24 hours of coursework (a three credit-hour core course and 21 hours of electives) and at least six hours of thesis. The degree culminates with defense of the thesis.
4. Students who would like to pursue the thesis option must apply for it no sooner than their 18th hour and no later than their 24th hour of coursework. A student who elects to write a thesis must select a topic in consultation with his/her thesis director. Before the student registers for thesis hours, a Thesis Committee (a director and two readers) must be established.
5. The non-thesis option requires a 36 credit-hour program of coursework (a three credit-hour core course and 33 hours of electives). The final requirement for a non-thesis MA is submission of a portfolio. This will consist of a variety of writing assignments designed to prepare the student to enter the professional and/or academic workplace.
6. Students are allowed to take up to 9 hours of graduate coursework in other departments in the College of Liberal Arts. In some circumstances, courses outside the College of Liberal Arts may be approved.

Admission Requirements

In addition to the basic graduate admission requirements of UT Arlington described in this Catalog in the Admission section under University Policies & Requirements, the Department of English requires all international students to have speaking, reading, and writing competence in English. For both the MA and the PhD, we consider four different admission criteria: (1) GPA; (2) GRE; (3) writing sample; and (4) letters of recommendation. Prospective students should submit all the required materials and scores—i.e. official transcripts, GRE scores, a writing sample, and recommendation letters—in order for their application to be processed. All criteria are considered together, in a holistic way. No single factor will eliminate a prospective student from consideration. For unconditional admission, candidates must meet the following standards for at least three of the four criteria.

Criteria for Admission: PhD Program

1. A minimum GPA of 3.5 in the student's MA in English or a very closely related field. (If the MA is not in English, we will consider the undergraduate GPA as well as that of the MA. Moreover, if the MA is not in a very closely related field, the prospective student will be admitted to the MA program in English, not the PhD.)

2. GRE scores: a minimum of 156 on the verbal scale and 4.5 on analytic writing. We will not consider the math scores. We do not require the English subject test.
3. A writing sample of 15 to 20 pages that demonstrates a sophisticated prose style, the ability to engage in intellectually rigorous modes of analysis, and a strong knowledge of rhetoric, composition studies, literary studies, cultural studies, or interdisciplinary critical theory.
4. Three letters of recommendation that attest to the student's intellectual and scholarly potential. At least two of these must be from former professors; at least one must be a professor from the student's MA program.

Deferred Decision

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Probationary Admission

For both MA and PhD, students may be admitted on probation under one of two scenarios: (1) if the prospective student's application materials do not meet two of the four standards, but are outstanding in the remaining two categories; or (2) if the prospective student's materials come extremely close to meeting the standards in at least three of the four areas. Students on academic probation must make no grade lower than a B in the first 12 hours of their graduate work in order to remain in the program.

Denial

Admission will be denied if the application materials (1) do not meet the standards in three of the four categories; or (2) if the materials do not meet the standards in two of the categories, and in the remaining two categories meet the standards but in an unexceptional manner.

Degree Requirements

Doctor of Philosophy

1. The PhD requires thirty semester hours of coursework beyond the MA, followed by a minimum of 9 hours of dissertation work.
2. ENGL 5300 THEORY AND PRACTICE IN ENGLISH STUDIES is required. It must be taken within a student's first 12 hours of study unless they have already taken ENGL 5300 while in the MA program.
3. All students are also required to take ENGL 5311 FOUNDATIONS OF RHETORIC AND COMPOSITION or ENGL 5359 ARGUMENTATION THEORY as early in their programs as possible.
4. Students are allowed to take up to 9 hours of graduate coursework in other departments in the College of Liberal Arts. In some circumstances, courses outside the College of Liberal Arts may be approved.
5. The PhD requires basic proficiency in translation in one natural language other than English.

Students are strongly encouraged to consult with the Graduate Advisor or Graduate Coordinator in planning their coursework, in order to develop a coherent focus and to ensure that they take all required courses. Near the end of coursework, students must establish a dissertation committee and identify the chair, who will become their primary advisor. The committee will help students develop three subject area reading lists for their written comprehensive examination, which will be taken after they complete their coursework and satisfy the foreign language requirement. While studying for the comprehensive exam, students may enroll in ENGL 6391 GRADUATE READINGS, supervised reading for the PhD exam, graded R. By the end of the first semester after successfully completing the comprehensive examination, the student must submit a dissertation prospectus to their committee. The dissertation must be an original, substantial and significant contribution to a scholarly field. Students should work closely with the chair of their committee while researching and writing their dissertation. While researching and writing their dissertation, students must enroll in dissertation hours (ENGL 6399 DISSERTATION, ENGL 6699 DISSERTATION or ENGL 6999 DISSERTATION). In the final semester of dissertation work, students may enroll in ENGL 7399 DOCTORAL DEGREE COMPLETION. Once the student, the chair of the committee, and the primary readers agree that the dissertation is sufficiently completed, the student may schedule the defense. The student must furnish each committee member with a copy of the dissertation, including notes and bibliography, at least three weeks prior to the defense date. The defense of the dissertation is oral. The defense is open to all members of the faculty, graduate students and invited guests of the university community. Questioning of the candidate will be directed by the student's dissertation supervising committee, but any person attending the defense may participate. Committee members may request that the dissertation be further revised and may withhold final approval of the dissertation until the revisions have been made. For more specific information regarding degree requirements, please consult the Graduate Handbook of the Department of English.

English - Undergraduate Programs

Overview

By majoring in English, students are involved simultaneously with two activities that are essentially and uniquely human: language and art. The mission of the Department of English in the College of Liberal Arts at UT Arlington is to educate students about the powers and pleasures of literary and other kinds of language.

The curriculum provides students with an understanding of theoretical and analytical processes that enable them to assimilate a variety of textual materials representing many cultures and historical periods. Students will learn to read closely, critically, and empathetically. In addition, students will learn to conduct scholarly research and to produce clear and cogent arguments in both written and oral form. These skills are widely applicable for English graduates who pursue careers in the arts, education, business, research and development, government, media, and publishing.

The Department of English offers two degree options: a BA in English and a BA in English with Teacher Certification (BATCH). The distribution requirements for both degree plans include courses in literature, rhetoric, theory, and writing. In addition to the majors, the Department of English offers minors in English, Writing, Creative Writing, Technical Writing and Professional Design, and Sound Studies, as well as a Certificate in Technical Writing and Professional Design for non-degree-seeking students. Furthermore, the Department of English frequently cross-lists courses with African American Studies, Disability Studies, Environmental and Sustainability Studies, Mexican American Studies, and Women's and Gender Studies.

Requirements for a Bachelor of Arts Degree in English

Pre-Professional Courses

General Core Requirements (p. 50)	42
HIST 2311, HIST 2312, HIST 2313, HIST 2314, HIST 2321, HIST 2322, or Brit/World History electives	6
ENGL 1200 (new students) or UNIV 1101 (new transfer students)	1-2
Modern and Classical Languages: 1441, 1442, 2313, and 2314 or equivalent ¹	14
Electives sufficient to complete the 120 credit hours required for the degree ²	2-3

Professional Courses

Major. To count toward the major, all English courses must be completed with a grade of C or better.

ENGL 1301	RHETORIC AND COMPOSITION I (or waiver for advanced standing) ²	3
ENGL 1302	RHETORIC AND COMPOSITION II (or waiver for advanced standing) ²	3
Sophomore Literature ³		3
ENGL 3333	DYNAMIC TRADITIONS IN LITERATURE	3
ENGL 3350	ANALYSIS AND INTERPRETATION ⁴	3
ENGL 3384	STRUCTURE OF MODERN ENGLISH	3
Early English Language and Literature		3
Rhetoric / Theory		6
Writing / Digital Authoring		3
3000/4000-level Literature elective		3
3000/4000-level English electives		9
ENGL 4399	SENIOR SEMINAR (capstone course)	3

Total Hours	110-112
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¹ In line with the College of Liberal Art's foreign language requirement, students are required to take a minimum of 6 hours of foreign language courses, even if they transfer in with a completed Core Curriculum and a completed Field of Study in English Language and Literature (but without 6 hours of foreign language courses) and even if they will, as a result, need more than 120 hours to graduate.

² Students who take ENGL 1200 will need 2 credit hours; students who take UNIV 1101 will need 3 credit hours.

³ Please keep in mind that the credit hours for ENGL 1301, ENGL 1302, and our sophomore literature requirement (ENGL 2303, ENGL 2309, ENGL 2319, or ENGL 2329), are also counted under the "General Core Requirements" category, giving the misleading impression that our degree plan requires 129 hours (111 + 18 hours for a minor) when, in fact, it requires only 120 hours (102 + 18 hours for minor).

⁴ This course is a pre- or co-requisite for all upper-level English courses. English majors must pass this course with a grade of C or better in order to receive credit toward the major for any 3000/4000-level English courses.

Teacher Certification

Students wishing to take a Bachelor of Arts Degree in English with Secondary Teacher Certification (BATCH) must complete LIST 4343 CONTENT AREA READING AND WRITING and 36 hours in English. To count toward the major, each English course must be completed with a grade of C or better. The required English courses are:

ENGL 1301	RHETORIC AND COMPOSITION I (or waiver for advanced standing)	3
ENGL 1302	RHETORIC AND COMPOSITION II (or waiver for advanced standing)	3
Sophomore Literature		3
ENGL 3333	DYNAMIC TRADITIONS IN LITERATURE	3
ENGL 3350	ANALYSIS AND INTERPRETATION ¹	3
ENGL 3384	STRUCTURE OF MODERN ENGLISH	3
ENGL 4326	SHAKESPEARE	3
Rhetoric / Theory		3
Writing / Digital Authoring		3
3000/4000-level Literature electives		6
3000/4000-level English elective		3
ENGL 4370	RHETORIC AND COMPOSITION FOR SECONDARY SCHOOL TEACHERS	3
Total Hours		39

¹ BATCH majors must pass this course with a C or better in order to receive credit toward the major for any 3000/4000-level English courses.

The requirement of six hours of English or world history does not pertain to students obtaining teacher certification. Students will still need to take the required core curriculum courses, ENGL 1200 (new students) or UNIV 1101 (new transfer students), fourteen hours of foreign language courses, the required secondary certification courses, and the required elective hours necessary to complete the 120 credit hours required for the degree.

Competence in Oral Presentations

Students obtaining a BA in English can demonstrate oral proficiency by:

1. passing ENGL 4399 SENIOR SEMINAR; or
2. passing COMS 1301 FUNDAMENTALS OF PUBLIC SPEAKING, COMS 1302 VOICE AND DICTION, COMS 2305 BUSINESS AND PROFESSIONAL COMMUNICATION, or COMS 3315 COMMUNICATION FOR EDUCATORS (or equivalent).

Competence in Computer Use

Students obtaining a BA in English can demonstrate computer proficiency by:

1. passing ENGL 3350 ANALYSIS AND INTERPRETATION, ENGL 3372 COMPUTERS AND WRITING, or ENGL 3374 WRITING, RHETORIC, AND MULTIMODAL AUTHORING; or
2. passing ENGL 2350 INTRODUCTION TO ANALYSIS AND INTERPRETATION prior to Fall 2020; or
3. passing CSE 1301 COMPUTER LITERACY (or equivalent); or
4. passing the University computer literacy examination.

Minors and Certificate Program

The Department of English currently offers minors in English, Writing, Creative Writing, Technical Writing and Professional Design, and Sound Studies. We also offer a Certificate in Technical Writing and Professional Design.

MINOR IN ENGLISH

The minor in English may be achieved by completing 18 hours in English with a grade of C or better. At least six of the hours must be at the 3000- or 4000-level.

MINOR IN WRITING

The minor in Writing is offered for students who wish to concentrate in writing as a part of their undergraduate curriculum. Students selecting the Writing minor should consult first with the undergraduate advisor in their department or program for approval of the minor and then with the undergraduate advisor in the Department of English. Working with advisors, students will select a sequence of advanced courses to fulfill their minor requirements. To count toward the minor, all English courses must be completed with a grade of C or better. This minor consists of 21 hours.

Required Courses

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Select one of the following:		3
ENGL 2303	TOPICS IN LITERATURE	
ENGL 2309	WORLD LITERATURE	
ENGL 2319	BRITISH LITERATURE	
ENGL 2329	AMERICAN LITERATURE	
ENGL 3371	ADVANCED EXPOSITION	3
Select three of the following:		9
ENGL 3372	COMPUTERS AND WRITING	
ENGL 3373	ADVANCED TECHNICAL WRITING	
ENGL 3374	WRITING, RHETORIC, AND MULTIMODAL AUTHORING	
ENGL 3376	BUSINESS AND PROFESSIONAL WRITING	
ENGL 4371	ADVANCED ARGUMENTATION	
Total Hours		21

MINOR IN CREATIVE WRITING

The minor in Creative Writing is offered for students who wish to pursue advanced work in creative writing as a part of their undergraduate curriculum. Students selecting the Creative Writing minor should consult first with the undergraduate advisor in their department or program for approval of the minor and then with the undergraduate advisor in the Department of English. Working with advisors, students will select a sequence of advanced courses to fulfill their minor requirements. To count toward the minor, all English courses must be completed with a grade of C or better. This minor requires 18 hours.

Required Courses

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 3375	FORMS IN CREATIVE WRITING	3
Select four of the following:		12
ENGL 4330	TOPICS IN CREATIVE WRITING	
ENGL 4347	ADVANCED CREATIVE WRITING: FICTION	
ENGL 4348	ADVANCED CREATIVE WRITING: POETRY	
ENGL 4349	ADVANCED CREATIVE WRITING: CREATIVE NON-FICTION	
ENGL 4351	THE BUSINESS OF WRITING	
Total Hours		18

MINOR IN TECHNICAL WRITING AND PROFESSIONAL DESIGN

The minor in Technical Writing and Professional Design (TWPD) provides students with training in technical and professional writing, document design, visual communication, editing, and usability, and it helps students become more effective communicators in both traditional and new media environments. Students selecting the TWPD minor should consult first with the undergraduate advisor in their department or program for approval of the minor and then with an undergraduate advisor in the Department of English. Working with advisors, students will select a sequence of courses to fulfill the requirements of the minor. To count toward the minor, all courses must be completed with a grade of C or better. This minor requires 18 hours.

Required Courses

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
ENGL 2338	TECHNICAL WRITING	3
ENGL 4372 Professional Practice in Technical Communication		3
Select two of the following:		6
ENGL 3373	ADVANCED TECHNICAL WRITING	
ENGL 3376	BUSINESS AND PROFESSIONAL WRITING	
ENGL 3377	TECHNICAL EDITING	
ENGL 3378	TECHNICAL PROCEDURES AND MANUALS	
ENGL 3379	GRANT AND PROPOSAL WRITING	
ENGL 3383 INFORMATION DESIGN		

ENGL 4376	DESIGNING TECHNICAL DOCUMENTS	
ENGL 4390	INTERNSHIP IN ENGLISH	
Total Hours		18

MINOR IN SOUND STUDIES

The minor in Sound Studies is offered for students who wish to focus on sound and culture as a part of their undergraduate curriculum. To count toward the minor, all courses must be completed with a grade of C or better. This minor requires 18 hours, at least six of which must be from the Department of English.

Required Courses

ENGL 3380	RHETORIC AND WRITING WITH SOUND	3
ENGL 3382	LISTENING TO LITERATURE	3
Select four of the following:		12
BCMN 2357	RADIO PRODUCTION I	
BCMN 4393	SPECIAL TOPICS (when offered as PODCASTING)	
COMS 1302	VOICE AND DICTION	
ENGL 3386 WRITING ABOUT MUSIC		
HIST/AAST 4325	HISTORY OF HIP HOP	
LING 3330	PHONETICS AND PHONOLOGY	
LING 4301	PHONOLOGICAL THEORY I	
MUSI 1301	ELEMENTS OF MUSIC	
MUSI 1324 EXPLORATIONS IN MUSIC THEORY		
THEA 3303	SOUND DESIGN	
THEA 3316	LIGHTING AND SOUND TECHNOLOGY	
THEA/DS 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	
Total Hours		18

CERTIFICATE IN TECHNICAL WRITING AND PROFESSIONAL DESIGN

The Certificate in Technical Writing and Professional Design (TWPDP) is designed to provide working professionals and other non-degree-seeking students with the same benefits as the minor in TWPDP. To receive the certificate, all courses must be completed at UT Arlington with a grade of C or higher. The certificate requires 12 hours.

Required Courses

ENGL 2338	TECHNICAL WRITING	3
ENGL 4372 PROFESSIONAL PRACTICE IN TECHNICAL WRITING		3
Select two of the following:		6
ENGL 3373	ADVANCED TECHNICAL WRITING	
ENGL 3376	BUSINESS AND PROFESSIONAL WRITING	
ENGL 3377	TECHNICAL EDITING	
ENGL 3378	TECHNICAL PROCEDURES AND MANUALS	
ENGL 3379	GRANT AND PROPOSAL WRITING	
ENGL 3383 INFORMATION DESIGN		
ENGL 4376	DESIGNING TECHNICAL DOCUMENTS	
ENGL 4390	INTERNSHIP IN ENGLISH	
Total Hours		12

Global Studies

Charles T. McDowell Center for Global Studies – Minor and Certificate Program

Overview

The Global Studies Minor and Global Studies Certificate promote understanding of global processes and awareness of the responsibilities of global citizenship in order to prepare students to meet the challenges of the 21st century and achieve success in the complex social, political, economic, and cultural environment of the world today.

The interdisciplinary program combines courses from across College of Liberal Arts disciplines and beyond, with a focus on those courses that offer global perspectives on modern and contemporary issues. The Global Studies Certificate is similar to the Minor, but with fewer course credit hour requirements (18 for the Minor vs. 15 for the Certificate). Both the minor and the certificate are open to all students at UTA.

Global Studies Minor Requirements

The Global Studies Minor features one required course: ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304; three credit hours are required at the 2000 level in a Modern Language discipline; three credit hours are required in interdisciplinary core electives; six credit hours in upper-level electives; and a capstone course.

Global Studies Certificate Requirements

The Global Studies Certificate features one required course: ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304; three credit hours in interdisciplinary core electives; six credit hours in upper-level electives; and a capstone course.

Global Studies Minor Curriculum (18 SCHS)

The Global Studies Minor features **one** required course: 1) ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304 (**three credit hours**); a further **three credit hours** are required at the 2000 level in a Modern Language discipline; **three credit hours** in interdisciplinary core electives; **six credit hours** in upper-level electives, with a focus on courses that offer global and international perspectives on modern and contemporary issues; and a capstone course chosen from among the various disciplines represented in the minor (**three credit hours**).

Global Studies Minor requirements:

- **Requirement 1:** Global core courses (3 credit hours)
 - ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304
- **Requirement 2:** Language or culture course from a Modern Language discipline (3 credit hours)
 - Students choose one of the following:
 - ARAB 2310, 2314
 - CHIN 2310, 2314
 - FREN 2310, 2314
 - GERM 2310, 2314
 - GLOBAL 2315
 - KORE 2310, 2314
 - MODL 2301
 - RUSS 2310, 2314
 - SPAN 2310, 2314
- **Requirement 3:** Interdisciplinary core course (3 credit hours)
 - Students choose one of the following:
 - ART 1309. ART OF THE WESTERN WORLD I: GREECE THROUGH RENAISSANCE
 - ART 1310. ART OF THE WESTERN WORLD II: BAROQUE TO MODERN
 - ART 1317. THE ART OF NONWESTERN TRADITIONS
 - ECON 2305. PRINCIPLES OF MACROECONOMICS
 - ECON 2306. PRINCIPLES OF MICROECONOMICS
 - ENVR 1300/GEOL 1330. GLOBAL WARMING
 - ENVR 1301. INTRODUCTION TO ENVIRONMENTAL STUDIES
 - ENVR 2414. THE GLOBAL ENVIRONMENT AND HUMAN HEALTH

- GEOG 2302. HUMAN GEOGRAPHY
- GEOG 2303. WORLD REGIONAL GEOGRAPHY
- HIST 2377. FLIGHT CULTURE AND THE HUMAN EXPERIENCE
- KINE 2350. PUBLIC HEALTH: PRINCIPLES AND POPULATIONS
- LING 2371. LANGUAGE IN A MULTICULTURAL USA
- MUSI 2300. INTRODUCTION TO WORLD MUSIC
- PHIL 1304. CONTEMPORARY MORAL PROBLEMS
- THEA 1342. THEATRE AND FILM APPRECIATION
- **Requirement 4:** Advanced electives (3000- or 4000-level courses; 6 credit hours)
 - Students choose two of the following (must represent two different prefixes, or permission of the advisor):
 - ANTH 3325. ETHNOGRAPHY OF SOUTH AMERICA
 - ANTH 3329. CONTEMPORARY AFRICAN CULTURES
 - ANTH 3330. CULTURAL DIVERSITY AND IDENTITY
 - ANTH 3332. FOOD AND CULTURE
 - ANTH 3334. ANTHROPOLOGY OF SOUTH ASIA
 - ANTH 3335. GANDHI: CULTURE AND POLITICS IN A GLOBAL WORLD
 - ANTH 3345/COMM 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD
 - ANTH 3346. ANTHROPOLOGY OF TOURISM
 - ANTH 3348. ANTHROPOLOGY OF MIGRATION
 - ANTH 3349. ANTHROPOLOGY OF GLOBALIZATION
 - ANTH 3352. ARCHAEOLOGY OF AFRICA
 - ANTH 4342. TOPICS IN CULTURAL ANTHROPOLOGY
 - ANTH 4348. POLITICAL ANTHROPOLOGY
 - ARAB 3303. ARABIC CONVERSATION & CULTURE
 - ARAB 3304. ARABIC CONVERSATION & CULTURE II
 - ARAB 3312. TOPICS IN ARABIC LITERATURE AND CULTURE
 - ART 3304. JAPANESE ART & ARCHITECTURE
 - ART 3317. ISLAMIC ART AND ARCHITECTURE
 - ART 3319. ART & ARCHITECTURE OF INDIA
 - ART 3321. CHINESE ART & ARCHITECTURE
 - ART 4307. SPECIAL TOPICS IN ASIAN ART
 - CHIN 4334. CONTEMPORARY CHINESE CULTURE
 - CHIN 4335. BUSINESS CHINESE
 - COMM 4305. COMMUNICATION & SOCIETY
 - COMM 4335. INTERCULTURAL COMMUNICATION
 - CRCJ 4380. COMPARATIVE CRIMINAL JUSTICE SYSTEMS
 - ECON 4306. Comparative Economic Systems
 - ENGL/RUSS 3301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION
 - ENGL/RUSS 3306. TOPICS IN SOVIET AND POST-SOVIET LITERATURE IN TRANSLATION
 - ENGL 3361. HISTORY OF WORLD LITERATURE
 - ENGL 3362. HISTORY OF WORLD LITERATURE II
 - ENVR 4303. Topics in Sustainability
 - ENVR 4313. Environmental Regulation of Chemical Hazards
 - FREN 3305. FRENCH CULTURE AND CIVILIZATION
 - FREN 3312. FRENCH LITERATURE AND CULTURE II
 - FREN 3316. TOPICS IN CITIES OF FRANCE
 - FREN 4328. TOPICS TWENTIETH-CENTURY FRENCH STUDIES
 - FREN 4338. SELECTED TOPICS IN FRENCH LITERATURE OR CULTURE
 - GEOG 3320. GEOGRAPHY OF AFRICA
 - GERM 3301. TOPICS IN GERMAN LITERATURE AND CULTURE IN TRANSLATION
 - GERM 3313. TOPICS IN GERMAN CULTURE & CONVERSATION
 - GERM 3317. INTRODUCTION TO LITERATURE AND CULTURE STUDIES

- GERM 3318. SPECIAL TOPICS IN GERMAN STUDIES I
- GERM 4314. GERMAN LITERATURE AND CULTURE II
- GERM 4321. TOPICS IN LITERATURE & CULTURE
- GLOBAL 3301. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS I
- GLOBAL 3302. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS II
- HIST 3360. NINETEENTH-CENTURY EUROPE, 1789-1914
- HIST 3361. TWENTIETH-CENTURY EUROPE, 1914-1991
- HIST 3368. GERMANY IN THE WORLD
- HIST 3369. HISTORY OF SPAIN AND PORTUGAL
- HIST 3374. EAST CENTRAL EUROPE AND THE MODERN WORLD
- HIST 3376. LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT
- HIST 3377. HISTORY OF MEXICO
- HIST 3378. HISTORY OF THE CARIBBEAN
- HIST 4301. HISTORICAL GEOGRAPHY
- HIST 4372. SOVIET UNION IN GLOBAL COLD WAR
- HIST 4374. EAST CENTRAL EUROPE IN THE AGE OF EXTREMES
- HIST 4380. AMERICA AND THE VIETNAM WARS
- KINE 3353. HEALTH AND THE HUMAN CONDITION IN THE GLOBAL COMMUNITY
- KORE 3301. TOPICS IN KOREAN LITERATURE AND CULTURE IN TRANSLATION
- KORE 3303. KOREAN CONVERSATION AND CULTURE I
- KORE 3304. KOREAN CONVERSATION AND CULTURE II
- KORE 4321. TOPICS IN KOREAN LINGUISTICS
- KORE 4331. TOPICS IN KOREAN CULTURE AND CIVILIZATION
- LING 4317. SOCIOLINGUISTICS
- MODL 3301. TOPICS IN COMPARATIVE LANGUAGES, CULTURE, AND LITERATURES
- PHIL 3320. PHILOSOPHY OF LAW
- PHIL 3304. HISTORY OF PHILOSOPHY: NINETEENTH AND EARLY TWENTIETH CENTURY PHILOSOPHY
- PHIL 3330. SOCIAL AND POLITICAL PHILOSOPHY
- POLS 3302. INTRODUCTION TO INTERNATIONAL RELATIONS
- POLS 3304. INTRODUCTION TO COMPARATIVE POLITICS
- POLS 3328. INTRODUCTION TO MIDDLE EAST POLITICS
- POLS 4312. INTERNATIONAL ORGANIZATIONS
- POLS 4370. INTERNATIONAL RELATIONS OF THE MIDDLE EAST
- POLS 4371. THE POLITICS AND FOREIGN POLICY OF ISRAEL
- POLS 4372. HUMAN SECURITY, VIOLENCE, AND SCARCITY
- POLS 4369. THE ARAB-ISRAELI CONFLICT
- POLS/RUSS 4362. RUSSIA AND THE SUCCESSOR STATES TODAY
- RUSS 3333. CONVERSATION AND TOPICS IN RUSSIAN LITERATURE
- RUSS 4301. SELECTED AUTHORS AND TOPICS
- RUSS 4302. RUSSIAN AND SOVIET CINEMA
- RUSS 4303. PROPAGANDA AND IDEOLOGY IN SOVIET ART AND LITERATURE
- RUSS 4304. BANNED AND CENSORED WORKS OF RUSSIAN LITERATURE
- RUSS 4338. TOPICS IN INTERCULTURAL COMMUNICATION AND COLLABORATION
- SPAN 3302. HISPANIC LITERATURE IN TRANSLATION
- SPAN 3311. SPANISH CULTURE AND CIVILIZATION
- SPAN 3312. LATIN AMERICAN CULTURE AND CIVILIZATION
- SPAN 3313. TOPICS IN HISPANIC LANGUAGE, LITERATURE & CULTURE
- SPAN 3320. INTRODUCTION TO HISPANIC LITERATURE AND CULTURE
- SPAN 3340. INTRODUCTION TO TRANSLATION
- SPAN 4313. TOPICS IN HISPANIC CULTURE
- SPAN 4334. CONTEMPORARY HISPANIC CULTURE
- SPAN 4341. BUSINESS AND LEGAL TRANSLATION

- THEA 3302. FILM STUDIES
- THEA 4304. MODERN THEATRE HISTORY
- THEA 4310. MUSICAL THEATRE HISTORY
- **Requirement 5:** Capstone course (3 credit hours)
 - GLOBAL 4301 or an upper-level Maverick Advantage course with a Global Connections activity.

Global Studies Certificate Curriculum (15 SCHS)

The Global Studies Certificate features **one** required courses: 1) ANTH 2322, GLOBAL 2301, POLS 3302, or POLS 3304 (**three credit hours**); a further **three credit hours** are required at the 1000 or 2000 level in an interdisciplinary core elective; **six credit hours** in upper-level electives, with a focus on courses that offer global and international perspectives on modern and contemporary issues; and a capstone course chosen from among the various disciplines represented in the minor (**three credit hours**).

Global Studies Certificate requirements:

- **Requirement 1:** Global core courses (3 credit hours)
 - ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304
- **Requirement 2:** Interdisciplinary core course (3 credit hours)
 - Students choose one of the following:
 - ARAB 2310. ARABIC CULTURE IN THE WORLD
 - ART 1309. ART OF THE WESTERN WORLD I: GREECE THROUGH RENAISSANCE
 - ART 1310. ART OF THE WESTERN WORLD II: BAROQUE TO MODERN
 - ART 1317. THE ART OF NONWESTERN TRADITIONS
 - CHIN 2310. CHINESE CULTURE IN THE WORLD
 - ECON 2305. PRINCIPLES OF MACROECONOMICS
 - ECON 2306. PRINCIPLES OF MICROECONOMICS
 - ENVR 1301. INTRODUCTION TO ENVIRONMENTAL STUDIES
 - ENVR 1330/GEOL 1330. GLOBAL WARMING
 - ENVR 2414. THE GLOBAL ENVIRONMENT AND HUMAN HEALTH
 - FREN 2310. FRENCH AND FRANCOPHONE CULTURE IN THE WORLD
 - GEOG 2302. HUMAN GEOGRAPHY
 - GEOG 2303. WORLD REGIONAL GEOGRAPHY
 - GERM 2310. GERMAN CULTURE IN THE WORLD
 - GLOBAL 2315. INTRODUCTION TO LOCALIZATION AND LANGUAGE TECHNOLOGY
 - HIST 2377. FLIGHT CULTURE AND THE HUMAN EXPERIENCE
 - KINE 2350. PUBLIC HEALTH: PRINCIPLES AND POPULATIONS
 - KORE 2310. KOREAN CULTURE IN THE WORLD
 - LING 2371. LANGUAGE IN A MULTICULTURAL USA
 - MODL 2301. INTRODUCTION TO WORLD LANGUAGES
 - MUSI 2300. INTRODUCTION TO WORLD MUSIC
 - PHIL 1304. CONTEMPORARY MORAL PROBLEMS
 - RUSS 2310. RUSSIAN CULTURE IN THE WORLD
 - SPAN 2310. HISPANIC CULTURE IN THE WORLD
 - THEA 1342. THEATRE AND FILM APPRECIATION
- **Requirement 3:** Advanced electives (3000- or 4000-level courses) chosen from the following list (6 credit hours)
 - Students choose two of the following (must represent two different prefixes, or permission of the advisor):
 - ANTH 3325. ETHNOGRAPHY OF SOUTH AMERICA
 - ANTH 3329. CONTEMPORARY AFRICAN CULTURES
 - ANTH 3330. CULTURAL DIVERSITY AND IDENTITY
 - ANTH 3332. FOOD AND CULTURE
 - ANTH 3334. ANTHROPOLOGY OF SOUTH ASIA
 - ANTH 3335. GANDHI: CULTURE AND POLITICS IN A GLOBAL WORLD
 - ANTH 3345/COMM 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD
 - ANTH 3346. ANTHROPOLOGY OF TOURISM
 - ANTH 3348. ANTHROPOLOGY OF MIGRATION

- ANTH 3349. ANTHROPOLOGY OF GLOBALIZATION
- ANTH 3352. ARCHAEOLOGY OF AFRICA
- ANTH 4342. TOPICS IN CULTURAL ANTHROPOLOGY
- ANTH 4348. POLITICAL ANTHROPOLOGY
- ARAB 3303. ARABIC CONVERSATION & CULTURE
- ARAB 3304. ARABIC CONVERSATION & CULTURE II
- ARAB 3312. TOPICS IN ARABIC LITERATURE AND CULTURE
- ART 3304. JAPANESE ART & ARCHITECTURE
- ART 3317. ISLAMIC ART AND ARCHITECTURE
- ART 3319. ART & ARCHITECTURE OF INDIA
- ART 3321. CHINESE ART & ARCHITECTURE
- ART 4307. SPECIAL TOPICS IN ASIAN ART
- CHIN 4334. CONTEMPORARY CHINESE CULTURE
- CHIN 4335. BUSINESS CHINESE
- COMM 4305. COMMUNICATION & SOCIETY
- COMM 4335. INTERCULTURAL COMMUNICATION
- CRCJ 4380. COMPARATIVE CRIMINAL JUSTICE SYSTEMS
- ECON 4306. Comparative Economic Systems
- ENGL/RUSS 3301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION
- ENGL/RUSS 3306. TOPICS IN SOVIET AND POST-SOVIET LITERATURE IN TRANSLATION
- ENGL 3361. HISTORY OF WORLD LITERATURE
- ENGL 3362. HISTORY OF WORLD LITERATURE II
- ENVR 4303. Topics in Sustainability
- ENVR 4313. Environmental Regulation of Chemical Hazards
- FREN 3305. FRENCH CULTURE AND CIVILIZATION
- FREN 3312. FRENCH LITERATURE AND CULTURE II
- FREN 3316. TOPICS IN CITIES OF FRANCE
- FREN 4328. TOPICS TWENTIETH-CENTURY FRENCH STUDIES
- FREN 4338. SELECTED TOPICS IN FRENCH LITERATURE OR CULTURE
- GEOG 3320. GEOGRAPHY OF AFRICA
- GERM 3301. TOPICS IN GERMAN LITERATURE AND CULTURE IN TRANSLATION
- GERM 3313. TOPICS IN GERMAN CULTURE & CONVERSATION
- GERM 3317. INTRODUCTION TO LITERATURE AND CULTURE STUDIES
- GERM 3318. SPECIAL TOPICS IN GERMAN STUDIES I
- GERM 4314. GERMAN LITERATURE AND CULTURE II
- GERM 4321. TOPICS IN LITERATURE & CULTURE
- GLOBAL 3301. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS I
- GLOBAL 3302. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS II
- HIST 3360. NINETEENTH-CENTURY EUROPE, 1789-1914
- HIST 3361. TWENTIETH-CENTURY EUROPE, 1914-1991
- HIST 3368. GERMANY IN THE WORLD
- HIST 3369. HISTORY OF SPAIN AND PORTUGAL
- HIST 3374. EAST CENTRAL EUROPE AND THE MODERN WORLD
- HIST 3376. LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT
- HIST 3377. HISTORY OF MEXICO
- HIST 3378. HISTORY OF THE CARIBBEAN
- HIST 4301. HISTORICAL GEOGRAPHY
- HIST 4372. SOVIET UNION IN GLOBAL COLD WAR
- HIST 4374. EAST CENTRAL EUROPE IN THE AGE OF EXTREMES
- HIST 4380. AMERICA AND THE VIETNAM WARS
- KINE 3353. HEALTH AND THE HUMAN CONDITION IN THE GLOBAL COMMUNITY
- KORE 3301. TOPICS IN KOREAN LITERATURE AND CULTURE IN TRANSLATION

- KORE 3303. KOREAN CONVERSATION AND CULTURE I
- KORE 3304. KOREAN CONVERSATION AND CULTURE II
- KORE 4321. TOPICS IN KOREAN LINGUISTICS
- KORE 4331. TOPICS IN KOREAN CULTURE AND CIVILIZATION
- LING 4317. SOCIOLINGUISTICS
- MODL 3301. TOPICS IN COMPARATIVE LANGUAGES, CULTURE, AND LITERATURES
- PHIL 3320. PHILOSOPHY OF LAW
- PHIL 3304. HISTORY OF PHILOSOPHY: NINETEENTH AND EARLY TWENTIETH CENTURY PHILOSOPHY
- PHIL 3330. SOCIAL AND POLITICAL PHILOSOPHY
- POLS 3302. INTRODUCTION TO INTERNATIONAL RELATIONS
- POLS 3304. INTRODUCTION TO COMPARATIVE POLITICS
- POLS 3328. INTRODUCTION TO MIDDLE EAST POLITICS
- POLS 4312. INTERNATIONAL ORGANIZATIONS
- POLS 4370. INTERNATIONAL RELATIONS OF THE MIDDLE EAST
- POLS 4371. THE POLITICS AND FOREIGN POLICY OF ISRAEL
- POLS 4372. HUMAN SECURITY, VIOLENCE, AND SCARCITY
- POLS 4369. THE ARAB-ISRAELI CONFLICT
- POLS/RUSS 4362. RUSSIA AND THE SUCCESSOR STATES TODAY
- RUSS 3333. CONVERSATION AND TOPICS IN RUSSIAN LITERATURE
- RUSS 4301. SELECTED AUTHORS AND TOPICS
- RUSS 4302. RUSSIAN AND SOVIET CINEMA
- RUSS 4303. PROPAGANDA AND IDEOLOGY IN SOVIET ART AND LITERATURE
- RUSS 4304. BANNED AND CENSORED WORKS OF RUSSIAN LITERATURE
- RUSS 4338. TOPICS IN INTERCULTURAL COMMUNICATION AND COLLABORATION
- SPAN 3302. HISPANIC LITERATURE IN TRANSLATION
- SPAN 3311. SPANISH CULTURE AND CIVILIZATION
- SPAN 3312. LATIN AMERICAN CULTURE AND CIVILIZATION
- SPAN 3313. TOPICS IN HISPANIC LANGUAGE, LITERATURE & CULTURE
- SPAN 3320. INTRODUCTION TO HISPANIC LITERATURE AND CULTURE
- SPAN 3340. INTRODUCTION TO TRANSLATION
- SPAN 4313. TOPICS IN HISPANIC CULTURE
- SPAN 4334. CONTEMPORARY HISPANIC CULTURE
- SPAN 4341. BUSINESS AND LEGAL TRANSLATION
- THEA 3302. FILM STUDIES
- THEA 4304. MODERN THEATRE HISTORY
- THEA 4310. MUSICAL THEATRE HISTORY

- **Requirement 4:** Capstone course (3 credit hours)
 - GLOBAL 4301 or an upper-level Maverick Advantage course with a Global Connections activity.

COURSES

GLOBAL 2301. INTRODUCTION TO GLOBAL ISSUES. 3 Hours.

Comparative perspectives on a broad range of cultural, linguistic, economic, political, and social issues confronting a globalized world today. Designed to draw attention to the multifaceted connections among nation-states, nongovernmental organizations, diverse ethnic, cultural and religious groups, and populations around the world.

GLOBAL 2315. INTRODUCTION TO LOCALIZATION AND LANGUAGE TECHNOLOGY. 3 Hours.

An introduction to localization and computational approaches to language and culture. Topics will include: computer-aided translation, machine translation, natural language processing, mining and semantic analysis of language data, machine learning/AI with natural language.

GLOBAL 3301. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS I. 3 Hours.

Intensive study of a particular world region and/or culture including, but not limited to, its language, geography, history, arts, commerce, politics, and government. Focus on its uniqueness as a culture and its integral place in global society. Repeatable for credit as topic varies. No prerequisite. Recommend enrollment in GLOBAL 2301 concurrently or previously.

GLOBAL 3302. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS II. 3 Hours.

Advanced study of a particular world region and/or culture including, but not limited to, its language, geography, history, arts, commerce, politics, and government. Emphasis on film, media, international communication, or other subjects of global study. Repeatable for credit as topic changes. No prerequisite. Strongly recommended: GLOBAL 2301 and GLOBAL 3301, concurrently or previously.

GLOBAL 3310. LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: GLOBAL 3301 in the language under study or permission of the instructor.

GLOBAL 4301. RESEARCH IN GLOBAL STUDIES. 3 Hours.

This course examines multidisciplinary problems that fall within the scope of human rights and the UN's Sustainable Development Goals (SDGs). Students complete coursework which culminates in an original research project on a topic of their choice, which might involve novel approaches toward sustainability, food security, infrastructure, health, water conservation, sanitation, ecosystem resilience, urbanization, recycling, or other issues related to globalization. Students will investigate and propose solutions in the form of a proposal to carry out active field work in partnership with a non-governmental agency or non-profit organization working to promote sustainable global development. For students pursuing a minor or certificate in Global Studies, this course serves as their Capstone. Prerequisite: ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304.

GLOBAL 4312. INTERCULTURAL COMPETENCE FOR GLOBAL COMMUNICATION. 3 Hours.

A study of the differences between the U.S. and other cultures of the world with a focus on the development of intercultural competence: verbal and non-verbal communication, interpersonal skills, effective management strategies, and professional etiquette in multicultural settings.

GLOBAL 4393. INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, and formal presentations. Prerequisite: Two GLOBAL 3000 level courses and/or permission of the instructor.

History

Undergraduate Degrees

- Bachelor of Arts in History (<http://catalog.uta.edu/liberalarts/history/undergraduate/#bachelorstext/#ba>)
- Bachelor of Arts in History (Pre-Law Option) (<http://catalog.uta.edu/liberalarts/history/undergraduate/#bachelorstext/#baprelaw>)
- Bachelor of Arts in History with Secondary Social Studies Teacher Certification (<http://catalog.uta.edu/liberalarts/history/undergraduate/#bachelorstext/#bateachercertification>)
- Bachelor of Arts in History with Secondary History Teacher Certification (p. 809)
- Geography Minor (p. 813)
- Minor in History (p. 813)
- Minor in Military History (p. 813)

Graduate Degrees

- History, M.A. (p. 802)
- History, Ph.D. (p. 804)

Certificates

- Archival Administration Certificate (p. 808) (Graduate studies)
- History of Technology and Science Certificate (p. 815) (Undergraduate studies)

COURSES

GEOG 2301. PHYSICAL GEOGRAPHY. 3 Hours.

Survey of geographies of the natural environment and human-environment interactions with an emphasis on spatial patterns and processes.

GEOG 2302. HUMAN GEOGRAPHY. 3 Hours.

An introduction to geographical perspectives. An exploration of human activities from a local to a global scale. Emphasis on mapping and interpreting patterns and processes of human geography.

GEOG 2303. WORLD REGIONAL GEOGRAPHY. 3 Hours.

Survey of the geography of major world regions. Introduces global issues from a regional perspective with an emphasis on developing an understanding of the connections between and differences among world regions.

GEOG 3300. RESEARCH METHODS IN GEOGRAPHY. 3 Hours.

An introduction to geographic research that includes generating research questions, research design, methods of quantitative and qualitative data collection and analysis, and communication of research results. Prerequisite: GEOG 2302.

GEOG 3305. MAPS AND MAPMAKERS. 3 Hours.

A history of geography and cartography with an emphasis on the development of geographical ideas and mapmaking from antiquity to the modern era. Offered as GEOG 3305 and HIST 3305; credit will be granted only once.

GEOG 3310. GEOGRAPHY OF THE UNITED STATES AND CANADA. 3 Hours.

A survey of the geography of the United States and Canada. Includes environmental, cultural, economic, and political geographies with an emphasis on spatial patterns and processes.

GEOG 3315. GEOGRAPHY OF LATIN AMERICA AND THE CARIBBEAN. 3 Hours.

A regional survey of Latin American geography including Mexico, the Caribbean, Central America, and South America. Focuses on environmental, cultural, economic, political, and urban geographies with an emphasis on spatial patterns and processes.

GEOG 3320. GEOGRAPHY OF AFRICA. 3 Hours.

A survey of the human and physical geography of the whole continent of Africa. It assesses environmental, demographic, cultural, economic, and political geographies with an emphasis on spatial patterns and processes.

GEOG 3334. HISTORICAL GEOGRAPHY OF NORTH AMERICA. 3 Hours.

Examines the intersection of the disciplines of geography and history including the creation of cultural landscapes, the spatial organization of human activities over time, and the interaction of humans with their environment over time with an emphasis on North America. Course taught as HIST 3334 and GEOG 3334. Credit will be granted in only one department.

GEOG 3336. ENVIRONMENTAL HISTORY OF THE UNITED STATES. 3 Hours.

People and the natural environment from the colonial period to the present. Ecological change, conservation movements, and artistic and literary interpretations of landscape and nature. Listed as GEOG 3336 and HIST 3336; credit will be granted only once.

GEOG 3347. AMERICA'S BORDERS AND BORDERLANDS. 3 Hours.

Covers the historical evolution of U.S. borders from independence to the present, and of the hybrid societies that have emerged along with them. Examines how borders have changed over time, and the people, commodities, ideas, and cultures, etc. that have crossed or straddled them. Particular attention is given to changing patterns of migration, border enforcement, and cultural hybridization, and the impact these have had on American society and politics. Offered as GEOG 3347 and HIST 3347; credit will only be granted in one department.

GEOG 3380. THE SPATIAL HUMANITIES. 3 Hours.

Introduction to the Spatial Humanities, including theory and methods concerning deep mapping, sense of place, and online open-source geospatial technology. Helps to develop an understanding of spatial and "palatial" thought and practice, drawing on perspectives found in literary, cultural, social, philosophical, linguistic, historical, artistic, dramatic, cinematographic, and media studies.

GEOG 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: permission of the instructor.

GEOG 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: permission of the instructor.

GEOG 4330. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software. This course is offered as GEOL 4330 and GEOG 4330; credit will not be granted for both. Prerequisite: Junior standing.

GEOG 4331. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3-D Analyst, topological surface analysis and modeling; 3-D visualization and viewscales; spatial statistics and data quality management. Course taught as GEOL 4331 and GEOG 4331. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4332. GLOBAL POSITIONING SYSTEM. 3 Hours.

Review of the NAVSTAR Global Positioning System and its segments: space, operational control, and GPS receivers. Mechanics of the satellite constellation; GPS signal structure; datums and coordinate systems; precision and accuracy; error factors; absolute (point) versus relative (differential) positioning. Various positioning techniques using several types of GPS receivers; field data collection and input into GIS programs for data analysis and presentation. Course taught as GEOL 4332 and GEOG 4332. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4333. REMOTE SENSING FUNDAMENTALS. 3 Hours.

The electromagnetic spectrum and the interaction of EM waves with matter; various types of sensing devices; spectral and spatial resolution parameters; airborne and satellite sensor platforms; aerial photographs and false-color images. The sequence of data acquisition, computer processing, and interpretation; sources of data; the integration of remote sensing data with other data types in GIS. Course taught as GEOL 4333 and GEOG 4333. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4334. GEOGRAPHIC DATA ANALYSIS. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with approval of the instructor. A written report of the results is required. Course taught as GEOL 4334 and GEOG 4334. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4340. GEOGRAPHIES OF FILM. 3 Hours.

An exploration of film geographies with a focus on cinema as both a topic and a method for geographical representation, analysis, and learning.

GEOG 4341. IMAGES OF THE SOUTHWEST BORDERLANDS. 3 Hours.

Examines the changing culture, architecture, and landscapes of the American Southwest as depicted in literature, art, film, television, and advertising, including the role of popular culture and commerce in creating and marketing a regional "Southwestern style." Offered as GEOG 4341 and HIST 4341; credit will be granted only once.

GEOG 4350. SPECIAL TOPICS IN MODERN GEOGRAPHY. 3 Hours.

Selected topics in an identified area of geography. The course may be repeated for credit.

GEOG 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: permission of the instructor.

GEOG 5330. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software. This course is offered as GEOL 5330 and GEOG 5330; credit will not be granted for both.

GEOG 5331. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3-D Analyst, topological surface analysis and modeling; 3-D visualization and viewscales; spatial statistics and data quality management. Course taught as GEOL 5331 and GEOG 5331. Credit will be granted in only one department.

GEOG 5334. GEOGRAPHIC DATA ANALYSIS PROJECT. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with the approval of the instructor. A written report of the results is required. Offered as GEOL 5324 and GEOG 5334. Credit will not be given for both. Prerequisite: For GEOL 5324: GEOL 5320.

COURSES

HIST 1301. HISTORY OF THE UNITED STATES TO 1865. 3 Hours. (TCCN = HIST 1301)

An introduction to the political, social, economic, and cultural history of the United States prior to 1865. This course is designed to help students understand and evaluate their society, comprehend the historical experience, and further develop reading and writing competencies and critical skills. Prerequisite: completion of or concurrent enrollment in ENGL 1301.

HIST 1302. HISTORY OF THE UNITED STATES, 1865 TO PRESENT. 3 Hours. (TCCN = HIST 1302)

An introduction to the political, social, economic, and cultural history of the United States since 1865. This course is designed to help students understand and evaluate their society, comprehend the historical experience, and further develop reading and writing competencies and critical skills. Prerequisite: completion of or concurrent enrollment in ENGL 1301.

HIST 1331. TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I. 3 Hours.

An introduction to the major scientific discoveries and technological innovations that influenced the development of American society and culture from the pre-colonial period to the Civil War era. This course satisfies the University of Texas at Arlington core curriculum requirement in U.S. History.

HIST 1332. TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II. 3 Hours.

An introduction to the major scientific discoveries and technological innovations that have influenced American society and culture from the era of the Civil War to the present. This course satisfies the University of Texas at Arlington core curriculum requirement in U.S. History.

HIST 2311. WESTERN CIVILIZATION TO 1500. 3 Hours.

An introductory survey of the ideas, beliefs, cultures, and institutions that have influenced the development of Western civilization from the ancient world to the early sixteenth century. Examines achievements and experiences of great civilizations, emphasizing major historical figures and epochs, important ideas and religions, and factors of continuity and change.

HIST 2312. WESTERN CIVILIZATION, 1500 TO THE PRESENT. 3 Hours.

An introductory survey of the ideas, beliefs, cultures, and institutions that have influenced the development of Western civilization from the early sixteenth century to the present day with a particular focus on major trends such as exploration, industrialization, nationalism, the rise of political ideologies, and the process of globalization.

HIST 2313. HISTORY OF ENGLAND. 3 Hours. (TCCN = HIST 2313)

The history of Britain from prehistoric times to 1688. The development of English laws and institutions. Required of all pre-law majors.

HIST 2314. HISTORY OF ENGLAND. 3 Hours. (TCCN = HIST 2314)

British history from 1688 to the present. The growth of English laws and institutions. Required of all pre-law majors. HIST 2313 is not a prerequisite for this course.

HIST 2321. WORLD HISTORY TO 1400. 3 Hours.

An introduction to World History from the first human settlements to the late fifteenth-century Age of Exploration and Encounters. Introduces students to the historical forces that shaped the pre-modern world.

HIST 2322. WORLD HISTORY, 1400 TO THE PRESENT. 3 Hours.

An introduction to World History from the late fifteenth century to the present with a particular focus on major trends such as industrialism, nationalism, imperialism, socialism, and the more complex problems and conflicts of the present. Introduces students to the historical forces that have shaped the modern world.

HIST 2377. FLIGHT CULTURE AND THE HUMAN EXPERIENCE. 3 Hours.

An interdisciplinary, cross-cultural survey of the origins, development, and representation of human flight from the ancient world to the present.

HIST 3300. INTRODUCTION TO HISTORICAL RESEARCH. 3 Hours.

Introduction to the methods that historians use to conduct research and present their findings in written and oral form. Required for history majors. This course also satisfies the requirements for UNIV 1101.

HIST 3301. TECHNOLOGY, CULTURE, & SOCIETY. 3 Hours.

An investigation of the interaction between technological development, social and cultural change between the eighteenth-century Industrial Revolution and the unfolding Information Revolution of the present day. History majors may use the course to meet either their US or non-US course requirements.

HIST 3303. HISTORY OF VIDEO GAMES. 3 Hours.

A wide-ranging investigation of the development and growth of video games and the gaming industry from the origins of electronic computing to the present day. Students will be expected to play classic games (in emulation) as part of their weekly course preparations.

HIST 3305. MAPS AND MAPMAKERS. 3 Hours.

A history of geography and cartography with an emphasis on the development of geographical ideas and mapmaking from antiquity to the modern era. Offered as GEOG 3305 and HIST 3305; credit will be granted only once.

HIST 3306. HISTORY AND FILM. 3 Hours.

Using historically-themed films, this course explores the ways in which the dramatic design of film can contribute to an understanding of history. Specific topic varies. May be repeated twice if topics differ.

HIST 3307. HISTORY OF DISABILITY. 3 Hours.

Examines the history of ideas about disability, the historical lives of people with disabilities, and the history of disability policy. The growth of asylums, the rise of the eugenics movement, a historical look at freak shows, the impact of industrialization on experiences of disability, the evolution of special education, the role of ideas about disability in colonialism, the historical treatment of disabled veterans, and the development of the disability rights movement. Geographic focus will vary. Offered as HIST 3307 and DS 3307; credit will only be granted once. Prerequisite: HIST 1311 and HIST 1312.

HIST 3310. AMERICAN COLONIAL ERA TO 1763. 3 Hours.

Considers early American history within a continental and an international perspective that emphasizes conflicts between colonists and Indian peoples, the relationship between American freedom and slavery, and the growth of the British Empire in North America. Topics include religion and culture, immigration and ethnicity, and government and politics. Students will read both recent historians' works and examine primary documents from the colonial era.

HIST 3311. THE AMERICAN REVOLUTION AND THE CONSTITUTION, 1763-1789. 3 Hours.

The origins of the American Revolution, the transformation of American politics and society during the Revolutionary era, and the establishment of the new national government under the Constitution. Special topics include the development of law, civilian-military relations, slavery and race relations, and women's social experience.

HIST 3312. THE NEW NATION, 1789-1844. 3 Hours.

The development of the national government, the party system, the market economy, and reform movements from Jefferson through Jackson. The birth of modern American society and personality, with special emphasis on changing views of man, community, and society.

HIST 3313. THE COMING OF THE CIVIL WAR, 1820-1860. 3 Hours.

Sectional conflict in the United States from the Missouri Compromise of 1820 to the election of Abraham Lincoln in 1860. Southern separatism, slavery as a political issue, the antislavery movement, the breakup of the national political system, and the failure of sectional compromise. Offered as AAST 3313 and HIST 3313; credit will be granted in only one department.

HIST 3314. CIVIL WAR AND RECONSTRUCTION, 1860-1876. 3 Hours.

The background and causes of secession and the Civil War, the organization of the Confederate States of America, the progress of the war, and the attempts to solve the racial, social, political, and economic problems of the post-war period. Offered as AAST 3314 and HIST 3314; credit will be granted in only one department.

HIST 3315. THE AGE OF INDUSTRY AND REFORM, 1876-1920. 3 Hours.

Examines the emergence of the United States as an industrial and world power between Reconstruction and World War I. Investigates how corporate capitalism, labor conflicts, immigration, urbanization, racial tensions, and a diverse array of reform movements laid the foundation for a recognizably modern United States.

HIST 3316. HISTORY OF THE UNITED STATES, 1920-1945. 3 Hours.

The technological revolutions of the 1920s, the Great Depression, and World War II.

HIST 3317. CONTEMPORARY AMERICA, 1945-PRESENT. 3 Hours.

The origins of the Cold War, the problem of loyalty in a democratic nation, the Vietnam conflict, the Fair Deal and Great Society, the Civil Rights Movement, student unrest and the growth of the New Left, and the impact of Richard Nixon and subsequent presidents on American politics.

HIST 3320. AMERICAN INDIAN HISTORY. 3 Hours.

Representative Indian tribes within the continental limits of the United States from pre-history to the contemporary period. Special topics: tribal cultures, the impact of European contact, and the colonial and United States Indian policies.

HIST 3321. MEXICAN-AMERICAN HISTORY. 3 Hours.

The role of the Mexican American in the cultural and historical development of the United States with special emphasis on the Southwest. Offered as HIST 3321 & MAS 3321; credit will be granted only once.

HIST 3322. AFRICAN AMERICAN HISTORY TO 1863. 3 Hours.

History of blacks in America from their African origins to 1863. Emphasis on early African society, American slavery, and the development of black institutions and culture in the U.S. Offered as AAST 3322 and HIST 3322; credit will be granted in only one department.

HIST 3323. AFRICAN AMERICAN HISTORY SINCE EMANCIPATION. 3 Hours.

Emphasis on the transition from slavery to freedom and the political, social, and economic status of blacks in the late 19th century, 20th century black institutions and culture, and the evolution of the civil rights movements. Offered as AAST 3323 and HIST 3323; credit will be granted in only one department.

HIST 3324. U.S. WOMEN'S HISTORY. 3 Hours.

An examination of women in US politics, work and society from the colonial era to the present. Offered as HIST 3324 and WOMS 3324; credit will be granted only once.

HIST 3325. IMMIGRATION IN UNITED STATES HISTORY. 3 Hours.

Immigration to the United States from the arrival of European colonists to the present. An examination of different forms of migration--voluntary and involuntary, temporary and permanent, legal and illegal. Explores the similarities and differences between the experiences of various immigrant groups. Particular attention to the shifting definitions of race, ethnicity, and citizenship, and the impact of immigrants on society and politics in the United States. Prerequisites: HIST 1301 and HIST 1302.

HIST 3326. TWENTIETH-CENTURY AMERICAN CULTURAL HISTORY. 3 Hours.

The development of mass culture in 20th century America. The rise and social effects of popular culture, especially radio, film, television, advertising, and popular music.

HIST 3327. CITIES AND SUBURBS IN UNITED STATES HISTORY. 3 Hours.

Traces urban and suburban development from the colonial era to the present with special emphasis not only on the transformation of their physical appearance over time, but on their changing meaning and significance in American history. Focuses on the economic base of urban and suburban expansion, as well as the social, political, and cultural dynamics of metropolitan America.

HIST 3330. U.S. LEGAL AND CONSTITUTIONAL HISTORY, COLONIAL TO 1877. 3 Hours.

Traces the adaptation of laws to changing social and economic needs with emphasis on the interrelations of law, public opinion, the legal profession, judiciary, and the political process. Topics include the transatlantic origins of American law, slavery and indentured servitude, poor laws and dependency, family law and gender, developments in criminal and civil law, and the failure of Reconstruction.

HIST 3331. U.S. LEGAL AND CONSTITUTIONAL HISTORY, 1877 TO PRESENT. 3 Hours.

Traces the adaptation of laws to changing social and economic needs with emphasis on the interrelations of law, public opinion, the legal profession, judiciary, and the political process. Topics include civil rights, disability and the law, education, abortion, the death penalty, healthcare and social welfare, gun rights, eugenics, family law, and the impact of personality on judicial decision-making.

HIST 3332. HISTORY OF AMERICAN FOREIGN RELATIONS, 1775-1913. 3 Hours.

American foreign relations from the Revolution to the outbreak of World War I. Four topics will be explored in depth: the problems of the young republic in conducting foreign policy; the acquisition of continental empire; the rise of the United States to Great Power status: the acquisition and rule of overseas empire.

HIST 3333. HISTORY OF AMERICAN FOREIGN RELATIONS, 1913- PRESENT. 3 Hours.

American diplomacy from outbreak of World War I to the present. Four topics will be explored in depth: the problems of the young republic in conducting foreign policy; the acquisition of continental empire; the rise of the United States to Great Power status: the acquisition and rule of overseas empire.

HIST 3334. HISTORICAL GEOGRAPHY OF NORTH AMERICA. 3 Hours.

Examines the intersection of the disciplines of geography and history including the creation of cultural landscapes, the spatial organization of human activities over time, and the interaction of humans with their environment over time with an emphasis on North America. Course taught as HIST 3334 and GEOG 3334. Credit will be granted in only one department.

HIST 3336. ENVIRONMENTAL HISTORY OF THE UNITED STATES. 3 Hours.

People and the natural environment from the colonial period to the present. Ecological change, conservation movements, and artistic and literary interpretations of landscape and nature. Listed as GEOG 3336 and HIST 3336; credit will be granted only once.

HIST 3337. MILITARY HISTORY OF THE UNITED STATES. 3 Hours.

U.S. military history from the colonial period to the present. The role of the military establishment in the nation, the historical evolution of its organization, and the basic strategic and tactical concepts which it has employed.

HIST 3338. HISTORY OF AMERICAN CAPITALISM, 1607-PRESENT. 3 Hours.

Covers business and economic history in the North American colonies and the United States from 1607 to the present. Topics include slavery, trade, agriculture, industry, government actions and legislation, and the experiences of people from all walks of life. The course will also explore financial downturns and the causes of those so that students develop an understanding of what causes our economy to be "good" or "bad." Previously offered as HIST 3372 and HIST 3373; credit will only be granted once.

HIST 3340. HISTORY OF THE NORTH AMERICAN WEST. 3 Hours.

An introduction to the history of the North American West and the unique migration patterns, cross-cultural interactions and conflicts, and human-environmental relationships that have defined life in this region over time.

HIST 3342. THE OLD SOUTH, 1607-1863. 3 Hours.

Colonial origins of plantation agriculture, slavery, economics, King Cotton, politics and secession. Other topics include slave cultures, religion, slave insurrections, plantation lifestyle, honor, dueling and southern belles. Offered as AAST 3341 and HIST 3342; credit will be granted in only one department.

HIST 3343. THE NEW SOUTH, 1863-PRESENT. 3 Hours.

From military defeat to Sun Belt growth. Topics include Reconstruction, segregation, migration of Southerners to the North and West, depressions, reforms, Civil Rights, Moral Majority, cultural expressions in literature and music. Offered as AAST 3343 and HIST 3343; credit will be granted in only one department.

HIST 3345. TEXAS TO 1850. 3 Hours.

Multicultural heritage of Texas from pre-Colombian period to early statehood. Cultural contact; social, economic, and political change. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach in Texas schools. Offered as HIST 3345 and MAS 3363; credit will be granted in only one department.

HIST 3346. TEXAS SINCE 1845. 3 Hours.

Texas in the Mexican-American and Civil Wars. Political events and ethnic relations since annexation. Rise of cotton, cattle, and oil industries. Literature and music in the 20th century. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach history in Texas secondary schools. Offered as HIST 3346 and MAS 3364; credit will be granted in only one department.

HIST 3347. AMERICA'S BORDERS AND BORDERLANDS. 3 Hours.

Covers the historical evolution of U.S. borders from independence to the present, and of the hybrid societies that have emerged along with them. Examines how borders have changed over time, and the people, commodities, ideas, and cultures, etc. that have crossed or straddled them. Particular attention is given to changing patterns of migration, border enforcement, and cultural hybridization, and the impact these have had on American society and politics. Offered as GEOG 3347 and HIST 3347; credit will only be granted in one department.

HIST 3348. HISTORY OF THE DALLAS-FORT WORTH METROPLEX. 3 Hours.

The growth and development of Dallas and Fort Worth from competitive 19th-century trade centers in a rural setting to cooperative high-tech cities in a rapidly urbanizing metroplex. Political, economic, cultural, and spatial changes of this area are explored within a national urban context.

HIST 3350. ANCIENT GREECE. 3 Hours.

The origins, development and diversity, successes and failures of Ancient Greece from around 1500 to 31 B.C. Near Eastern and Bronze Age background; Archaic Age and the City State; Sparta and Athens; war and imperialism; democracy and culture; Alexander the Great and the Hellenistic Era.

HIST 3351. ANCIENT ROME. 3 Hours.

The origin, development, expansion, problems, and achievements of the Roman Republic and Empire. Roots and rise of Rome; Roman Imperialism; Republic and Revolution; Roman Empire, Emperors, and Peace; Paganism and Christianity; Late Empire.

HIST 3352. MEDIEVAL EUROPE I. 3 Hours.

The rise of new states and cultures in western Europe and Byzantium after the Roman Empire's breakdown; institutional Christianity and the medieval papacy; foundation of the Holy Roman Empire; Islam at Europe's borders.

HIST 3353. MEDIEVAL EUROPE II. 3 Hours.

The formation of national, religious, and ethnic identities in Europe; intellectual developments associated with universities and new religious movements; the expansion of Europe's borders; and the confrontation of Western Christianity with Islam.

HIST 3354. THE RENAISSANCE. 3 Hours.

The political, social, and intellectual events of the Renaissance period. The rise of the modern state, the emergence of individualism, and the incipient secularization of politics, arts, and letters.

HIST 3355. EUROPE: THE REFORMATION AND COUNTER-REFORMATION. 3 Hours.

The religious reawakening and reform that swept Europe in the 16th century with its consequent religious wars. The political effects of religious reform in the remaking of European attitudes in regard to politics, society, and religion.

HIST 3356. EARLY MODERN EUROPE, 1560-1715. 3 Hours.

The major social, economic, cultural, and political developments that occurred in the major European countries from the end of the Counter-Reformation to the early eighteenth century.

HIST 3357. MILITARY REVOLUTION. 3 Hours.

Changes in European art of war from advent of gunpowder to American rebellion. Effects of these changes upon demography, political institutions, industrial production, social structure, and taxation patterns.

HIST 3360. NINETEENTH-CENTURY EUROPE, 1789-1914. 3 Hours.

This course focuses on the political, cultural, social, and intellectual developments that shaped the European continent's "long" nineteenth century. Beginning with the dawn of modern politics in the salons and streets of revolutionary Paris and concluding with cultural crises that prefigured War in the summer of 1914, it examines in detail how European political and cultural forms came to dominate the globe during the nineteenth century while setting the stage for European decline in the first decades of the twentieth.

HIST 3361. TWENTIETH-CENTURY EUROPE, 1914-1991. 3 Hours.

This course introduces students to major developments in continental European history from the outbreak of World War I to the present time. Topics include: the First and Second World Wars and the ensuing Cold War confrontation between Communism and Democracy; the mechanisms of differing forms of dictatorial rule including Fascism, Nazism, and Stalinism; recurrent waves of democratization; and more recent efforts toward European integration.

HIST 3362. TUDOR-STUART ENGLAND, 1485-1714. 3 Hours.

The legacy of the Wars of the Roses: the so called new monarchy of the Tudors; The Protestant Reformation in England; constitutional implications of the controversy between crown and Parliament; changes in family and social structures; the emergence of England as a world power.

HIST 3363. ENGLAND, 1714-1848. 3 Hours.

English history in the age of revolution. Topics include the consolidation of aristocratic power, nature of Parliament, rise of Empire and the American rebellion, the Industrial Revolution, the governance of Ireland, wars of the French Revolution and Napoleon, the challenge of democratic radicalism and the alternative of political reform or revolution.

HIST 3364. ENGLAND, 1848-PRESENT. 3 Hours.

English history from Victorian grandeur to 20th century decline. Topics include the growth of social stability and democracy, the rise to and fall from world supremacy in industry and empire, the labor and women's movements, the problem of Ireland, World Wars I and II, the emergence of the socialist state, and its post-1980 revision by recent prime ministers.

HIST 3365. EARLY FRANCE: OLD REGIME AND REVOLUTION, 1610-1799. 3 Hours.

Society and politics from the assassination of Henry IV to Napoleon. The traditions of the French people and their kings, the splendor and misery of the Age of Louis XIV, the Enlightenment of Voltaire and Rousseau, the coming of the Revolution, the Reign of Terror, and the rise of Napoleon.

HIST 3366. MODERN FRANCE, 1799-PRESENT. 3 Hours.

From Napoleon to the emergence of a modern democratic state. Social and cultural trends together with the politics of two monarchies, two empires, five republics, and two German occupations. The acceleration of change in recent decades in contrast with earlier social patterns.

HIST 3367. GERMANY IN THE WORLD, 1815-1918. 3 Hours.

Prussian, German, and Hapsburg empires. Feudal society, absolutism, German romanticism, democratization, industrialization. The challenges of nationalism, colonialism, and the collapse of the empires.

HIST 3368. GERMANY AND THE WORLD, 1918-PRESENT. 3 Hours.

Social, political, and cultural history of Germany through World War I and II, division of Germany into East and West, and ultimate unification.

HIST 3369. HISTORY OF SPAIN AND PORTUGAL. 3 Hours.

The cultural, political and economic history of the Iberian peninsula from ancient times. The medieval epoch; the Catholic Church; the overseas empires of Spain and Portugal, and their artistic achievements. The monarchist ideal, as well as political ideologies such as liberalism, Marxism, anarchism, and fascism.

HIST 3371. THE RUSSIAN EMPIRE 1552-1917. 3 Hours.

The political, social, and cultural impact of Russian imperial rule between the sixteenth and twentieth centuries; interactions between the Russian state and non-Russian nationalities during the successive stages of the Russian expansion: the Siberian frontier in the 16th and 17th centuries; the "Western Borderlands" (Eastern Europe) from the 18th century on; the Russian presence in the Caucasus and Central Asia in the 19th century. Special focus on the structure and functioning of Russian imperial institutions; types of contact between Russians and non-Russians (strategies of conquest, resistance, forms of collaboration); and the production of culture and knowledge in the service of the Russian empire.

HIST 3372. THE SOVIET UNION, 1917-1991. 3 Hours.

The history of the Soviet Union from its birth as a utopian experiment in October 1917 to its final collapse, under the weight of institutionalized corruption, bureaucratic inertia, and political repression, in December 1991. Incorporating original documents, creative works, and artifacts of popular culture, the course examines the nature and evolution of Soviet political life as well as the social structures and cultural forms that shaped the Soviet experience.

HIST 3374. EAST CENTRAL EUROPE AND THE MODERN WORLD. 3 Hours.

An examination of the eastern regions of the European continent and their relationship with the broader world between the eighteenth century and the present. Focus on ideological "making" of Eastern Europe in 18th century; the region's role in globalization; travels and exchanges between Eastern Europe and the rest of the world; imperial experiences and legacies; Eastern Europe's economic "catching up" with the West; the role of Eastern Europe in relations with Western Europe, USSR, US and the "Third World" during the Cold War and experiences behind the iron curtain.

HIST 3375. LATIN AMERICAN HISTORY: ORIGINS THROUGH INDEPENDENCE. 3 Hours.

Latin America during the colonial period of Spanish and Portuguese rule. Pre-European civilizations; Iberian backgrounds; conquest of indigenous peoples; development of colonial institutions, economic patterns, social structures, and race relations; independence from Europe. Offered as MAS 3375 and HIST 3375; credit will be granted in only one department.

HIST 3376. LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT. 3 Hours.

The evolution of six Latin American nations during the 19th and 20th centuries. The social, economic, and political development of three social groups in three regions: the Europeanized southern cone area of Argentina, Chile, and Uruguay; the indigenous culture of the Andean mountains in Peru; the African background of Brazil and Cuba. Offered as MAS 3376 and HIST 3376; credit will be granted in only one department.

HIST 3377. HISTORY OF MEXICO. 3 Hours.

Mexican history from its pre-Colonial indigenous foundation to the current situation. A social and economic analysis of the major events in Mexican history with emphasis on the 19th and 20th centuries. The major theme in this class is the growth of Mexican nationalism and its relation to region, religion, and ethnicity. Offered as HIST 3377 and MAS 3377; credit will only be granted in one department.

HIST 3378. HISTORY OF THE CARIBBEAN. 3 Hours.

A comparative history of the different societies in the Caribbean (including Cuba, Jamaica, and Haiti) with emphasis on the coming of slavery and the consequences of emancipation. Traces the development of emerging new societies from intermingling of Amerindian, African and European elements. Offered as AAST 3378 and HIST 3378; credit will be granted in only one department.

HIST 3385. AFRICAN HISTORY I. 3 Hours.

Examines African prehistory, ancient civilizations, religion, gender issues, slavery, and commerce in precolonial Africa. Offered as AAST 3385 and HIST 3385; credit will be granted in only one department.

HIST 3386. AFRICAN HISTORY II. 3 Hours.

Africa from the "Scramble for Africa" through the establishment of the various colonial systems, through the beginnings of African nationalism, to the contemporary period. The African Revolution and the development of the independent African states. Offered as AAST 3386 and HIST 3386; credit will be granted in only one department.

HIST 3390. HONORS COLLOQUIUM. 3 Hours.

A multidisciplinary course designed to meet the needs of advanced undergraduates in the Honors College.

HIST 3391. MOOT COURT. 3 Hours.

Students will develop an understanding of legal debate and legal history through the study of constitutional law and legal research methods in preparation for simulated oral arguments before the Supreme Court of the United States. Attendance at statewide competitions required. May be repeated for total of 6 hours credit. This course does not satisfy distribution requirements.

HIST 3392. ARCHIVES AND THE ARCHIVES PROFESSION. 3 Hours.

This course provides an overview of the archival profession and the work that archivists do. Students develop an understanding of the historical development of the field of archives and learn about current issues, trends, and theories that are shaping the profession. Students also study the role of the archivist and the use of archives and historical collections by a range of users and become familiar with the theoretical considerations that underlie the core functions of archival administration. The course explores the legal and ethical responsibilities of archivists, as well as the codes of conduct and ethics that have been developed and debated within the profession. Students gain an understanding of how new technologies and digital records are shaping the way that archivists do their work and the skills they must develop to perform core archival functions with digital records.

HIST 3395. SELECTED TOPICS IN HISTORY. 3 Hours.

Subjects of immediate interest in the various fields of history. May be repeated for credit when the topic changes.

HIST 4191. UNDERGRADUATE CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in designated areas with tenure-track/tenured faculty. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the undergraduate advisor. The faculty member may petition for the student's exemption from these prerequisites.

HIST 4291. UNDERGRADUATE CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas with tenure-track/tenured faculty. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the undergraduate advisor. The faculty member may petition for the student's exemption from these prerequisites.

HIST 4302. WOMEN AND WORK IN TRANSATLANTIC PERSPECTIVE. 3 Hours.

Examines the history of women and work, both waged and nonwaged, in Europe and the Americas, including the United States. Highlights differences within women's work cultures as well as variation in women's employment opportunities and their efforts to achieve equality with men in the workplace, by ethnicity, region, and nation. Offered as HIST 4302 and WOMS 4302; credit will be granted only once.

HIST 4303. HISTORY OF ENGINEERING. 3 Hours.

The history of engineering from the ancient world to the present including: ancient and medieval technology and machines, experimentation and machine building in the era of the Scientific Revolution and Enlightenment, revolutions in industry and the Age of Synergy, World War II and the Cold War, engineering the modern consumer society, and engineering in the age of Big Science. Particular focus is paid to the political and social contexts of the rise and development of professional engineering, the role of engineers and engineering in shaping the modern world, engineering ethics, and cultural representations of engineers and engineering projects.

HIST 4304. REVOLUTIONS AND REVOLUTIONARIES IN HISTORY. 3 Hours.

A historical examination of the world's major revolutions, from the 16th through the 20th centuries.

HIST 4306. INTERCULTURAL TRANSFERS IN HISTORY. 3 Hours.

Recognizing the interconnectedness of the human experience in history, this class focuses on the transfers that occurred between cultures and societies during the last three centuries. Transfers occurred in all spheres of public life and contributed to the formation of modern societies and states.

HIST 4307. HISTORY OF MEDICINE. 3 Hours.

The history of medicine from the eighteenth century to the present including: pre-scientific medical beliefs and practices, the germ theory of disease, medical institutions, and the rise of the modern health care industry.

HIST 4308. GLOBAL HISTORY OF PHILANTHROPY. 3 Hours.

An examination of the historical development and dominant institutional forms of philanthropy and non-profits across the globe including foundations, endowments, voluntary associations, limited dividend companies, and cooperatives.

HIST 4309. SOCIAL DARWINISM AND EUGENICS. 3 Hours.

Examines the history of Social Darwinism, global spread of eugenic theory and practice, and history of genetics and gene manipulation. Topics may include debates over assisted suicide as well as links to disability, race, and gender.

HIST 4319. NATIVE AMERICANS, SCIENCE AND TECHNOLOGY. 3 Hours.

This course examines the relationship between Indigenous peoples, science, and technology from the pre-colonial period to the present. Case studies drawn from the Americas and Pacific Islands explore Native innovations and adaptations in agricultural engineering, transportation, weaponry, healing and medicine, and communication.

HIST 4320. RADICALISM IN MODERN AMERICA. 3 Hours.

An examination of the various movements that sought to radically alter the political and economic structure of the United States in the decades since the Civil War. This course examines the development of and differences between revolutionary movements such as anarchism, socialism, communism, and the New Left. Particular attention is given to the circumstances that gave rise to radical movements, the goals of these movements, how they attempted to achieve their goals, and the impact that they had on American society. Prerequisites: HIST 1301 and HIST 1302.

HIST 4321. WORK AND PLAY IN THE USA. 3 Hours.

Examines changing ideas and practices of work and leisure from colonial America to post-industrial society. Discusses how work and leisure rights developed according to social lines of class, gender, and race, and examines the impact of shifts in capitalist, industrial and consumer economies on those rights.

HIST 4324. NATIVE AMERICAN WOMEN. 3 Hours.

This course explores how settler colonialism affected Native women in particular ways from the late eighteenth century to the present. Topics include gender roles, kinship organization, women's work and economic activities, political and diplomatic roles, and everyday lives and relationships.

HIST 4325. HISTORY OF HIP HOP. 3 Hours.

Focused study of the origins and development of Hip Hop as an artistic genre and political and cultural movement. Topics include deejaying, emceeing, sampling and other musical techniques as well as issues of ethnic and other identities, commercialism, capitalism, cultural appropriation, and authenticity. Offered as HIST 4325 and AAST 4325; credit will be granted only once.

HIST 4327. CYBORGS AND PROSTHETICS. 3 Hours.

Explores the history, theories, and evolving representations of prosthetics, bionics, cyborgism, and the post-human. Investigates the origins and development of the prosthetics industry, historical experiences of prosthetics users, and cultural depictions and debates about human-technology interactions. Offered as DS 3327 and HIST 4327 and previously as DS 3321 and HIST 4388; credit will only be granted once.

HIST 4328. NATIVE AMERICANS IN POPULAR CULTURE. 3 Hours.

An examination of popular stereotypes of Native Americans and the manner in which these images and portrayals have effected US policy and changing perceptions of Native Americans over time. The course explores a range of visual and written media including art, film, social media, comics, hip hop, super heroes, and sports mascots.

HIST 4330. GREAT ANGLO-AMERICAN TRIALS. 3 Hours.

The historical development of criminal trial procedure in Britain and the United States: arrest and detention procedures; the roles of judge and jury; press coverage; political implications of celebrated and notorious cases.

HIST 4331. U.S. CIVIL LIBERTIES. 3 Hours.

The historical origins of individual liberties in the United States. Topics include Bill of Rights freedoms and histories of case law relating to speech, privacy, and religion.

HIST 4332. PRESIDENTIAL PERSONALITY. 3 Hours.

This course will examine in their historical contexts the dynamics of presidential behavior, personality and leadership. A select number of chief executives will be reviewed, whose backgrounds, careers, and management styles will enable students to understand the extent and limits of presidential power.

HIST 4333. COMPARATIVE CIVIL RIGHTS HISTORY. 3 Hours.

Explores the U.S. civil rights movement from a comparative perspective, exploring the African American civil rights movement, Chicano movement, women's liberation movement, gay liberation, and disability rights movement. Offered as AAST 4333 and HIST 4333; credit will be granted in only one department.

HIST 4340. HOLLYWOOD AND THE WEST. 3 Hours.

The way the American West has been portrayed and the part the Western myth has played in search for a national identity. First impressions of the new world; the West in colonial literature; fiction in the 19th and 20th centuries; art, music and film; Western themes in politics; recent variations of the Western myth; the way such developments have reflected changes in popular values and a sense of national purpose.

HIST 4341. IMAGES OF THE SOUTHWEST BORDERLANDS. 3 Hours.

Examines the changing culture, architecture, and landscapes of the American Southwest as depicted in literature, art, film, television, and advertising, including the role of popular culture and commerce in creating and marketing a regional "Southwestern style." Offered as GEOG 4341 and HIST 4341; credit will be granted only once.

HIST 4342. HISTORY OF THE NORTH AMERICAN FUR TRADE. 3 Hours.

This course examines the social, cultural, economic, and environmental history of the fur trade between 1500 and 1800. The goal of the course is to consider one of the earliest global businesses as historical precedent for many global businesses of the present-day. The following themes will be addressed: local/global intersections, cultural conflict and collaboration, capitalism and empire, people and nature.

HIST 4350. HISTORY OF ANCIENT SPORT. 3 Hours.

The nature, variety, and role of sports in ancient history. The origin and development of sport in Greece and Rome, the Olympic Games, religious and political implications, the nature of events and contests, intellectual and popular attitudes, and sport in art and society.

HIST 4351. MEDIEVAL TECHNOLOGY AND SCIENTIFIC THOUGHT. 3 Hours.

An examination of medieval technology and scientific thought in Western Europe, from c. 500 - c. 1500, with particular regard to cross-cultural influences, social context, and material culture.

HIST 4352. MEDIEVAL CRUSADE AND JIHAD. 3 Hours.

A history of the crusading movement of Western Europe, and the counter-crusades. This course will consider the events, ideas, and peoples involved, and their impacts on the civilizations of medieval Christendom, North Africa, and the Middle East.

HIST 4353. MEDIEVAL TRAVELERS. 3 Hours.

Medieval people traveled for a wide variety of reasons: exploration, survival, profit, belief. Students will study medieval travel accounts to understand how voyages and other travels illustrate cultural contact, communication, exchange, and diffusion of ideas.

HIST 4355. THE SCIENTIFIC REVOLUTION. 3 Hours.

An examination of the principal ideas, individuals, and institutions that contributed to the birth of "scientific" thinking between the mid-sixteenth and early eighteenth centuries.

HIST 4359. BRITISH CONSTITUTIONAL HISTORY. 3 Hours.

The development of the British constitution from its earliest beginnings to the present day, with special emphasis on the Anglo-Saxon institutions, the Norman constitutional development, the evolution of the major offices of the government, the development of Parliament, constitutional developments of the Stuarts, the Hanoverian constitution, the growth of democracy in the 19th and 20th centuries, and the imperial and commonwealth institutions.

HIST 4360. BRITISH EMPIRE. 3 Hours.

Examines the major parts of the empire--Ireland, Canada, West Indies, India, Australia/New Zealand, and South Africa--from 1600 to present. Also considers English attitudes and policies, and changing ideas of imperialism.

HIST 4361. THE GREAT WAR, 1914-1918. 3 Hours.

Beginning with a survey of the international Imperial order c. 1900 and concluding with an in-depth account of the human and economic costs of industrialized conflict, the course examines the fundamental global transformations wrought by history's first total war.

HIST 4362. WORLD WAR II, 1939-1945. 3 Hours.

Various aspects of the Second World War from American, European, and Asian perspectives. Origins of the conflict, national mobilization, the Holocaust, the Soviet-German confrontation, and the legacy of the most devastating conflict in modern history.

HIST 4366. HITLER'S GERMANY. 3 Hours.

A pivotal event in the history of the twentieth century, Hitler's Germany continues to elicit fascination, revulsion, and controversy. Dealing with this extraordinary and deeply disturbing historical phenomenon, the course explores the origin, nature, and demise of the Third Reich. Beginning with the rise of the National Socialism in Weimar Germany, it goes on to examine the Nazi seizure of power, the centrality of Hitler, the ideology and racial agenda of Nazism, and the destruction of the Reich in five years of war and genocide. These and other topics, such as popular opinion and everyday life, will be discussed from a variety of perspectives - cultural, political, and socioeconomic - to provide a broad interpretative framework for understanding the genesis, consolidation, and criminality of the Nazi State.

HIST 4367. HITLER: HISTORY AND IMAGE. 3 Hours.

Hitler has been vilified, ridiculed, idolized, and mythologized. This course examines Hitler, the historical figure, as well as the image of Hitler created through literature, theatre, and cinema.

HIST 4368. HISTORICAL MEMORIES OF RESISTANCE. 3 Hours.

This course focuses on the ways and methods in which Europeans chose to remember and to forget about those who resisted dictatorial rule. Students will be introduced to the processes and mechanisms that create and shape public memory.

HIST 4371. STALINISM: CULTURE & CIVILIZATION. 3 Hours.

This course examines the efforts of the Soviet state and society to build a civilization of a new type based upon the principles of Marxist-Leninist-Stalinist ideology. Emphasis on the period from 1924 through 1956.

HIST 4372. SOVIET UNION IN GLOBAL COLD WAR. 3 Hours.

The Cold War from Joseph Stalin to Mikhail Gorbachev. Themes may include: origins and end of the Cold War; roots and consequences of Soviet decision-making; relationships between the USSR, its satellite states and competing great powers; culture and ideas in the Cold War; Soviet citizens' experiences of the Cold War; legacies of the Cold War.

HIST 4374. EAST CENTRAL EUROPE IN THE AGE OF EXTREMES. 3 Hours.

Examination of political and social upheavals in East-Central Europe during the "short" twentieth century (1914-1991): Russian revolutions, left- and right-wing dictatorships and mass murder; the two world wars, communist takeover and half-century-long struggle between societies and the party-states culminating in the revolutions of 1989 and the breakup of the Soviet empire.

HIST 4376. AFRICAN DIASPORA I. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in the Atlantic, Mediterranean, and Indian Ocean areas from the earliest times to 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Diaspora. Offered as AAST 4376 and HIST 4376; credit will be granted in only one department.

HIST 4377. AFRICAN DIASPORA II. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in Latin America, the Caribbean, and North America since 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Atlantic Diaspora. Offered as AAST 4377 and HIST 4377; credit will be granted in only one department.

HIST 4378. WEST AFRICA AND THE ATLANTIC DIASPORA. 3 Hours.

This course examines the history of West Africa and how this region was integrated into the Atlantic world through the Atlantic slave trade. The course adopts an interdisciplinary approach that integrates traditional classroom instruction with field-based learning in West Africa. This learning method, combined with cultural immersion, challenges students to develop their academic and cross-cultural knowledge and skills. Offered as AAST 4378 and HIST 4378; credit will be granted in only one department.

HIST 4379. HISTORY OF MODERN CHINA. 3 Hours.

The Ching dynasty and China's response to the West. Revolution and republic, warlords, and the Japanese occupation during World War II. Civil War and the development of the People's Republic of China.

HIST 4380. AMERICA AND THE VIETNAM WARS. 3 Hours.

American involvement in the Indochinese conflict; the causes, outcome, and consequences of the war.

HIST 4390. HISTORY INTERNSHIP. 3 Hours.

Supervised internship providing hands-on experience working in archives, records centers, museums, or other history-oriented agencies or organizations in the local community. Prerequisite: HIST 3300 with grade of C or better; permission of instructor.

HIST 4391. UNDERGRADUATE CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas with tenure-track/tenured faculty. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the undergraduate advisor. The faculty member may petition for the student's exemption from these prerequisites.

HIST 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

HIST 4395. HISTORY SEMINAR. 3 Hours.

Topic varies. A reading and research course focusing on a specific subject, theme, or era in history. May be used to fulfill the History major research requirement. Prerequisite: HIST 3300 with grade of C or higher.

HIST 5191. INDEPENDENT STUDY. 1 Hour.

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5291. INDEPENDENT STUDY. 2 Hours.

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5339. HISTORICAL THEORY AND METHODOLOGY. 3 Hours.

An examination of theories of historical knowledge, the history of the discipline, various historical methodologies, and research techniques. Required for all history M.A. and Ph.D. students.

HIST 5340. ISSUES AND INTERPRETATIONS IN U.S. HISTORY. 3 Hours.

A critical survey of U.S. historical scholarship from colonial times to the present. Required for all history M.A. students who are emphasizing U.S. history.

HIST 5341. APPROACHES TO WORLD HISTORY. 3 Hours.

A critical survey of approaches to the study of global and comparative history.

HIST 5342. PRINCIPLES OF ARCHIVES AND MUSEUMS I. 3 Hours.

The historical evolution of archival science, emphasizing the development of the archives profession, archival principles and theories, appraisal and acquisition techniques, the laws affecting archives, programming and outreach, automation, conservation and preservation, and administration of collections.

HIST 5343. PRINCIPLES OF ARCHIVES AND MUSEUMS II. 3 Hours.

Training in the methods and techniques of processing archives and historical manuscripts. Focuses on the day-to-day responsibilities of archivists and curators, such as appraising, accessioning, arranging, and describing collections.

HIST 5345. INTRODUCTION TO PUBLIC HISTORY. 3 Hours.

An overview of the field of public history focusing on public historians, their work, their relationship to academic historians, their accomplishments, and the ethical principles under which they operate.

HIST 5347. INTRODUCTION TO TEACHING COLLEGE HISTORY. 3 Hours.

Course discusses teaching philosophies, techniques and technologies in order to help students become more effective college instructors.

HIST 5348. TOPICS IN PUBLIC HISTORY. 3 Hours.

A detailed examination of some aspect of public history (e.g. historical editing, oral history, historic preservation). The particular topic will vary with the instructor.

HIST 5349. INTRODUCTION TO TRANSATLANTIC HISTORY. 3 Hours.

Provides overview of the field of Transatlantic history and introduction to historiographical debates.

HIST 5350. HISTORY OF CARTOGRAPHY. 3 Hours.

A history of maps and their making and cartographic documentation as a source for understanding historical development. An aspect of the history of science and technology and the history of discovery and exploration.

HIST 5360. READING COLLOQUIUM IN EARLY TRANSATLANTIC HISTORY. 3 Hours.

Course topic varies; focuses on topics in transatlantic history prior to 1850.

HIST 5361. READING COLLOQUIUM IN LATE TRANSATLANTIC HISTORY. 3 Hours.

Course topic varies; focuses on topics in transatlantic history after 1850.

HIST 5363. READING COLLOQUIUM IN NATIONAL HISTORIES. 3 Hours.

Course topic varies; focuses on a chronological period or theme within the history of a single nation-state.

HIST 5364. READING COLLOQUIUM IN TRANSNATIONAL HISTORY. 3 Hours.

Course topic varies; focuses on topics in transnational history.

HIST 5365. READING COLLOQUIUM: TOPICS. 3 Hours.

Course topic varies; focuses on themes and topics in history.

HIST 5390. DIRECTED STUDIES FOR MASTERS STUDENTS. 3 Hours.

Directed study for masters students who have arranged to pursue specific topics of historical inquiry.

HIST 5391. INDEPENDENT STUDY. 3 Hours.

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5392. HISTORICAL PERSPECTIVES ON THE HUMANITIES. 3 Hours.

An historical inquiry into problems and issues of contemporary relevance in the humanistic disciplines. The particular problems and issues investigated will vary with the instructor.

HIST 5395. NON-THESIS CAPSTONE. 3 Hours.

Readings in the non-thesis student's final semester, directed by the three-person faculty committee supervising the student's program of work. Required of all non-thesis history M.A. students.

HIST 5398. THESIS. 3 Hours.

For thesis history M.A. students.

HIST 5644. ARCHIVAL/PUBLIC HISTORY INTERNSHIP. 6 Hours.

Work experience for either Archival or Public History students. Archival Certification: Hands-on experience in archives, records centers, or historical manuscripts repositories. Public History: Placement in a history-oriented position in a private or public agency or organization in the community.

HIST 5655. PUBLIC HISTORY INTERNSHIP. 6 Hours.

HIST 5691. INDEPENDENT STUDY. 6 Hours.

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5698. THESIS. 6 Hours.

For thesis history M.A. students.

HIST 5998. THESIS. 9 Hours.

HIST 6190. DIRECTED STUDIES FOR PhD STUDENTS. 1 Hour.

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6191. INDEPENDENT STUDY. 1 Hour.

HIST 6360. RESEARCH SEMINAR IN EARLY TRANSATLANTIC HISTORY. 3 Hours.

Research seminar focuses on primary source research on topics in transatlantic history prior to 1850.

HIST 6361. RESEARCH SEMINAR IN LATE TRANSATLANTIC HISTORY. 3 Hours.

Research course focuses on primary source research on topics in transatlantic history after 1850.

HIST 6363. SEMINAR IN NATIONAL HISTORIES. 3 Hours.

Topic varies; this is a research seminar that focuses on the history of a given nation-state.

HIST 6364. SEMINAR IN TRANSNATIONAL HISTORY. 3 Hours.

Topics vary; this is a research seminar focusing on some aspect of transnational history.

HIST 6365. SEMINAR: TOPICS. 3 Hours.

Topics vary; this is a research seminar that will focus on an historical theme or topic.

HIST 6390. DIRECTED STUDIES FOR PhD STUDENTS. 3 Hours.

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6391. INDEPENDENT STUDY. 3 Hours.

For history Ph.D. students.

HIST 6399. DISSERTATION. 3 Hours.

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HIST 6690. DIRECTED STUDIES FOR PhD STUDENTS. 6 Hours.

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6691. INDEPENDENT STUDY. 6 Hours.

For history Ph.D. students.

HIST 6699. DISSERTATION. 6 Hours.

Dissertation research.

HIST 6990. DIRECTED STUDIES FOR PhD STUDENTS. 9 Hours.

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6991. INDEPENDENT STUDY. 9 Hours.

For history Ph.D. students.

HIST 6999. DISSERTATION. 9 Hours.**HIST 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

History - Graduate Programs

Objectives

Graduate study in history seeks not only to train students in historical methods and analysis but also to nurture in them a sense of the excitement and relevance of studying the past. Exploring the historical diversity of human experience broadens and deepens our understanding of both the past and the contemporary world. Students who complete graduate studies in history pursue careers in teaching, research and archival or museum administration, as well as in government and business.

The Master's Degree Program offers students a general graduate degree, with courses in a broad array of geographic and temporal topics, including U.S., European, African, Latin American, Transatlantic and Transnational histories. In the flexible Master's degree curriculum, apart from two required courses early in the program, students tailor their course of study among available course offerings to meet individual interests and career objectives. Students choose either Thesis or Non-Thesis programs. Coursework and internships in Archival Administration certification and/or Public History are also available as part of the Master's degree program.

The Doctoral Degree Program in Transatlantic History offers students comparative study of the historical development of peoples on the continents bordering the Atlantic Ocean. This exciting Ph.D. program is part of recent developments within the discipline of history that broaden the study of the past, transcend national histories, and contribute to a new transnational and comparative perspective. Utilizing specific research resources in the UT Arlington Libraries, the Ph.D. program in Transatlantic History (1492 to the present) offers a structured and focused curriculum of both required and elective courses. Prerequisite: B.A. or M.A. degree in history.

Admission Standards

In compliance with HB 1641, the History Department does not assign a specific weight to any one factor being considered, and does not use standardized tests (i.e., the GRE) in the admissions process as the sole criterion for consideration or as the primary criterion to end consideration of an applicant to either the M.A. or Ph.D. program. However, the GRE is required and used as a criterion, without specific weight, in the Department's evaluation of candidates for admission to programs at each of three levels: Unconditional, Provisional, and Probationary Admission.

The Department wishes to be as thorough and fair as possible in evaluating applicants for admission. It recognizes that some applicants may appear to be stronger according to some criteria than according to other criteria. When an applicant does not completely meet the minimum expectations for Unconditional Admission, the Department may consider the applicant for possible Provisional or Probationary Admission. When the applicant is not granted any of the three levels of admission, the decision may be deferred or the application is denied. We do not wish to exclude a qualified and potentially successful candidate who perhaps has approached but not met all the criteria completely. However, we do not wish to admit candidates who, based on the criteria, are deemed to have a poor chance of successfully completing the graduate program.

Admission Standards

Unconditional Admission

The criteria for admission below are used, without specific weights, as positive indicators of potential success in the program. In all but the most exceptional cases, all four criteria for unconditional admission must be met in order to receive unconditional admission.

- Undergraduate GPA of 3.0 (as calculated by Graduate Admissions) in the last 60 credit hours in the course of completing a B.A. degree in History (or an appropriate other field) from an accredited institution (verified by official transcripts from each college or university previously attended sent directly from the registrar of that institution to Graduate Admissions).
- A writing sample, sent to the Graduate Advisor. The Department prefers that applicants send a research paper written in an upper-division history course, but other examples are acceptable. The essay should demonstrate the applicant's writing, research, and analytical skills where possible. There is not a specific page minimum, but papers should not be over 25 pages.
- Three letters of recommendation (from faculty if possible) mailed directly from the recommenders to the History Graduate Advisor.
- A minimum score of 153 on the verbal section and a minimum score of 4 on the analytical writing section of the GRE aptitude test (verified by official GRE scores sent to Graduate Admissions). However, standardized test performance is not the sole criterion for admission or the primary criterion to end consideration for admission.
- UTA graduates who completed their B.A. with a grade point average of 3.3 or higher may be eligible to waive some admissions requirements including the GRE exam. For more information, please contact the M.A. Advisor.

Provisional Admission

An applicant unable to supply all required documentation (e.g. GRE scores have not yet arrived) prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission. Provisionally admitted students must adequately satisfy any incomplete documentation by the end of the semester in which they are admitted. If the applicant fails to do so, the Department may then reclassify the applicant as Probationary, defer the decision, or ask the candidate to leave the program.

Probationary Admission

An applicant whose performance, according to the criteria, approximates but does not meet minimum admission standards may be granted Probationary Admission. Students admitted under this category must earn no grade lower than a B in his/her first 12 semester hours of graduate work taken at UT Arlington.

Deferral or Denial

If two or more of the criteria have not been met satisfactorily, the applicant will not be admitted on any of the three levels above but will receive deferral or denial. A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate. A deferred decision may also be granted when the student does not have adequate preparation in the discipline of history. In the latter case, students will be required to take "leveling" courses (make-up coursework) and earn a B or better before reapplying.

M.A. Degree Requirements

Courses taken toward a master's degree should fit into a unified program aimed at providing students with both a comprehensive background and a depth of understanding in U.S., European, African, Latin American, Transatlantic, or Transnational history. All students are required to take HIST 5339 and the Issues & Interpretations course corresponding to their major field (either HIST 5340 or HIST 5341 APPROACHES TO WORLD HISTORY). Except for those specializing in Public history, all students must take a minimum of six hours in both the Colloquium and the Seminar courses. Master's students are eligible to take courses at the 6000 level as well as 5000 level, subject to any particular course prerequisites. Students may take upper-division under-graduate courses for graduate credit under certain conditions. In this case and others, students must consult with the Graduate Advisor to determine their program.

Competency in one foreign language is required to obtain the Master's degree. This may be demonstrated by one of three methods:

- four semesters of credit in an approved language verifiable in an official transcript
- successful completion of an examination administered by an approved UTA faculty member or by an approved outside source such as a CLEP test
- a passing grade in a graduate-level translation course (MODL 5301) offered by the Department of Modern Languages

The Thesis degree plan is designed for students who wish to research and write a substantial, original work on a historical topic of personal interest. The plan requires completion of 30 credit hours (24 hours of coursework, plus 6 hours of thesis preparation). With the approval of the Graduate Advisor, thesis students may have a minor of as many as six hours of graduate and/or advanced undergraduate courses in a discipline other than history. A maximum of six hours of advanced undergraduate history coursework may be taken for graduate credit. Thesis candidates should consult with the Graduate Advisor to form their thesis faculty committee, which consists of one supervising professor and two other professors.

The Non-Thesis degree plan requires completion of 36 credit hours of coursework. With the approval of the Graduate Advisor, non-thesis students may have a minor of as many as nine hours of graduate and/or advanced undergraduate courses in a discipline other than history. A maximum of nine hours of advanced undergraduate coursework may be taken for graduate credit. In the final semester, the non-thesis students are required to form a nonthesis faculty committee in consultation with the Graduate Advisor, consisting of three members of the graduate faculty. The student must submit to this committee a portfolio containing their seminar paper(s) and a selection of three papers that required an analysis of historiography. After reviewing the portfolio, the committee will devise a new assignment for the student to complete based on its determination of what best fits the needs of the student, keeping in mind that the assignment will constitute less than the equivalent of 3 credit hours of course work. The student will complete the assignment during his/her final semester and turn it into the faculty committee, where it must receive an evaluation of "adequate" or better. The committee will meet the student for a final oral exam, in which the student discusses his/her project.

Non-thesis

Requirements for Non-Thesis option:

HIST 5339	HISTORICAL THEORY AND METHODOLOGY	3
HIST 5340	ISSUES AND INTERPRETATIONS IN U.S. HISTORY	3
or HIST 5341	APPROACHES TO WORLD HISTORY	
Content courses (reading colloquia and research seminars) in U.S., European, African, Latin American, Transatlantic or Transnational history		30
Students may take up to 9 hours in another discipline that has a history-related focus with advisor approval.		
Final Term: Portfolio submitted; portfolio project completed and defended		
Total Hours		36

Thesis

Requirements for Thesis option:

HIST 5339	HISTORICAL THEORY AND METHODOLOGY	3
HIST 5340	ISSUES AND INTERPRETATIONS IN U.S. HISTORY	3
or HIST 5341	APPROACHES TO WORLD HISTORY	
Content courses (reading colloquia and research seminars) in U.S., European, African, Latin American, Transatlantic or Transnational history		18

Students may take up to 6 hours in another discipline that has a history-related focus with advisor approval.

Thesis	6
Total Hours	30

Archival Administration

Requirements for Archival Administration option:

HIST 5339	HISTORICAL THEORY AND METHODOLOGY	3
HIST 5340	ISSUES AND INTERPRETATIONS IN U.S. HISTORY	3
or HIST 5341	APPROACHES TO WORLD HISTORY	
Content courses (reading colloquia and research seminars) in U.S., European, African, Latin American, Transatlantic or Transnational history		18
Students may take up to 9 hours in another discipline that has a history-related focus with advisor approval.		
HIST 5342	PRINCIPLES OF ARCHIVES AND MUSEUMS I	3
HIST 5343	PRINCIPLES OF ARCHIVES AND MUSEUMS II	3
HIST 5644	ARCHIVAL/PUBLIC HISTORY INTERNSHIP	6
Final Term: Portfolio submitted; portfolio project completed and defended		
Total Hours		36

Public History

Students desiring public history as an area of study as part of the Master of Arts in History must take:

Requirements for Public History option:

HIST 5339	HISTORICAL THEORY AND METHODOLOGY	3
HIST 5340	ISSUES AND INTERPRETATIONS IN U.S. HISTORY	3
or HIST 5341	APPROACHES TO WORLD HISTORY	
Content courses (reading colloquia and research seminars) in U.S., European, African, Latin American, Transatlantic or Transnational history		12
HIST 5342	PRINCIPLES OF ARCHIVES AND MUSEUMS I	3
HIST 5343	PRINCIPLES OF ARCHIVES AND MUSEUMS II	3
HIST 5345	INTRODUCTION TO PUBLIC HISTORY	3
HIST 5348	TOPICS IN PUBLIC HISTORY	3
HIST 5644	ARCHIVAL/PUBLIC HISTORY INTERNSHIP	6
Final Term: Portfolio submitted; portfolio project completed and defended		
Total Hours		36

Students electing to complete an internship in archival management will also earn the certificate in archival administration (see Certificate section).

Students interested in either archival administration (see Certificate section) or public history as an area of study are encouraged to consult the Graduate Advisor to discuss a program of work.

Master of Education in Teaching (M.Ed.T.)

History may be chosen as an appropriate academic specialization or teaching field for students enrolled in the Master of Education in Teaching Degree Program. The History Department offers courses that qualify as an academic area or teaching field for elementary and secondary teachers. HIST 5340 and/or HIST 5341 are especially recommended for students in the M.Ed.T. program, and for others who wish to broaden their historical knowledge for classroom teaching. See Master of Education in Teaching Degree Program (p. 390).

Ph.D. Program

Unconditional Admission

The criteria for admission below are used, without specific weight, as positive indicators of potential success in the program.

- A prior academic degree (B.A. or M.A. in History or related fields) from an accredited institution (verified by transcripts from each college or university previously attended sent directly from the registrar of that institution to Graduate Admissions).
- A minimum undergraduate GPA of 3.0 in the course of completing a B.A. degree in History or a related field from an accredited institution (verified by official transcripts from each college or university previously attended sent directly from the registrar of that institution to Graduate Admissions).
- An academic writing sample (e.g. research essay) from a previous course assignment.
- A letter of intent, describing the student's historical interests and how they intersect with the faculty and strengths of the Ph.D. program.

- Three letters of recommendation (from university or college professors) mailed directly from the recommenders to the History Ph.D. Advisor.
- A score of 156 or higher on the verbal section and a score of 5 or higher on the analytical writing section of the GRE aptitude test (verified by official GRE scores sent to Graduate Admissions). However standardized test performance is not the sole criterion for admission or the primary criterion to end consideration for admission.

Provisional Admission

An applicant unable to supply all required documentation (e.g., GRE scores) prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission. Provisionally admitted students must adequately satisfy any incomplete documentation by the end of the semester in which they are admitted. If the applicant fails to do so, the student will be dropped from the program. He or she may seek readmission when provisional requirements are complete.

Probationary Admission

An applicant whose credentials approximate but do not meet minimum admission standards, may be granted Probationary Admission subject to the condition that the candidate must earn no grade lower than a B in his/her first 12 semester hours of graduate work taken at UT Arlington.

Deferral or Denial

If two or more of the criteria have not been met satisfactorily, the applicant will not be admitted on any of the three levels above but will receive deferral or denial. A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate.

Application Deadline

The Ph.D. admissions committee will begin its evaluation of completed applications on January 15 and will continue to meet periodically until the Graduate School deadline of June 15.

Ph.D. Degree Requirements

Students accepted into the PhD program are expected to take a total of 45 semester credit hours in a three-year period: During the first or second year, full-time students take HIST 5339 HISTORICAL THEORY AND METHODOLOGY, and two of the following three courses: HIST 5340 ISSUES AND INTERPRETATIONS IN U.S. HISTORY, HIST 5341 APPROACHES TO WORLD HISTORY, or HIST 5350 HISTORY OF CARTOGRAPHY, as well as three colloquia (reading courses). During their second and third year, students take at least three seminars (research courses), as well as nine additional colloquia or seminars. The colloquia must include HIST 5363 READING COLLOQUIUM IN NATIONAL HISTORIES and HIST 5364 READING COLLOQUIUM IN TRANSNATIONAL HISTORY. The seminars must include HIST 6363 SEMINAR IN NATIONAL HISTORIES and HIST 6364 SEMINAR IN TRANSNATIONAL HISTORY. In their sixth semester, students commonly enroll in HIST 6690 DIRECTED STUDIES FOR PhD STUDENTS to prepare for the Comprehensive Exam.

Required Courses

HIST 5339	HISTORICAL THEORY AND METHODOLOGY	3
HIST 5363	READING COLLOQUIUM IN NATIONAL HISTORIES	3
HIST 5364	READING COLLOQUIUM IN TRANSNATIONAL HISTORY	3
HIST 6363	SEMINAR IN NATIONAL HISTORIES	3
HIST 6364	SEMINAR IN TRANSNATIONAL HISTORY	3

And two of the following:

HIST 5340	ISSUES AND INTERPRETATIONS IN U.S. HISTORY	3
HIST 5341	APPROACHES TO WORLD HISTORY	3
HIST 5350	HISTORY OF CARTOGRAPHY	3

Full-time doctoral students are expected to take nine hours each semester. Part-time students are required to take at least six hours each semester. Each semester a student must consult the Graduate Advisor before he/she can be cleared to register.

Recommended Course of Study for Full-Time Students

First Year

First Semester	Hours	Second Semester	Hours
HIST 5339		3 HIST 5341, 5340, or 5350	3
HIST 5340, 5341, or 5350		3 HIST 5364	3
HIST 5363		3 One colloquium	3
		9	9

Second Year

First Semester	Hours	Second Semester	Hours
HIST 6363		3 HIST 6364	3
One colloquium		3 One colloquium	3

One colloquium or seminar		3	One colloquium or seminar	3
		9		9
Third Year				
First Semester	Hours		Second Semester	Hours
One colloquium		3	HIST 6990	9
One colloquium or seminar		3		
One colloquium or seminar		3		
		9		9
Fourth Year				
First Semester	Hours		Second Semester	Hours
Comprehensive Exam			HIST 6699	6
Dissertation Proposal is due				
HIST 6990		9		
		9		6
Fifth Year				
First Semester	Hours		Second Semester	Hours
HIST 6699		6	HIST 6699	6
		6		6
Sixth Year				
First Semester	Hours		Second Semester	Hours
HIST 6699		6	HIST 7399	3
		6		3
Total Hours: 90				

Diagnostic Evaluation

At the end of the first academic year or after the student has completed the first 18 hours of coursework, each student will have to pass a diagnostic evaluation. History faculty with whom the student has worked will be asked to submit a written evaluation of the student's potential to continue in the program, using a form developed by the Graduate Advisor. The Graduate Studies Committee will review these evaluations and give each student one of four results:

1. approval to continue in the doctoral program;
2. approval to continue with specified remedial work;
3. failure, but with permission for assessment through a second diagnostic evaluation after no more than one year;
4. failure and referral of the student to the MA program, in which the student will be allowed to work towards a terminal MA degree.

Language Requirement

If the student has not already fulfilled the foreign language requirement before entering the Ph.D. program, he/she is expected to use the first three years in the program to satisfy the foreign language requirement. The student is expected to choose a language that will be required to work on the Ph.D. topic of his/her choice. Each student is expected to have a solid reading knowledge in at least one language other than English. The language proficiency can be demonstrated in three different ways:

1. If the student has not already taken four semesters (from an accredited university) in a single foreign language with at least a B before being admitted to the Ph.D. program (within 10 years prior to admission), the student needs to complete four semesters in one foreign language with at least a grade of B prior to taking the Comprehensive Exam.
2. Demonstrating proficiency in a foreign language by taking the CLEP test and scoring 71-80 in German, 68-80 in French, and 67-80 in Spanish.
3. Taking the Reading Comprehension Exercise by an appropriate faculty member in which the student during one semester must read a source of the faculty member's choosing in a language other than English and submit a summary in English, which must include up to three pages of direct translation.

The language requirement must be satisfied before the student can take the Comprehensive Exam. For the student at the dissertation stage, the candidate's doctoral committee may require that the student demonstrates competency in a second foreign language in the same fashion as the first foreign language if that second language is judged essential for the student's dissertation research.

B.A.-Ph.D. Track

Students in the B.A.-Ph.D. track will be awarded an M.A. degree after sitting for their comprehensive examination. Students who pass the oral examination unconditionally will proceed to the dissertation (ABD) phase of the program.

Comprehensive Exam

Comprehensive Exam Committee

If the student is allowed to stay in the program, he/she should, after consultation with the Ph.D. Advisor, establish a five-member Comprehensive Exam Committee. The student must first ask a graduate faculty member whose research closely relates to the student's anticipated dissertation topic to chair the committee. The chair of the committee will then assist the student in assembling the rest of the committee. Four of the five committee members must be from UTA's History Department. The Ph.D. advisor reserves the right to attend the oral portion of the Comprehensive Exam. One member can be from outside the department or even from another university.

Comprehensive Exam

After the student has completed all or most of the 48 hours of coursework and satisfied the language requirement, he/she, upon consultation with the Ph.D. Advisor and the Comprehensive Exam Committee, should begin preparing for the Ph.D. Comprehensive Exam. It is strongly recommended that students wait until they have completed all 48 hours of coursework before they take the Exam. To prepare for the Comprehensive Examination, students may enroll in Directed Study courses, HIST 6190, HIST 6390, HIST 6690, or HIST 6990 during their sixth semester.

Only after the student has the approval of the Ph.D. Advisor, he/she may arrange the date of the exam in consultation with all committee members.

The Comprehensive Examination is meant to test the student's knowledge in at least three broad areas of study and to determine whether the student is prepared to teach in those areas. Students work with their professors to define each of their three exams, and students' earlier coursework should be used to help them prepare for their exam fields. One field must be on a national history or topic (for example, "History of Mexico" or "Gender in Mexico"), one must be on transnational field or topic (for example, "Transatlantic History" or "Transatlantic Migration"), and the third field can be individually constructed by students in consultation with their supervisors—this field may be related to certain careers (for example, Public History), a dissertation topic (for example, History of Cartography), or on a related discipline outside of the History Department (for example, Women's Studies or Sociology).

The student and each exam field supervisor will decide upon a book list of approximately 30-40 books, and choose whether the exam for that field will be a timed essay or a take-home essay. Students may schedule their written exams with no more than one business day between the completion of one exam and the beginning of the next.

- Timed essay exams must be taken on campus, seven hours each exam, from 9:00 a.m. to 4:00 p.m. Students may use a personal computer available in the department to take their examination. They may not use texts or notes during the exam unless expressly permitted by that field's examiner. Chairs should ensure that time-limits for individual parts of the examination are observed.
- Take-home essay exams will begin when a student is given the essay question by the field examiner. The student will hand in an essay responding to the question (~15-20 pages) no earlier than 12 hours and no more than 72 hours later, as agreed upon with the field examiner. The student may consult notes and readings during the writing process.

A member of the department's office staff will email each field's reading list, exam question, and completed written exam to the entire comps committee. After the written exams are completed and the committee has read all three parts, students will take the oral exam (within one week of completion of the third written exam).

Students must take both the written and oral exams or they will automatically fail the comprehensive exam. After the oral exam is over, the committee members will discuss the exam as a whole (written and oral). Then the committee will decide on one of the four options listed below.

1. Passed, approval and recommendation to begin dissertation research under the supervision of the committee chair.
2. Passed, approval to remain in the program upon meeting certain specified additional requirements.
3. Failed, with permission to retake the examination after a certain period as specified by the examining committee.
4. Failed: Recommendation not to continue in the program.

Students are required to pass this examination before they proceed to the dissertation (ABD) phase of the program.

Dissertation Guidelines

By the end of the first semester after the successful completion of the Comprehensive Examination, the student should submit a dissertation proposal to the committee members and the Ph.D. Advisor who assures that it fulfills the expectations of a doctoral project. The dissertation committee ordinarily consists of three of the five professors involved in the Comprehensive Examination of the student. **All three members of the dissertation committee must be members of the UT Arlington History Department. The student together with his/her primary supervisor may, if deemed necessary, invite outside readers to become additional members of the dissertation committee.** Students should work closely with the chair of their committee while researching and writing their dissertation.

During the dissertation phase of the program, students enroll in HIST 6399, HIST 6699 or HIST 6999 and, in exceptional cases with prior approval of the Ph.D. Advisor, in HIST 6190. HIST 6190 may be taken by students following their Comprehensive Exams for a maximum of four semesters, if their dissertation chair concludes that in a given semester they are not engaged **full-time in work** on their dissertation. In the final semester of dissertation work, students must enroll in HIST 7399 to be in compliance with the requirement of the Graduate School. Students should be aware that

the dissertation defense should occur **after NO more than four years from the Comprehensive Examination**. If the student takes more time to finish the doctoral dissertation, he/she has to file for an extension with the Graduate School.

Once the student, the chair of the committee, and the primary readers agree that the dissertation is ready to be defended, the student must schedule the **dissertation defense**. Before he/she **applies for graduation**, the student must receive approval from the Ph.D. Advisor. The student should furnish each committee member with a copy of the dissertation, including notes and bibliography, at least three weeks prior to the defense date. The oral defense of the dissertation generally lasts 1-2 hours. Questioning of the candidate will be supervised by the chair of the student's dissertation committee. Committee members may request that the dissertation be further revised and may withhold final approval of the dissertation until the revisions have been made. If the dissertation has been approved by the committee, the student has to submit the **dissertation** and the **dissertation defense report** to the Graduate School. The deadline dates for each semester are published in the Graduate School Calendar.

Certificate Requirements

These studies involve application of historical knowledge and methodology in non-academic settings such as private businesses or public historical agencies (e.g., archives, museums, preservation societies).

Students desiring a certificate of archival administration or a certificate in public history should consult course requirements (p. 802).

Students already holding a M.A. or Ph.D. degree in history or a related field, as well as students enrolled in graduate programs other than history, who desire only a certificate in archival administration should consult the Graduate Advisor.

History - Undergraduate Programs

Overview

The study of history explores the basic forces that have shaped human affairs and is therefore a means for dealing with present concerns and future problems. An appreciation of our heritage develops a sense of our identity. Historical inquiry also provides the necessary background for the study of other disciplines such as economics, literature, art, language, and the social as well as natural sciences.

Students of history develop important critical skills that are the hallmark of educated people: the ability to reason and analyze; the capacity to investigate problems and synthesize diverse information; facility in expressing ideas or data clearly and precisely. The History Department encourages an open and questioning attitude toward the diversity of human experiences and ideas. An awareness of cultural differences between various groups of people will provide insights concerning the basic issues of world civilization. Students of history are encouraged to read analytically, speak cogently, and write coherently.

Both the curriculum and the methodology of the History Department are multifaceted. The History Department, therefore, requires that students take courses in both chronological and topical areas in United States and world history. The history faculty specializes in such diverse methodologies as quantitative analysis and social and political history, as well as the more traditional biographical and narrative approaches. Thus students are exposed to the many ways of studying the past and the present.

A degree in history prepares students for a variety of careers, including teaching, archival administration, business, journalism and communications, historical preservation, law, and public affairs. More importantly, by providing insight into the causes and effects of change in society, a knowledge of history prepares every individual for life in a complex world.

Admission to Department of History Degree Programs

There are no special requirements that prospective majors in the Department of History must fulfill beyond entering with a minimum 2.25 GPA. In order to graduate students must have a 2.0 GPA overall and in history courses. Students are strongly encouraged to complete the core requirement before enrolling in upper level history courses.

Requirements for a Bachelor of Arts Degree in History

General Core Requirements

General Core Requirements (p. 50)		42
UNIV 1131	STUDENT SUCCESS	1

Required Core for History

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
HIST 2377	FLIGHT CULTURE AND THE HUMAN EXPERIENCE	3
or ENGL 2303	TOPICS IN LITERATURE	
or ENGL 2309	WORLD LITERATURE	
or ENGL 2319	BRITISH LITERATURE	
or ENGL 2329	AMERICAN LITERATURE	
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Mathematics (select 6 hours from general core requirements)		6
Life & Physical Sciences (select 6 hours from general core requirements)		6
Social and Behavioral Sciences (Select one course from the general core requirements)		3
Creative Arts elective (Select one course from the general core requirements)		3
Foundational Component Area elective (Select one additional course from the general core requirements)		3
Electives - nine hours from any level		9
Electives - six hours from any 3000-4000 level courses		6

Major Requirements for History

History Core ¹		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
or HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
or HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
HIST 3300	INTRODUCTION TO HISTORICAL RESEARCH	3

HIST 2311	WESTERN CIVILIZATION TO 1500	3
or HIST 2321	WORLD HISTORY TO 1400	
HIST 2312	WESTERN CIVILIZATION, 1500 TO THE PRESENT	3
or HIST 2322	WORLD HISTORY, 1400 TO THE PRESENT	
History Concentration ²		
Group A - U.S. History (select two courses)		6
Group B - Non U.S. History (select two courses)		6
Group A or B (Select two courses)		6
HIST 4395	HISTORY SEMINAR	3
Modern or Classical Language requirement (must be in same language)		14
Minor (see minor advisor for details)		18
Total Hours		120

It is strongly recommended that history majors complete the core requirements before enrolling in upper level history courses.

Note: Please see undergraduate advisor for up-to-date information on degree totals.

- ¹ It is recommended that History majors complete the core requirement before enrolling in upper level History courses. **Students are strongly advised to complete HIST 3300 as early as possible, preferably in their first semester after having declared a History major.** Students may not enroll in the capstone HIST 4395 course until they have successfully completed HIST 3300 with a "C" or better.
- ² Students with a satisfactory SAT achievement score in U.S. history or other proof of a strong background in U.S. History may wish to enroll in an honors section or opt to substitute six hours of advanced courses in U.S. History.

All history majors will design an appropriate course of upper level study in history in consultation with their advisor .

Bachelor of Arts Degree in History (Pre-Law Option)

General Core Requirements		
General Core Requirements (p. 50)		42
General Core requirements		
UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
HIST 2377	FLIGHT CULTURE AND THE HUMAN EXPERIENCE	3
or ENGL 2303	TOPICS IN LITERATURE	
or ENGL 2309	WORLD LITERATURE	
or ENGL 2319	BRITISH LITERATURE	
or ENGL 2329	AMERICAN LITERATURE	
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Mathematics (select two courses from the general core requirements)		6
Life and Physical Sciences (select two courses from the general core requirements)		6
Creative Arts elective (see general core requirements)		3
Electives - any level		1
Major Requirements for History		
History Core		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
or HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
or HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	
HIST 2313	HISTORY OF ENGLAND	3
or HIST 2311	WESTERN CIVILIZATION TO 1500	
or HIST 2321	WORLD HISTORY TO 1400	
HIST 2314	HISTORY OF ENGLAND	3

or HIST 2312	WESTERN CIVILIZATION, 1500 TO THE PRESENT	
or HIST 2322	WORLD HISTORY, 1400 TO THE PRESENT	
HIST 3300	INTRODUCTION TO HISTORICAL RESEARCH	3
History Concentration		
Legal History - Any four (4) from: HIST 3307, HIST 3311, HIST 3330, HIST 3331, HIST 3391, HIST 4330, HIST 4331, HIST 4333, HIST4359		12
History electives - 3000-4000 level		3
HIST 4395	HISTORY SEMINAR	3
Other pre-law requirements		
Political Science - Any two (2) from: POLS 3330, POLS 3331, POLS 3333, POLS 3334, POLS 3335, POLS 3336, POLS 4331, POLS 4332		6
BLAW 3311	LAW I	3
or BLAW 3312	LAW II	
or BLAW 4310	BASIC INTERNATIONAL LAW FOR BUSINESS	
CRCJ 2334	INTRODUCTION TO THE CRIMINAL JUSTICE SYSTEM	3
ECON 2305	PRINCIPLES OF MACROECONOMICS	3
or ECON 2306	PRINCIPLES OF MICROECONOMICS	
PHIL 1301	FUNDAMENTALS OF REASONING	3
or PHIL 2311	LOGIC	
Sociology or Anthropology (one class 3000-4000 level)		3
Modern or Classical Language requirement (must be same language)		14
Minor (see minor advisor for details)		18
Total hours 120		

Note: It is recommended that History majors complete the core requirement before enrolling in upper level History courses. **Students are strongly advised to complete HIST 3300 as early as possible, preferably in their first semester after having declared a History major.** Students may not enroll in the capstone HIST 4395 course until they have successfully completed HIST 3300 with a "C" or better.

Note: Please see undergraduate advisor for up-to-date information on degree totals.

Teacher Certification

Students interested in Texas Teacher Certification at the elementary level should consult the College of Education section of this catalog for the most recent changes in requirements regarding admission to Teacher Education, completion of University programs in preparation for certification, and eligibility for certification after graduation. Students interested in secondary certification in social studies, including history, should see the History with Social Studies BA secondary certification plan below.

Bachelor of Arts Degree in History with Secondary Level Teacher Certification for Social Studies

General Core Requirements		
General Core Requirements (p. 50)		42
General Core Requirements		
UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
HIST 2377	FLIGHT CULTURE AND THE HUMAN EXPERIENCE	3
or ENGL 2303	TOPICS IN LITERATURE	
or ENGL 2309	WORLD LITERATURE	
or ENGL 2319	BRITISH LITERATURE	
or ENGL 2329	AMERICAN LITERATURE	
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Mathematics (select two courses from the general core requirements)		6
Life and Physical Sciences (select two courses from the general core requirements - geology recommended)		6
Creative Arts elective (see general core requirements)		3
Major Requirements for History		
History Core		

HIST 1301 or HIST 1331	HISTORY OF THE UNITED STATES TO 1865 TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	3
HIST 1302 or HIST 1332	HISTORY OF THE UNITED STATES, 1865 TO PRESENT TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	3
HIST 2321	WORLD HISTORY TO 1400	3
HIST 2322	WORLD HISTORY, 1400 TO THE PRESENT	3
HIST 3300	INTRODUCTION TO HISTORICAL RESEARCH	3
History Concentration		
HIST 3345	TEXAS TO 1850	3
HIST 3346	TEXAS SINCE 1845	3
HIST 4395	HISTORY SEMINAR	3
Group A - U.S. History (select two courses)		6
Group B - Non-U.S. History (select two courses)		6
Social Studies Certification Requirements		
Political Science - three hours from POLS 3306, POLS 3330, POLS 3331, POLS 3333, POLS 4314, POLS 4317, POLS 4318, POLS 4319, POLS 4324, POLS 4326, POLS 4330, POLS 4331, POLS 4332, POLS 4333, POLS 4334, POLS 4335, POLS 4350, or POLS 4354		3
ECON 2305	PRINCIPLES OF MACROECONOMICS	3
ECON 2306	PRINCIPLES OF MICROECONOMICS	3
GEOG 2302	HUMAN GEOGRAPHY	3
GEOG 2303	WORLD REGIONAL GEOGRAPHY	3
Geography elective (one course 3000-4000 level)		3
Modern or Classical Language requirement (must be in same language)		14
Education Courses		
Prior acceptance to the College of Education and Health Professions required		
EDML 4300	PRE-ADOLESCENT/ADOLESCENT GROWTH AND DEVELOPMENT	3
EDUC 4318	POSITIVE CLASSROOM MANAGEMENT	3
LIST 4343	CONTENT AREA READING AND WRITING	3
Field Experience (fall semester only)		
EDUC 3301	TEACHING DIVERSE LEARNERS	3
EDUC 4341	ORGANIZATION AND MANAGEMENT OF INSTRUCTION IN SECONDARY SCHOOLS	3
EDUC 4343	TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL	3
Field Experience (spring semester only - student teaching)		
EDUC 4647	CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	6
Total hours 123		

Note: Please see undergraduate advisor for up-to-date information on degree totals.

Bachelor of Arts Degree in History with Secondary Level Teacher Certification for History

General Core Requirements		
General Core Requirements (p. 50)		42
Required Core for History		
UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
HIST 2377 or ENGL 2303 or ENGL 2309 or ENGL 2319 or ENGL 2329	FLIGHT CULTURE AND THE HUMAN EXPERIENCE TOPICS IN LITERATURE WORLD LITERATURE BRITISH LITERATURE AMERICAN LITERATURE	3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3

Mathematics (select two courses from the general core requirements)	6
Life and Physical Sciences (select two courses from the general core requirements)	6
GEOG 2303 WORLD REGIONAL GEOGRAPHY	3
Creative Arts elective (see general core requirements)	3
Social and Behavioral Sciences (Select one additional course from the general core requirements).	3
Electives - any level	9
Major Requirements for History	
History Core	
HIST 1301 HISTORY OF THE UNITED STATES TO 1865 or HIST 1331 TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	3
HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT or HIST 1332 TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	3
HIST 2321 WORLD HISTORY TO 1400	3
HIST 2322 WORLD HISTORY, 1400 TO THE PRESENT	3
HIST 3300 INTRODUCTION TO HISTORICAL RESEARCH	3
HIST 3345 TEXAS TO 1850	3
HIST 3346 TEXAS SINCE 1845	3
History Concentraion	
Group A - U.S. History (select two courses)	6
Group B - Non-U.S. History (select two courses)	6
HIST 4395 HISTORY SEMINAR	3
Modern or Classical Language requirement (must be in same language)	14
Education Courses	
Prior acceptance to the College of Education and Health Professions required	
EDML 4300 PRE-ADOLESCENT/ADOLESCENT GROWTH AND DEVELOPMENT	3
EDUC 4318 POSITIVE CLASSROOM MANAGEMENT	3
LIST 4343 CONTENT AREA READING AND WRITING	3
Field Experience (fall semester only)	9
EDUC 3301 TEACHING DIVERSE LEARNERS	3
EDUC 4341 ORGANIZATION AND MANAGEMENT OF INSTRUCTION IN SECONDARY SCHOOLS	
EDUC 4343 TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL	
Field Experience (spring semester only - student teaching)	6
EDUC 4647 CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	
Total Hours	120

Note: Please see undergraduate advisor for up-to-date information on degree totals.

Oral Communication Competency

Students majoring in History demonstrate competency in oral communication by successfully completing HIST 3300. The department advisor must certify completion of this requirement.

Computer Use Competency

Students majoring in History demonstrate competency in computer use by successfully completing the sophomore level of a Foreign Language course when taken at UT Arlington. If you satisfy your language requirement otherwise, consult the advisor for ways to satisfy this computer competency requirement. The department advisor must certify completion of this requirement.

Minor in History

Eighteen (18) hours of History courses, at least six (6) of which must be 3000/4000 level classes

Minor in the History of Technology and Science

The Department's Minor in the History of Technology and Science (HoTS) provides students an opportunity to explore how technological development and scientific innovation have shaped societies, cultures, and institutions across time and place. While the Minor is open to all undergraduate students, those pursuing Majors in STEM-related disciplines will find it particularly valuable in advancing understanding of the historical origins and development

of their vocational fields. Students fulfill the Minor requirements by successfully completing eighteen (18) hours of courses chosen from the list below. Although not required, the Department recommends that students include the three core curriculum courses HIST 1331, HIST 1332, and HIST 2377 as part of their program of study. When applicable, HIST 3395 Special Topics courses may be counted toward the Minor.

Recommended Core Courses

HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	3
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	3
HIST 2377	FLIGHT CULTURE AND THE HUMAN EXPERIENCE	3

Upper-level courses

HIST 3301	TECHNOLOGY, CULTURE, & SOCIETY	3
HIST 3303	HISTORY OF VIDEO GAMES	3
HIST 3307	HISTORY OF DISABILITY	3
HIST 3334	HISTORICAL GEOGRAPHY OF NORTH AMERICA	3
HIST 3336	ENVIRONMENTAL HISTORY OF THE UNITED STATES	3
HIST 3395	SELECTED TOPICS IN HISTORY	3
HIST 4307	HISTORY OF MEDICINE	3
HIST 4303	HISTORY OF ENGINEERING (New for Fall 2021)	3
HIST 4309	SOCIAL DARWINISM AND EUGENICS	3
HIST 4319	NATIVE AMERICANS, SCIENCE AND TECHNOLOGY	3
HIST 4327	CYBORGS AND PROSTHETICS	3
HIST 4351	MEDIEVAL TECHNOLOGY AND SCIENTIFIC THOUGHT	3
HIST 4355	THE SCIENTIFIC REVOLUTION	3
GEOG 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
ANTH 3359	STONE TOOLS	3
SOCI 3380	SCIENCE AND TECHNOLOGY IN SOCIETY	3

Minor in Military History

The Minor in Military History provides students an opportunity to undertake focused study of the origins, development, and influence of armed conflict in the human past. Students fulfill the program's requirement by completing courses examining historical conflicts and/or military eras. Special Topics courses devoted to military subjects may be counted toward the Minor.

Two of the following core curriculum courses (six hours)

HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	3
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	3

Any four of the following courses (twelve hours)

HIST 2377	FLIGHT CULTURE AND THE HUMAN EXPERIENCE	3
HIST 3314	CIVIL WAR AND RECONSTRUCTION, 1860-1876	3
HIST 3332	HISTORY OF AMERICAN FOREIGN RELATIONS, 1775-1913	3
HIST 3333	HISTORY OF AMERICAN FOREIGN RELATIONS, 1913- PRESENT	3
HIST 3337	MILITARY HISTORY OF THE UNITED STATES	3
HIST 3357	MILITARY REVOLUTION	3
HIST 3395	SELECTED TOPICS IN HISTORY	3
HIST 4352	MEDIEVAL CRUSADE AND JIHAD	3
HIST 4361	THE GREAT WAR, 1914-1918	3
HIST 4362	WORLD WAR II, 1939-1945	3
HIST 4372	SOVIET UNION IN GLOBAL COLD WAR	3
HIST 4380	AMERICA AND THE VIETNAM WARS	3
GEOG 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3

Geography Minor

Geography is the study of humanity's interaction with the physical environment. Geographic conditions have had significant effects on history as interrelationships between place and human activities have changed over time. The study of geographic spatial relationships has a major role in general

education because it offers both theoretical and practical foundations for understanding contemporary problems, particularly those related to the environment, modernization, and technological progress. Students earn the Geography Minor by completing eighteen (18) hours of courses (at least six of which must be 3000/4000 level classes) from the list below.

Core Courses

GEOG 2302	HUMAN GEOGRAPHY	3
GEOG 2303	WORLD REGIONAL GEOGRAPHY	3

Elective Courses

GEOG 2301	PHYSICAL GEOGRAPHY	3
GEOG 3300	RESEARCH METHODS IN GEOGRAPHY	3
GEOG 3305	MAPS AND MAPMAKERS	3
GEOG 3310	GEOGRAPHY OF THE UNITED STATES AND CANADA	3
GEOG 3315	GEOGRAPHY OF LATIN AMERICA AND THE CARIBBEAN	3
GEOG 3320	GEOGRAPHY OF AFRICA	3
GEOG 3334	HISTORICAL GEOGRAPHY OF NORTH AMERICA	3
GEOG 3336	ENVIRONMENTAL HISTORY OF THE UNITED STATES	3
GEOG 3347	AMERICA'S BORDERS AND BORDERLANDS	3
GEOG 3380	THE SPATIAL HUMANITIES	3
GEOG 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOG 4331	ANALYSIS OF SPATIAL DATA	3
GEOG 4332	GLOBAL POSITIONING SYSTEM	3
GEOG 4333	REMOTE SENSING FUNDAMENTALS	3
GEOG 4334	GEOGRAPHIC DATA ANALYSIS	3
GEOG 4340	GEOGRAPHIES OF FILM	3
GEOG 4341	IMAGES OF THE SOUTHWEST BORDERLANDS	3
GEOG 4350	SPECIAL TOPICS IN MODERN GEOGRAPHY	3

Certificate in the History of Technology and Science

The Department's undergraduate Certificate in the History of Technology and Science (HoTS) provides students an opportunity to explore how technological development and scientific innovation have shaped societies, cultures, and institutions across time and place. While the Certificate is open to all undergraduate students, those pursuing Majors in STEM-related disciplines will find it particularly valuable in advancing understanding of the historical origins and development of their vocational fields. Students fulfill the Minor requirements by successfully completing twelve (12) hours of courses chosen from the list below. Although not required, the Department recommends that students include the three core curriculum courses HIST 1331, HIST 1332, and HIST 2377 as part of their program of study. When applicable, HIST 3395 Special Topics courses may be counted toward the Minor.

Recommended Core Courses

HIST 1331	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I	3
HIST 1332	TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II	3
HIST 2377	FLIGHT CULTURE AND THE HUMAN EXPERIENCE	3

Upper-level courses

HIST 3301	TECHNOLOGY, CULTURE, & SOCIETY	3
HIST 3303	HISTORY OF VIDEO GAMES	3
HIST 3307	HISTORY OF DISABILITY	3
HIST 3334	HISTORICAL GEOGRAPHY OF NORTH AMERICA	3
HIST 3336	ENVIRONMENTAL HISTORY OF THE UNITED STATES	3
HIST 3395	SELECTED TOPICS IN HISTORY	3
HIST 4303	HISTORY OF ENGINEERING	3
HIST 4307	HISTORY OF MEDICINE	3
HIST 4309	SOCIAL DARWINISM AND EUGENICS	3
HIST 4319	NATIVE AMERICANS, SCIENCE AND TECHNOLOGY	3
HIST 4327	CYBORGS AND PROSTHETICS	3
HIST 4351	MEDIEVAL TECHNOLOGY AND SCIENTIFIC THOUGHT	3
HIST 4355	THE SCIENTIFIC REVOLUTION	3

GEOG 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
ANTH 3359	STONE TOOLS	3
SOCI 3380	SCIENCE AND TECHNOLOGY IN SOCIETY	3

Law and Legal Studies

LAW AND LEGAL STUDIES MINOR AT A GLANCE

The minor in Law and Legal Studies offers an interdisciplinary, liberal arts approach to the study of law. This is an academic program, not a professional training program, emphasizing the social, cultural and philosophical foundations and impacts of law and legal systems. It is designed for Pre-Law students and for a broad array of students from across the UTA campus who are interested in the relationship of law to society and culture.

Upon completion of the Law & Legal Studies minor, students will have developed the following knowledge, skills, abilities and attitudes applicable towards the study and practice of law:

- Analyze judicial opinions and apply court precedent to new issues arising in both every day practical transactions and within the court system;
- Effectively and persuasively communicate simple and complex ideas at a level consistent with those attempting to pursue a law degree;
- Demonstrate logical and reasoning abilities consistent with that required by the Law School Admissions Test;
- Clearly define the role of attorneys within the American Judicial System and attorney interactions in society through various legal actions;
- Identify a legal issue, research judicial opinion and effectively identify a likely outcome in a court of law; and
- Communicate professionally and efficiently in writing in any corporate and legal professional setting.

For additional information, visit <https://www.uta.edu/prelaw/>.

Course Descriptions

REQUIRED COURSES (18 Credit Hours of Required Coursework)

Oral Advocacy (take all three)

HIST 3391	MOOT COURT	3
CRCJ 4302	MOCK TRIAL I (Mock Trial I)	3
CRCJ 4303	MOCK TRIAL II (Mock Trial II)	3

Advanced Writing (Choose at least one of these courses)

HIST 3300	INTRODUCTION TO HISTORICAL RESEARCH	3
ENGL 3371	ADVANCED EXPOSITION	3
ENGL 4371	ADVANCED ARGUMENTATION	3
ENGL 4349	ADVANCED CREATIVE WRITING: CREATIVE NON-FICTION	3

Experiential Learning Courses (choose at least one of these courses)

HIST 4391	UNDERGRADUATE CONFERENCE COURSE	3
POLS 4393	PREPARING FOR CAREERS IN POLITICAL SCIENCE	3
DS 4395	DISABILITY STUDIES INTERNSHIP	3
WOMS 4393	WOMEN'S STUDIES INTERNSHIP	3

Elective Courses (choose at least three of the following courses - two of those courses must be 3000- or 4000-level courses)

CRCJ 4301	THE AMERICAN JUDICIAL SYSTEM	3
BLAW 4310	BASIC INTERNATIONAL LAW FOR BUSINESS	3
PHIL 3319	BIOMEDICAL ETHICS	3
HIST 4359	BRITISH CONSTITUTIONAL HISTORY	3
SPAN 4341	BUSINESS AND LEGAL TRANSLATION	3
PHIL 3324	BUSINESS ETHICS	3
BLAW 3311	LAW I	3
BLAW 3312	LAW II	3
COMM 3310	COMMUNICATION LAW & ETHICS	3
HIST 4333	COMPARATIVE CIVIL RIGHTS HISTORY	3
PHIL 1304	CONTEMPORARY MORAL PROBLEMS	3
CRCJ 3371	CRIME SCENE INVESTIGATION	3
CRCJ 2340	CRIMINAL INVESTIGATION	3
ECON 3335	ECONOMICS OF PUBLIC POLICIES	3
BCOM 3360	EFFECTIVE BUSINESS COMMUNICATION	3
POLS 4392	SPECIAL TOPICS IN POLITICAL SCIENCE	3
PHIL 2312	ETHICS	3

Topic must be approved by Law and Legal Studies Advisor

BIOL 4352	FORENSIC BIOLOGY	3
CRCJ 4343	FORENSIC EXPERT TESTIMONY	3
PSYC 3308	FORENSIC PSYCHOLOGY	3
PHIL 1301	FUNDAMENTALS OF REASONING	3
THEA 1303	FUNDAMENTALS OF PRESENTATION	3
GEOL 1330	GLOBAL WARMING	3
HIST 4330	GREAT ANGLO-AMERICAN TRIALS	3
DS 3307	HISTORY OF DISABILITY	3
or HIST 3307	HISTORY OF DISABILITY	
HIST 3325	IMMIGRATION IN UNITED STATES HISTORY	3
SPAN 4344	INTERPRETING IN LEGAL SETTINGS	3
CRCJ 3370	INTRODUCTION TO FORENSICS	3
POLS 3330	JUDICIAL BEHAVIOR AND THE JUDICIAL PROCESS	3
POLS 3333	JURISPRUDENCE	3
CRCJ 3338	JUVENILE JUSTICE SYSTEMS	3
ECON 3305	LAWS AND ECONOMICS	3
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
PHIL 2311	LOGIC	3
BIOL 4355	METHODS IN FORENSIC BIOLOGY	3
GEOL 2406	NATURAL RESOURCES & SUSTAINABILITY	4
PHIL 3320	PHILOSOPHY OF LAW	3
PHIL 3318	THE PHILOSOPHY OF SCIENCE AND TECHNOLOGY	3
SOCI 4331	RACE, ETHNICITY & FAMILY FORMATION	3
BLAW 3314	REAL ESTATE LAW	3
BIOL 3331	SERVICE LEARNING	3
SOCI 3332	SOCIOLOGY OF REPRODUCTION	3
SOCI 3331	SOCIOLOGY OF THE FAMILY	3
POLS 4332	U.S. CONSTITUTIONAL LAW: FUNDAMENTAL RIGHTS	3
POLS 4331	U.S. CONSTITUTIONAL LAW: GOVERNMENT POWER	3
HIST 3331	U.S. LEGAL AND CONSTITUTIONAL HISTORY, 1877 TO PRESENT	3
HIST 3330	U.S. LEGAL AND CONSTITUTIONAL HISTORY, COLONIAL TO 1877	3
SOCI 3356	WOMEN, WORK AND SOCIAL CHANGE	3

Linguistics

Undergraduate Degree

- Bachelor of Arts in Linguistics (p. 834)
- Minor in Linguistics (p. 835)
- Minor in TESOL (p. 835)

Graduate Degrees

- Linguistics, M.A. (<http://catalog.uta.edu/liberalarts/linguistics/graduate/#masterstext/#ma>)
- Teaching English to Speakers of Other Languages, M.A. (<http://catalog.uta.edu/liberalarts/linguistics/graduate/#masterstext/#matesol>)
- Linguistics, B.A. to Ph.D.
- Linguistics, Ph.D. (<http://catalog.uta.edu/liberalarts/linguistics/graduate/#doctoraltext/#phd>)

Certificates

- Undergraduate Certificate in Teaching English to Speakers of Other Languages (TESOL) (p. 835)
- Graduate Certificate in Teaching English to Speakers of Other Languages (TESOL) (p. 832)

COURSES

LING 2301. INTRODUCTION TO THE STUDY OF HUMAN LANGUAGE. 3 Hours.

An introduction to the scientific study of human language, using English as an example. Topics in the course include how sounds are produced, how words and sentences are structured, how and why language changes, how language is acquired by children and adults, how the brain processes language, and how language and society intersect.

LING 2321. CONSTRUCTED LANGUAGES. 3 Hours.

This course is an introduction to constructed languages. Presentation, examination, and analysis of constructed languages, such as Esperanto, Klingon, Dothraki, and many others.

LING 2351. E-LANGUAGES. 3 Hours.

Human languages can be spoken or written, but today much of our language use is also transmitted through electronic devices. This course looks at aspects of language as reflected in the use of the technologies of modern life. Topics may include the language used in texting, chat, gaming, machine tools for recognizing print and speech, and computer translators.

LING 2371. LANGUAGE IN A MULTICULTURAL USA. 3 Hours.

The relationship between language in the U.S. and social power. This course explores how negative attitudes toward some language varieties and languages spoken in the U.S. arise from social factors, rather than features of the languages themselves. In addition to studying language varieties, the course shows how American institutions such as the educational system and the media reinforce these negative attitudes and contribute to discrimination. Offered as AAST 2371 and LING 2371; credit will be granted in only one department.

LING 2391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in Linguistics and TESOL. Consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

LING 3301. TOPICS IN LINGUISTICS. 3 Hours.

Covers issues related to language and linguistics. Topics may include language and film/literature/pop culture, endangered languages, speech synthesis, applied linguistics, or other topics determined by instructor. May be repeated for credit when content changes. No prerequisites.

LING 3309. LINGUISTICS FOR LANGUAGE TEACHERS. 3 Hours.

An examination and analysis of the linguistic structures of languages of the world, with a focus on how this knowledge can inform language teaching. Prerequisite: LING 2371, or may be taken concurrently.

LING 3311. PRINCIPLES OF LINGUISTIC ANALYSIS. 3 Hours.

This course prepares students for the systematic study of human language. Drawing on data from a range of languages, it will examine the sound patterns of language (phonetics and phonology), words and word formation (morphology), sentence structure (syntax), meaning (semantics), and language in context (pragmatics). Emphasis will be placed on methods of linguistic analysis to solve problems in phonology, morphology, syntax, and semantics. Additional topics may include language acquisition; linguistic variation; and/or historical/comparative linguistics.

LING 3330. PHONETICS AND PHONOLOGY. 3 Hours.

Human speech sounds from both physiological and cognitive perspectives; the range of speech sounds in language and the patterning of such sounds within particular language systems. Prerequisite: LING 3311 with a grade of C or better.

LING 3340. SYNTAX I. 3 Hours.

An examination of syntactic investigation, developed primarily through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science. Prerequisite: LING 3311 with a grade of C or better.

LING 3345. CRITICAL REASONING IN LINGUISTICS. 3 Hours.

A survey of formal logical approaches used to describe and explain natural language phenomena. Topics include the fundamentals of logical representation and argumentation, the effective use of inductive and deductive reasoning, and the construction of more complex linguistic arguments. Prerequisites: LING 3311 and either PHIL 1301 or PHIL 3321.

LING 3350. LEXICAL SEMANTICS. 3 Hours.

Examines meaning at the lexical level. Topics may include ways of describing meaning (sense and reference, componential analysis and prototype theory), organizing meaning (the mental lexicon, connotation and euphemism, linguistic relativity), and applying these concepts to analyzing word classes. Prerequisite: LING 3311 with a grade of C or better.

LING 3360. LANGUAGE ACQUISITION. 3 Hours.

An examination of the principles and patterns that underlie the acquisition of language, with a focus on child language acquisition. Prerequisite: LING 3311 or LING 3309, with a grade of C or better.

LING 3366. TOPICS IN RACE/ETHNICITY AND LANGUAGE IN THE U.S.. 3 Hours.

Either an intensive focus within one racial/ethnic group or a comparison between two or more groups. Focus may include language in the U.S. as it pertains to one (or more) of these communities: African Americans, Mexican Americans and Latinos/as, Native Americans, and/or Asian Americans. May be repeated for credit as course content changes.

LING 3370. PSYCHOLOGY OF LANGUAGE. 3 Hours.

An examination of psycholinguistics, or the cognitive processes involved in the acquisition, comprehension, and production of language. The class will focus mainly on language perception and production by native speakers, but will also address issues related to bilingual/second language processing. Prerequisite: LING 3311 with a grade of C or better, or instructor approval.

LING 3391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in Linguistics and TESOL. Consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

LING 4301. PHONOLOGICAL THEORY I. 3 Hours.

An investigation into the principles governing sound systems in human languages. Prerequisite: LING 3330 with a grade of C or better.

LING 4303. SYNTAX II. 3 Hours.

Continuation of LING 3340, which explores further aspects of English syntax; universal and language-particular constraints on syntactic structure and rules. Further development and extensions of the generative approach to syntactic investigation. Prerequisite: LING 3340 with a grade of C or better.

LING 4317. SOCIOLINGUISTICS. 3 Hours.

Language in its social context, including linguistic variation, address and reference, speech levels, bilingualism, code switching, speech acts, conversation analysis, and language and gender. Prerequisite: LING 3311.

LING 4318. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, women's and men's language in other cultures, the acquisition of gendered ways of speaking, and sexism in language. Offered as LING 4318 and WOMS 4318; formerly offered as LING 4392/WOMS 4392; credit will be granted only once. Prerequisite: LING 3311.

LING 4320. HISTORICAL AND COMPARATIVE LINGUISTICS. 3 Hours.

(Also taught as LING 5314). Language development and change; the comparative method and its use in linguistic reconstruction; laws of language change. Prerequisite: LING 3311.

LING 4325. SLA THEORIES AND THE TEACHING OF LANGUAGE. 3 Hours.

An examination of a variety of theories in Second Language Acquisition, with a focus on how this knowledge informs classroom practice for teachers of ESL and other languages. Prerequisite: LING 3309 or LING 3311.

LING 4326. BILINGUALISM. 3 Hours.

An examination of issues related to bilinguals and bilingualism. The areas that will be covered include different types of bilinguals/bilingualism, bilingual education, the cognitive benefits or disadvantages of being a bilingual, and language processing in bilinguals. Prerequisite: LING 3311 with a grade of C or better.

LING 4327. SECOND LANGUAGE ACQUISITION. 3 Hours.

This course focuses on second language acquisition. Topics include the similarities and differences between first and second language acquisition, perception and production in native and non-native languages, and the implications of second language acquisition and processing research for theoretical linguistics and language teaching. Prerequisite: LING 2301, LING 2371, LING 3309, or LING 3311.

LING 4328. PSYCHOLINGUISTICS. 3 Hours.

This course will focus on the cognitive processes involved in the comprehension and production of language. The class will involve opportunities for hands-on experience using psycholinguistics research methods. Prerequisite: LING 3370 or LING 3311 with a grade of C or better, or instructor approval.

LING 4330. CORPUS LINGUISTICS. 3 Hours.

Applications of ways in which computer science and linguistics inform each other. Corpus linguistics focuses on how computers can be used to both obtain the data that we examine and to provide the tools we use for analysis. Includes readings, practical experience with several different software programs, and using sources of online corpora. Prerequisite: LING 3311.

LING 4334. MORPHOLOGY. 3 Hours.

A theoretical and typological investigation into the nature of word-structure and word-formation processes in human languages. Prerequisite: LING 4301 or LING 4303.

LING 4335. LANGUAGE UNIVERSALS & LINGUISTIC TYPOLOGY. 3 Hours.

Consideration of universals in human language, their explanation and description, and language types. Prerequisite: LING 4301.

LING 4345. FORMAL SEMANTICS. 3 Hours.

Examination of empirical facts, fundamental goals, and current techniques of formal semantic theory with a goal toward independent research. Topics include basic tools of current semantic theory and various core topics concerning meaning in English and other languages. Prerequisite: LING 3311 with a grade of C or higher.

LING 4347. PRAGMATICS. 3 Hours.

Analysis of how context and form interact with meaning. Topics may include deixis, reference, speech acts, presupposition, implicature, information structure and intonation. Prerequisite: LING 3311.

LING 4353. TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on teaching techniques of aural comprehension; speaking, reading, and writing skills; testing, language laboratory, and linguistic-cultural differences.

LING 4354. METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Systematic study of how to teach English to second/foreign language learners. Topics covered include the teaching of grammar, vocabulary, reading, writing, pronunciation, speaking, and listening. Prerequisite: LING 2301 or LING 2371; LING 4353.

LING 4360. NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Study of a selected non-Western language, language family or language area based on descriptive linguistic analysis. May be repeated once for credit as the topic varies. Prerequisite: LING 3330 and LING 3340.

LING 4362. LANGUAGE DOCUMENTATION. 3 Hours.

The course discusses fundamental issues that are part of language documenting and description. These include project design, research ethics and intellectual property, researcher and community rights and responsibilities, world language ecology, technology and software, archiving issues, grant-writing fundamentals, and related issues that form best practices for language documentation projects. (Also offered as LING 5362. Credit will be granted only once for LING 4362 or LING 5362.) Prerequisite: LING 3311.

LING 4363. LANGUAGE ENDANGERMENT AND REVITALIZATION. 3 Hours.

This course examines language endangerment and what it means for a language to become endangered, and studies language revitalization. Case studies are presented where communities seek to maintain the number of speakers or revive the language. (Also offered as LING 5363. Credit will be granted only once for LING 4363 or LING 5363.) Prerequisite: LING 3311.

LING 4370. HISTORY OF LINGUISTICS. 3 Hours.

Surveys the recent history of the field of linguistics and familiarizes students with the key figures and theories in recent linguistic history, with special attention to the development and emergence of generative theories of syntax, semantics, and phonology. Prerequisite: LING 3330 and LING 3340 and either LING 4301 or LING 4303.

LING 4389. TOPICS IN LINGUISTICS. 3 Hours.

Current topics in linguistics research. May be repeated if topic changes. Prerequisite: Either LING 3330, LING 3340, or LING 4317, and permission of undergraduate advisor.

LING 4391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Either LING 3311, LING 3330, or LING 3340, and permission of undergraduate advisor.

LING 4393. INTERSHIP IN LINGUISTICS. 3 Hours.

Internship (paid or unpaid) in Linguistics, supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of Linguistics. Students are required to perform and report on designated career-related duties in a professional environment and submit assignments related to the work performed. May be repeated with the approval of the Undergraduate Advisor. May be repeated for credit once, as internship experience changes. Prerequisite: LING 3311 and permission of the instructor.

LING 4394. LING 4394 HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department. Approval of instructor required.

LING 4395. INTERSHIP IN TESOL. 3 Hours.

Internship (paid or unpaid) in TESOL, supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of TESOL and/or the application of this knowledge. Students are required to perform significant teaching-related duties in an ESL/EFL environment and submit assignments related to the work performed. May be repeated with the approval of the Undergraduate Advisor, as internship experience changes. Prerequisite: LING 4353 and LING 4354 (may be concurrently enrolled in 4354).

LING 5100. THESIS WRITING SEMINAR. 1 Hour.

Techniques for researching and writing a thesis/dissertation in linguistics. Required of all students who have elected the Thesis or Thesis Substitute degree option in Linguistics. Prerequisite: completion of at least 9 hours of LING courses.

LING 5110. TESOL PRACTICUM. 1 Hour.

In this class, students will apply the principles presented in the TESOL Certificate coursework through observing and teaching ESOL classes.

Prerequisite: Permission of adviser.

LING 5190. CONFERENCE COURSE IN LINGUISTICS. 1 Hour.

Graded P/F. Prerequisite: Permission of instructor.

LING 5300. LINGUISTIC ANALYSIS. 3 Hours.

This course introduces students to the field of linguistics, the systematic study of human language. Drawing on data from a range of languages, it will examine the sound patterns of language (phonetics and phonology), words and word formation (morphology), sentence structure (syntax), meaning (semantics), and language in context (pragmatics). Emphasis will be placed on methods of linguistic analysis to solve problems in phonology, morphology, syntax, and semantics. May be repeated for credit as the focus of the course or instructor changes. May not be used to fulfill Ph.D. degree requirements in linguistics.

LING 5301. INTRO TO COMMUNICATIVE LANGUAGE TEACHING. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on techniques of teaching aural comprehension; speaking, reading, and writing skills; attention to testing, language laboratory, and linguistic-cultural differences. Course includes a practical teaching requirement.

LING 5302. METHODS IN TEACHING READING AND WRITING. 3 Hours.

This course is an in-depth study of how to design ESL/EFL reading and writing classes and how to create instruction and assessment materials for these classes based on sound pedagogical principles.

LING 5303. ERROR ANALYSIS IN THE TEACHING OF ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

A study of error analysis as a means to diagnose particular patterns in language production of ESL/EFL students. Emphasis on current research and application to specific problems and contexts. Prerequisite: LING 5300 or LING 5309.

LING 5304. PEDAGOGICAL GRAMMAR OF ENGLISH. 3 Hours.

This course is a study of English sentence structure. Topics include article use, phrase structure, verb tense, agreement, pronouns, question forms, and embedded clauses. The course will focus on the second-language acquisition and processing of these structures as well as on ways that they can be addressed during ES/FL grammar instruction. Prerequisite: LING 5300 or LING 5309; LING 5301 or LING 5302.

LING 5305. SECOND LANGUAGE ACQUISITION. 3 Hours.

This course is the study of the processes of first and second language acquisition, their similarities and differences, language disorders, language perception and production, and implications of language acquisition research for linguistic theory and language teaching. May be repeated for credit as topic changes. Prerequisite: LING 5300 or permission of instructor.

LING 5306. TESOL CURRICULUM DESIGN. 3 Hours.

Systematic presentation of elements in development, management and evaluation of TESOL programs. Attention to needs analysis, syllabus design, materials selection and adaptation, teaching and evaluation in language curriculum design. Prerequisite: LING 5301.

LING 5307. PEDAGOGICAL PHONOLOGY OF ENGLISH. 3 Hours.

A study of the sound system of English. Topics include segmental phonemes, stress, length, intonation and variation at the lexical and utterance levels. Application to teaching English as a second or foreign language. Problems of description; means of application; adaptation to current pedagogical methods. Prerequisite: LING 5300; LING 5301 or LING 5302.

LING 5308. LANGUAGE ASSESSMENT. 3 Hours.

This is an introductory testing course. Topics will include different types of language assessment, issues related to language testing, measurement and evaluation of achievement and proficiency in a second language, and developing language tests of various language skills. Prerequisite: LING 5301, LING 5302, or permission of the instructor.

LING 5309. LINGUISTICS FOR LANGUAGE PROFESSIONALS. 3 Hours.

This course is an introduction to Applied Linguistics. It includes examination and analysis of the linguistic structures of languages of the world, with a focus on how this knowledge can inform language teaching.

LING 5310. SOCIOLINGUISTICS. 3 Hours.

The study of language and social context (made up of society and individuals). Content includes language as a social phenomenon, theoretical perspectives on relationship between language, society and individuals, basic concepts in sociolinguistics; and may include topics in macro- and micro-sociolinguistics such as multilingualism, language planning and standardization, linguistic variation, code switching, conversational analysis, and language and gender. May be repeated for credit as the topic changes.

LING 5311. SOCIOLINGUISTICS OF SOCIETY. 3 Hours.

The study of macro-sociolinguistics, including topics such as multilingualism, language standardization and planning, literacy, language dominance, maintenance and death, language and identity, diglossia, and pidgins and creoles. May be repeated for credit as the topic changes. Prerequisite: LING 5310.

LING 5312. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, men's and women's languages in other cultures, the acquisition of gendered ways of speaking, and sexism in language. May be repeated for credit as the topic changes. Prerequisite: LING 5310.

LING 5313. TOPICS IN SOCIOLINGUISTICS. 3 Hours.

Selected topics relating the scientific methodologies of linguistics to larger concerns of society and culture including cognition, motivation, description and analysis. May be repeated for credit when topic changes. Prerequisite: LING 5310.

LING 5314. HISTORICAL AND COMPARATIVE LINGUISTICS. 3 Hours.

The study of language development and change; comparative method and its use in linguistic reconstruction; laws of language change. May be repeated for credit as the topic changes. Prerequisite: LING 3330 or permission of instructor.

LING 5315. READINGS AND RESEARCH IN PEDAGOGY AND PRACTICE. 3 Hours.

This course focuses on selected readings for classroom practitioners, with a focus on work that connects current theory with classroom practice. Prerequisite: LING 5301 or LING 5302.

LING 5319. PHONETICS AND PHONOLOGY. 3 Hours.

Human speech sounds from both physiological and cognitive perspectives; the range of speech sounds in language and the patterning of such sounds within particular language systems. This course does not fulfill core PHD requirements for phonology.

LING 5320. PHONOLOGICAL THEORY. 3 Hours.

Ling 5320 is a foundations course for the study of the principles that govern sound systems in human languages. Students will work with sound patterns from a variety of languages in order to understand the fundamental aspects of phonological phenomena, and course assignments will require application of the descriptive and theoretical tools in working with sound pattern data. Lectures will further develop this description, analysis, and argumentation for phonological data. May be repeated for credit as the topic changes. Prerequisite: Permission of Advisor.

LING 5321. ADVANCED PHONOLOGICAL THEORY. 3 Hours.

A continuation of LING 5320. Topics include autosegmental analysis, lexical phonology, metrical phonology and phonological feature geometry. May be repeated for credit when topic changes. Prerequisite: LING 5320.

LING 5322. LABORATORY PHONOLOGY. 3 Hours.

An investigation into the physical properties of human speech. Students will gain hands-on experience with computer-assisted speech analysis. No prior computer experience is assumed. Prerequisite: LING 5320.

LING 5325. SLA AND CLASSROOM PRACTICE. 3 Hours.

An examination of a variety of theories in Second Language Acquisition, with a focus on how this knowledge informs classroom practice for teachers of ESL and other languages.

LING 5326. BILINGUALISM. 3 Hours.

This course introduces students to issues related to bilinguals and bilingualism. The areas that will be covered include different types of bilinguals/ bilingualism, bilingual education, the cognitive benefits (or disadvantages) of being a bilingual, and language processing in bilinguals. May be repeated for credit as the topic changes. Prerequisite: LING 5300.

LING 5328. PSYCHOLINGUISTICS: SENTENCE PROCESSING. 3 Hours.

This course examines the cognitive processes involved in sentence comprehension. Students will learn current theories and research methods related to this area of psycholinguistics through in-depth discussion of the primary literature and by developing research projects based on this literature. May be repeated for credit as the specific topics dealt with in the course change. Prerequisite: LING 5300.

LING 5329. SYNTAX. 3 Hours.

An examination of syntactic investigation, developed primarily through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science. This course does not fulfill core PHD requirements for syntax.

LING 5330. FORMAL SYNTAX. 3 Hours.

Introduction to syntactic theory. Major topics include phrase structure, subcategorization, lexical entries, and passive and infinitival constructions. May be repeated for credit as the topic changes. Prerequisite: Permission of advisor.

LING 5331. ADVANCED FORMAL SYNTAX. 3 Hours.

Continuation of Ling 5330. Topics may include the syntax of unbounded dependencies, constraints on extraction, unbounded versus successive cyclic movement, and the licensing of gaps. May be repeated for credit as the topics change. Prerequisite: LING 5330.

LING 5334. MORPHOLOGY. 3 Hours.

A theoretical and typological investigation into the nature of word-structure and word-formation processes in human languages. May be repeated for credit as the topics of focus change. Prerequisite: LING 5320 or LING 5330.

LING 5335. LANGUAGE UNIVERSALS AND LINGUISTIC TYPOLOGY. 3 Hours.

Consideration of universals in human language, their explanation and description, and language types. May be repeated for credit as the topics of focus change. Prerequisite: LING 5330.

LING 5338. PSYCHOLINGUISTICS: VISUAL WORD RECOGNITION. 3 Hours.

This course examines the cognitive processes involved in visual word recognition. Students will learn current theories and research methods related to this area of psycholinguistics through in-depth discussion of the primary literature and by developing research projects based on this literature. May be repeated for credit as the specific topics dealt with in the course change. Prerequisite: LING 5300.

LING 5345. SEMANTICS. 3 Hours.

Graduate-level introduction to formal semantics, designed to prepare students for research with basic tools in Model-theoretic semantics and compositionality, including core topics such as negation, quantification, mood and modality, noun phrases, indefinites, definiteness, tense, aspect, and events, from a semantic and cross-linguistic perspective. May be repeated for credit as the topics of focus change. Prerequisite: LING 3340 or permission of instructor.

LING 5346. TOPICS IN APPLIED LINGUISTICS. 3 Hours.

This is a special topics course in Applied Linguistics. Topics may change semester-by-semester, based on instructor and other factors; may be repeated for credit as the topics of focus change.

LING 5347. PRAGMATICS. 3 Hours.

Analysis of how context and form interact with meaning. Topics may include deixis, reference, speech acts, presupposition, implicature, information structure and intonation. May be repeated for credit as the topics of focus change.

LING 5350. TEXT ANALYSIS. 3 Hours.

Methods of charting and analyzing texts to reveal the systematic contributions of pragmatic choices to their organization and meaning. May be repeated for credit as the topics of focus change. Prerequisite: LING 3340.

LING 5353. TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on techniques related to Communicative Language Teaching.

LING 5354. METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Systematic study of how to teach English to second/foreign language learners. Topics covered include the teaching of grammar, vocabulary, reading, writing, pronunciation, speaking, and listening.

LING 5360. NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Study of a selected non-Western language, language family or language area based on descriptive linguistic analysis. May be repeated for credit as the topic varies. Prerequisite: LING 3330 and LING 3340.

LING 5361. READINGS IN NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Readings in the linguistic structures of non-Western languages. Enrollment in the course is not sufficient to fulfill the non-Western language requirement. May be repeated for credit as the readings and topics of focus change.

LING 5362. LANGUAGE DOCUMENTATION. 3 Hours.

The course discusses fundamental issues that are part of language documenting and description. These include project design, research ethics and intellectual property, researcher and community rights and responsibilities, world language ecology, technology and software, archiving issues, grant-writing fundamentals, and related issues that form best practices for language documentation projects. May be repeated for credit as the topics of focus change. Prerequisite: LING 5300.

LING 5363. LANGUAGE ENDANGERMENT AND REVITALIZATION. 3 Hours.

This course examines language endangerment and what it means for a language to become endangered, and studies language revitalization. Case studies are presented where communities seek to maintain the number of speakers or revive the language. May be repeated for credit as the topics of focus change. Prerequisite: LING 5300.

LING 5370. HISTORY OF LINGUISTICS. 3 Hours.

Surveys the recent history of the field of linguistics and familiarizes students with the key figures and theories in recent linguistic history, with special attention to the development and emergence of key generative theories such as those of syntax, semantics, and phonology. May be repeated for credit as the topics of focus change. Prerequisite: LING 5320 or LING 5330.

LING 5371. SURVEY OF THEORIES IN APPLIED LINGUISTICS. 3 Hours.

A comparison and contrast of various linguistic theories, with consideration of their implications for application to real-world problems involving language. May be repeated for credit as the topics of focus change. Prerequisite: LING 5305.

LING 5372. READINGS IN LINGUISTICS. 3 Hours.

Readings in linguistics, tailored to student's areas of interest and instructor's expertise. May be repeated for credit when topic changes. Prerequisite: LING 5330.

LING 5380. FIELD METHODS. 3 Hours.

The principles, techniques and practical aspects of linguistic field research. The course includes extensive practice in eliciting data (phonological, morpho-syntactic, textual and lexical) directly from a native speaker, as well as in managing, analyzing and describing the data obtained. Course may be repeated for credit when topic changes. Prerequisite: LING 5300. Permission of the Graduate Advisor.

LING 5381. CORPUS LINGUISTICS. 3 Hours.

Applications of ways in which computer science and linguistics inform each other. Corpus linguistics focuses on how computers can be used to both obtain the data that we examine and to provide the tools we use for analysis. Includes readings, practical experience with several different software programs, and using sources of online corpora. May be repeated for credit as the topics of focus change.

LING 5391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.**LING 5392. THESIS SUBSTITUTE. 3 Hours.****LING 5393. TESOL TEACHING AND OBSERVATION. 3 Hours.**

In this course, students will work regularly and consistently with an organization where English is taught. Students will observe, teach, guide, and participate in activities in order to demonstrate ability to apply the principles of Communicative Language Teaching in an English Language Learning environment. Prerequisite: LING 5302; LING 5305.

LING 5395. GRADUATE INTERNSHIP. 3 Hours.

Employment (paid or unpaid) supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of linguistics and/or TESOL. Students are required to submit an approved academic project related to the work performed. May be repeated with approval of Graduate Advisor.

LING 5398. THESIS. 3 Hours.**LING 5691. CONFERENCE COURSE IN LINGUISTICS. 6 Hours.**

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

LING 5698. THESIS. 6 Hours.**LING 5998. THESIS. 9 Hours.****LING 6100. LINGUISTICS GRADUATE PROGRAM SUCCESS. 1 Hour.**

This course introduces PhD students in Linguistics to the expectations of graduate school, including being a good TA, recognizing the importance of research and revision, and general academic success skills to aid the transition into a graduate program.

LING 6191. RESEARCH IN LINGUISTICS. 1 Hour.

Prerequisite: permission of instructor.

LING 6199. DISSERTATION. 1 Hour.**LING 6291. RESEARCH IN LINGUISTICS. 2 Hours.**

Prerequisite: permission of instructor.

LING 6300. PROFESSIONAL WRITING SEMINAR. 3 Hours.

Workshop in producing the writing genres expected of professional academic linguists. May be repeated for credit as the topics of focus change. Prerequisite: Completion of at least 9 hours of graduate LING courses.

LING 6360. DISCOURSE THEORY SEMINAR. 3 Hours.

Seminar on the theory of discourse in linguistics. May be repeated for credit as the instructor and topics of focus change. Prerequisite: permission of instructor.

LING 6380. FIELD METHODS SEMINAR. 3 Hours.

Second part of field methods sequence. May be repeated for credit as the student's topic of focus changes. Prerequisite: LING 5380.

LING 6381. STATISTICS FOR LINGUISTS. 3 Hours.

In this course, students learn the fundamentals of quantitative research in linguistics and language-related fields. Students learn how to develop viable research hypotheses, how to collect and manage the data necessary to evaluate these hypotheses, and how to analyze data using standard statistical tests. May be repeated for credit as the topics of focus change.

LING 6390. LINGUISTICS SEMINAR. 3 Hours.

Seminar in linguistics. Course may be repeated for credit when topic or instructor changes. Prerequisite: permission of instructor.

LING 6391. RESEARCH IN LINGUISTICS. 3 Hours.

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6392. SEMINAR IN PHONETICS AND PHONOLOGY. 3 Hours.

In-depth investigation of research into a specialized area of phonetics and/or phonology. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5321 or permission of the instructor.

LING 6393. SEMINAR IN SYNTAX. 3 Hours.

In-depth investigation of research into a specialized area of syntax. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5331 or permission of instructor.

LING 6394. SEMINAR IN SEMANTICS AND PRAGMATICS. 3 Hours.

In-depth investigation of research into a specialized area of meaning: semantics and/or pragmatics. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5345 or LING 5347 or permission of instructor.

LING 6395. SEMINAR IN SECOND LANGUAGE ACQUISITION. 3 Hours.

In-depth investigation of research into a specialized area of second language acquisition. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5305 or permission of the instructor.

LING 6399. DISSERTATION. 3 Hours.

LING 6491. RESEARCH IN LINGUISTICS. 4 Hours.

Prerequisite: permission of instructor.

LING 6591. RESEARCH IN LINGUISTICS. 5 Hours.

LING 6691. RESEARCH IN LINGUISTICS. 6 Hours.

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6699. DISSERTATION. 6 Hours.

LING 6991. RESEARCH IN LINGUISTICS. 9 Hours.

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6999. DISSERTATION. 9 Hours.

LING 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Linguistics - Graduate Programs

Objectives

The Department of Linguistics and TESOL at the University of Texas at Arlington provides coursework in both linguistics and in TESOL. Department programs seek to deepen understanding of language by examining how it is represented, used, and processed. We work toward this goal through courses in theoretical linguistics, focusing on phonology, syntax, semantics, pragmatics, and psycholinguistics as well as the interfaces among these domains of inquiry. In order to explore questions in these areas, we provide training in multiple methods, including field methods, corpus-based methods, and experimental research methods, to collect and analyze data from a wide range of the world's languages, and from both native and non-native speakers of these languages. This approach to the scientific study of language is the primary focus of our PhD, MA, and BA degrees in Linguistics.

In addition, the department has a separate track in the Teaching of English to Speakers of Other Languages (TESOL), offered through our MA in TESOL and TESOL certificates. This program trains professionals who will teach English to second and foreign-language learners. Our TESOL students build a strong foundation in teaching methodologies, language testing, second language acquisition, and other applied areas of linguistics.

For further information on the graduate degree programs in Linguistics or in TESOL, consult the program's Web site at <http://www.uta.edu/linguistics/current-students/degrees/index.php> (<http://www.uta.edu/linguistics/current-students/degrees/>); or contact the Graduate Advisor for admissions: <http://www.uta.edu/linguistics/current-students/advising/index.php> (<http://www.uta.edu/linguistics/current-students/advising/>).

Admission Requirements for MA Programs in Linguistics or in TESOL

In evaluating candidates for admissions to its graduate degree programs, the Linguistics & TESOL faculty have adopted a comprehensive approach that is sensitive to the diversity of backgrounds of its applicants. To this end, the following constellation of quantitative and qualitative factors has been established to make explicit the range of criteria upon which admissions decisions will be based. These factors are then applied to the Admission Metrics established for each degree program.

Admission Factors

Admission decisions into a degree program in the Department of Linguistics & TESOL are made on the basis of two types of factors, quantitative and qualitative.

1. Quantitative Factors
 - a. Grade Point Average (GPA). For M.A. program applicants, undergraduate GPA is determined by the U.T. Arlington Graduate School.
 - b. Graduate Record Examination (GRE) Scores. All applicants are required to submit GRE scores. There are no exceptions. The Department of Linguistics & TESOL evaluates each applicant's sub-scores separately: verbal, quantitative, and analytical.
 - c. TOEFL Scores (international applications only) Applicants for whom English is not their native language and who have not been granted either an undergraduate or graduate degree by an English-medium institution must also present a Test of English as a Foreign Language (TOEFL) or IELTS equivalent score. There are no exceptions.
2. Qualitative Factors
 - a. Letters of Recommendation. Each applicant must present three (3) letters of recommendation that unequivocally indicate that the applicant is prepared for and capable of successful graduate study in linguistics or TESOL at U.T. Arlington. The letters should further indicate that the applicant is capable of completing the appropriate degree program.
 - b. Statement of intent for academic study in our department. Each applicant must write a statement that explains their plan of study and specialization in our department. The statement will be evaluated on the degree to which it is clear, reasonable, and consistent with the research and teaching agenda of the current faculty in Linguistics & TESOL at U.T. Arlington. The statement should also convey a level of commitment and maturity commensurate with the applicant's desired degree goals.
 - c. Undergraduate Preparation. Applicants to the M.A. in TESOL program should have passed the following three courses or reasonable equivalents as determined by the TESOL graduate advisor (U.T. Arlington equivalents are noted in parentheses):
 - i. English composition (ENGL 1302)
 - ii. A course on English-language literature (ENGL 2319, ENGL 2329)
 - iii. The equivalent of a fourth-semester course in a foreign language (SPAN 2314, FREN 2314, etc.). Students whose undergraduate education was delivered in a language other than English are exempt from this requirement.
 - d. Writing Sample (required for PhD applicants, optional for MA programs): Applicants must submit an academic writing sample (research paper) of 20 pages or less. The paper must be in an area of language, teaching, or linguistic study, and demonstrate a strong prose style, a solid handle on argumentation, and the ability to do academic research in linguistics or a closely related field.

Admission Metrics

In formulating a recommendation for admission, the graduate advisors will apply the following admission metrics to each applicant's admission dossier.

1. M.A. in Linguistics
 - a. Unconditional Admission. Typically, applicants for the M.A. in Linguistics will be offered unconditional admission if they meet either of the following sets of criteria:

- i. The applicant presents an undergraduate GPA of at least 3.0, a GRE Verbal score of at least 150 on, a GRE Quantitative score of at least 146, a GRE Analytical score of at least 4.5, and a full set of acceptable Qualitative Factors. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also present a Test of English as a Foreign Language (TOEFL) score of at least 100 iBt or IELTS equivalent score.
 - ii. The applicant presents an undergraduate GPA of at least 3.5, a GRE Verbal score of at least 146, a GRE 144, a GRE Analytical score of at least 4.0, and a full set of acceptable Qualitative Factors. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also present a Test of English as a Foreign Language (TOEFL) score of at least 100 iBt or IELTS equivalent score.
 - b. Probationary Admission. Applicants for the M.A. in Linguistics typically present a complete application that has one of the following:
 - i. includes a GRE Verbal score of less than 146; or
 - ii. includes a GRE Quantitative score of less than 144; or
 - iii. includes a GRE Analytical score of less than 4.0; or
 - iv. lacks the undergraduate preparation specified above, but who otherwise meet a majority of the remaining admission criteria (including an undergraduate GPA of at least 3.0), will be eligible for probationary admission. Students on probation must:
 - complete any undergraduate courses necessary for unconditional admission during their first two semesters of study; and
 - achieve a GPA of at least 3.3 in the first 9 graduate-level credit hours (in LING courses) as an M.A. Linguistics student.
2. M.A. in TESOL
- a. Unconditional Admission. Typically, applicants for the M.A. in TESOL will be offered unconditional admission if they meet either of the following two sets of criteria:
 - i. The applicant presents an undergraduate GPA of at least 3.0, a GRE Verbal 156, a GRE Quantitative score of at least 141, a GRE Analytical score of at least 4.5, and a full set of Qualitative Factors. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also present a Test of English as a Foreign Language (TOEFL) score of at least 100 iBt or IELTS equivalent score.
 - ii. The applicant presents an undergraduate GPA of at least 3.5, a GRE Verbal score of at least 153, a GRE Quantitative score of at least 140, a GRE Analytical score of at least 4.0, and a full set of Qualitative Factors. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by a English-medium institution must also present a Test of English as a Foreign Language (TOEFL) score of at least 100 iBt or IELTS equivalent score.
 - b. Probationary Admission. Applicants for the M.A. in TESOL typically present a complete application that has one of the following:
 - i. includes a GRE Verbal score of less than 153; or
 - ii. includes a GRE Quantitative score of less than 140; or
 - iii. includes a GRE Analytical score of less than 4.0; or
 - iv. lacks the undergraduate preparation specified above but who otherwise meet a majority of the remaining admission criteria (including an undergraduate GPA of at least 3.0), will be eligible for probationary admission. Students on probation must:
 - complete any undergraduate courses necessary for unconditional admission during their first two semesters of study; and
 - achieve a GPA of at least 3.3 in the first 9 graduate-level courses taken as an M.A. TESOL student.

Master's Degree Requirements

LINGUISTICS

Graduate programs in linguistics are primarily designed for those with a background in one or more foreign languages and/or a background in the linguistic aspects of the English language. A graduate career in linguistics may also be appropriate to those with undergraduate study in anthropology, psychology, computer science, philosophy, or religion. Applicants without formal training in linguistics are invited to apply, provided that they are prepared to meet the department's requirements for leveling courses.

Requirements for master's and doctoral degrees are given in the Advanced Degrees and Requirements section of this catalog. In addition, the following apply to those pursuing a graduate degree in linguistics:

All students pursuing a graduate degree in linguistics must meet the degree prerequisites and must take the core courses appropriate to their degree as published on the department's Web site, <http://www.uta.edu/linguistics/current-students/degrees/index.php> (<http://www.uta.edu/linguistics/current-students/degrees/>).

Linguistics Degree Plan

M.A. Non-Thesis Degree Plan: 36 hours of graduate-level coursework plus comprehensive examination on the coursework.

Core Courses

LING 5320	PHONOLOGICAL THEORY
LING 5330	FORMAL SYNTAX
LING 5345	SEMANTICS
LING 5347	PRAGMATICS

Elective Courses ¹	24
Total Hours	36

¹ Students with no prior study in linguistics (as indicated by an official transcript) will be encouraged to complete the following three leveling courses before enrolling in more advanced courses:

- LING 5300: Linguistic Analysis
- LING 3330: Phonetics and Phonology
- LING 3340: Grammar and Morphology

These leveling classes will be counted towards the 24 credit elective-course requirement. Please consult your Linguistics MA advisor before selecting electives.

TESOL Degree Plan

The graduate degree in TESOL is primarily designed for those intending to teach English to adult learners, either in US colleges, in conjunction with community groups, or by working abroad.

M.A. Non-Thesis Degree Plan: 36 hours of graduate-level coursework plus comprehensive examination on the coursework.

Core Linguistics Courses	6
LING 5300 or LING 5309	LINGUISTIC ANALYSIS LINGUISTICS FOR LANGUAGE PROFESSIONALS
LING 5305	SECOND LANGUAGE ACQUISITION
Core TESOL Courses	18
LING 5301	INTRO TO COMMUNICATIVE LANGUAGE TEACHING
LING 5302	METHODS IN TEACHING READING AND WRITING
LING 5304	PEDAGOGICAL GRAMMAR OF ENGLISH
LING 5307	PEDAGOGICAL PHONOLOGY OF ENGLISH
LING 5308	LANGUAGE ASSESSMENT
LING 5393	TESOL TEACHING AND OBSERVATION
Electives ²	12
Total Hours	36

² Up to 2 elective courses (6 credits) may be taken from another department. Please consult your TESOL MA advisor before selecting electives.

All M.A. TESOL students must demonstrate knowledge of a foreign language prior to unconditional admission to the degree program. Those without such background may pursue study of a foreign language at U.T. Arlington concurrent with probationary enrollment in the M.A. TESOL program.

For additional information on prerequisites or degree requirements, consult the TESOL graduate advisor.

Admission Requirements for the PhD in Linguistics

In evaluating candidates for admissions to its graduate degree programs, the Linguistics & TESOL faculty have adopted a comprehensive approach that is sensitive to the diversity of backgrounds of its applicants. To this end, the following constellation of quantitative and qualitative factors has been established to make explicit the range of criteria upon which admissions decisions will be based. These factors are then applied to the Admission Metrics established for each degree program.

Admission Factors

Admission decisions into a degree program in the Department of Linguistics & TESOL are made on the basis of two types of factors, quantitative and qualitative. PhD applicants must include an academic writing sample.

1. Quantitative Factors
 - a. Grade Point Average (GPA)
 - i. For Ph.D. program applicants, GPA is based on all graduate work completed and recorded at the time the applicant submits an application for admission.
 - ii. For BA-to-PhD applicants, GPA is on the undergraduate GPA as determined by the UT Arlington Graduate School.
 - b. Graduate Record Examination (GRE) Scores. All applicants are required to submit GRE scores. There are no exceptions. The Department of Linguistics & TESOL evaluates each applicant's sub-scores separately: verbal, quantitative, and analytical.
 - c. TOEFL Scores (international applications only) Applicants for whom English is not their native language must also present a Test of English as a Foreign Language (TOEFL) or IELTS equivalent score. There are no exceptions.
2. Qualitative Factors

- a. Letters of Recommendation. Each applicant must present three (3) letters of recommendation that unequivocally indicate that the applicant is prepared for and capable of successful graduate study in linguistics or TESOL at UT Arlington. The letters should further indicate that the applicant is capable of completing the appropriate degree program.
- b. Statement of intent for academic study in our department. Each applicant must write a statement that explains their plan of study and specialization in our department. The statement will be evaluated on the degree to which it is clear, reasonable, and consistent with the research and teaching agenda of the current faculty in Linguistics & TESOL at UT Arlington. Prospective applicants should consider the departmental website and faculty research and teaching areas as they evaluate whether they would be able to accomplish their plan of study in our department, especially if they are applying to the doctoral program. Possible areas of specialization are those outlined at <http://www.uta.edu/linguistics/current-students/degrees/phd-linguistics/index.php> (<http://www.uta.edu/linguistics/current-students/degrees/phd-linguistics/>). The statement should also convey a level of commitment and maturity commensurate with the applicant's desired degree goals.
- c. Applicants to the Ph.D. in Linguistics programs should have passed the following three courses or reasonable equivalents as determined by the graduate advisor (UT Arlington equivalents are noted as in parentheses):
 - i. English composition (ENGL 1302)
 - ii. College-level mathematics (MATH 1302)
 - iii. A laboratory science (any 1000-level course in BIOL, CHEM, GEOL or PHYS; LING 5322 may also be used to fulfill this requirement)
- d. Applicants to the Ph.D. and the BA-to-Ph.D in Linguistics programs should present all of the following: evidence of research activity during undergraduate studies; an undergraduate transcript showing coursework which demonstrates that the applicant has passed with a B or higher the following three courses or reasonable equivalents as determined by the graduate advisor (UT Arlington equivalents are noted as in parentheses):
 - i. Introduction to linguistics (LING 3311/LING 5300)
 - ii. Phonetics and phonology (LING 3330)
 - iii. Morphology and syntax (LING 3340)
- e. Previous Graduate Work. Ph.D. applicants must present at least 30 semester credit hours of previous graduate-level coursework in any field (not necessarily linguistics) and must meet the linguistics course equivalents (LING 3311/LING 5300, LING 3330, LING 3340).
- f. Ph.D. applicants who present fewer than 30 semester credit hours will be assessed based on whether they meet the criteria for unconditional admission for the accelerated Ph.D. in linguistics, and whether their coursework includes the linguistics course equivalents (LING 3311/LING 5300, LING 3330, LING 3340). Such candidates who meet the unconditional admission criterion and who also have passed the three linguistics course equivalents will be considered for the BA-to-PhD program (i.e., "doctoral-bound"). Ph.D. applicants who present fewer than 30 semester credit hours and do not meet the unconditional admission criterion AND also the criterion of passing the three linguistics course equivalents will automatically be considered as applicants to the M.A. Linguistics program.
- g. Writing Sample (required for PhD applicants): Applicants must submit an academic writing sample (research paper) of 20 pages or less. The paper must be in an area of language or linguistic study, and demonstrate a strong prose style, a solid handle on argumentation, and the ability to do academic research in linguistics or a closely related field.

Admission Metrics

In formulating a recommendation for admission, the graduate advisors will apply the following admission metrics to each applicant's admission dossier.

1. BA-to-PhD applicants in Linguistics
 - a. Unconditional admission. Typically, applicants for the BA-to-Ph.D. in Linguistics program must be admitted unconditionally. Unconditional admission requirements are as follows. The applicant presents an undergraduate GPA of at least 3.6 (on a 4.0 scale) based on upper division course work (junior and senior level or equivalent) in a four year BA in linguistics program or a BA or BS in an allied field. Regardless of degree program, the coursework must include courses equivalent to LING 3330 and LING 3340. In addition, the applicant presents a GRE Verbal score of at least 150, a GRE Quantitative score of at least 146, a GRE Analytical score of at least 4.0, and a full set of excellent Qualitative Factors. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also submit a Test of English as a Foreign Language (TOEFL) score of at least 100 iBt or its IELTS equivalent and also submit a score from the Speaking Section of the TOEFL iBT, or the Speaking Section of the IELTS that documents the applicant's proficiency in spoken English. The speaking score is used for making determination for assistantships; applicants who wish to be considered for an assistantship must receive a score a score of 23 on the Speaking Section of the TOEFL iBT, or a score of 7 on the Speaking Section of the IELTS. This and other requirements for holding an assistantship are described in the Graduate Assistantship/Associateship Policy.
2. Ph.D. in Linguistics
 - a. Unconditional Admission. Typically, applicants for the Ph.D. in Linguistics will be eligible for unconditional admission if they meet either of the following sets of criteria:
 - i. The applicant presents a graduate GPA of at least 3.3, a GRE Verbal score of at least 500 (153 on the 2011 or later version), a GRE Quantitative score of at least 600 (148 on the 2011 or later version), a GRE Analytical score of at least 4.5, and a full set of excellent Qualitative Factors. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also submit scores on the Speaking section of either the Test of English as a Foreign Language (TOEFL) or the IELTS. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also submit a Test of English as a Foreign Language (TOEFL) score of at least 100 iBt, or 250 if computer based, or 600 if paper based (or its IELTS equivalent) and also submit a score from the Test of Spoken English, the Speaking Section of the TOEFL iBT, or the Speaking Section of the IELTS that documents the applicant's proficiency in spoken

English. The speaking score is used for making determinations for assistantships; applicants who wish to be considered for an assistantship must receive a score of 45 or higher on the TSE, a score of 23 on the Speaking Section of the TOEFL iBT, or a score of 7 on the Speaking Section of the IELTS. This and other requirements for holding an assistantship are described in the University's Graduate Assistantship/Associateship Policy.

- ii. The applicant presents an undergraduate GPA of at least 3.6, a GRE Verbal score of at least 150, a GRE Quantitative score of at least 146, a GRE Analytical score of at least 4.0, and a full set of excellent Qualitative Factors. In addition, applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also submit a Test of English as a Foreign Language (TOEFL) score of at least 100 iBT or its IELTS equivalent, and also submit a score from the Speaking Section of the TOEFL iBT, or the Speaking Section of the IELTS, that documents the applicants' proficiency in spoken English. The speaking score is used for making determinations for assistantships; applicants who wish to be considered for an assistantship must receive a score of 23 on the Speaking Section of the TOEFL iBT, or a score of 7 on the Speaking Section of the IELTS. This and other requirements for holding an assistantship are described in the University's Graduate Assistantship/Associateship Policy.
- b. Probationary Admission. Applicants for the Ph.D. in Linguistics typically present a complete application that has one of the following:
 - i. includes a GRE Verbal score of less than 150;
 - ii. or includes a GRE Quantitative score of less than 146; or
 - iii. includes a GRE Analytical score of less than 4.0
 - iv. lacks the undergraduate preparation specified above but who otherwise meet a majority of the remaining admission criteria (including a graduate GPA of at least 3.3 and for doctoral admissions, presents strong qualitative materials), will be considered for probationary admission. Students on probation must:
 - Deferred Admission Applicants for whom the admission file is incomplete will have a final decision admission deferred. In such cases, a final decision will be made only when the applicant presents a complete admission file.
 - Denial of Admission Applicants who do not meet a majority of the admission standards (both quantitative and qualitative) set forth above will be denied admission. For doctoral admission in particular, qualitative factors such as writing sample, statement of intent, or area of intended work may result in a student being denied admission even when quantitative factors are met.
 - Regarding Provisional Admission: The Department of Linguistics and TESOL does not permit Provisional Admission. All applicants must present a complete set of credentials before their application will be evaluated.

Doctoral Degree Requirements

LINGUISTICS

Graduate programs in linguistics are primarily designed for those with a background in one or more foreign languages and/or a background in the linguistic aspects of the English language. A graduate career in linguistics may also be appropriate to those with undergraduate study in anthropology, psychology, computer science, philosophy, or religion. Applicants without formal training in linguistics are invited to apply, provided that they are prepared to meet the department's requirements for leveling courses.

Requirements for master's and doctoral degrees are given in the Advanced Degrees and Requirements section of this catalog. In addition, the following apply to those pursuing a graduate degree in linguistics:

All students pursuing a graduate degree in linguistics must meet the degree prerequisites and must take the core courses appropriate to their degree as published on the department's Web site, <http://www.uta.edu/linguistics/current-students/degrees/index.php> (<http://www.uta.edu/linguistics/current-students/degrees/>).

PH.D. DEGREE PLAN

Students entering the Ph.D. program (including those entering as doctoral-bound) must enter having the equivalent of LING 5300/LING 3311, LING 3330, and LING 3340. In the first two semesters of the program, students are expected to enroll in the core required classes. The doctoral degree requires graduate coursework as follows: 21 hours of linguistic core courses, 6 hours of methods courses, 3 hours of professional development, 15 hours of electives, 3 hours of dissertation proposal preparation (LING 6391) and a minimum of 9 hours of dissertation (LING 6999). Students entering with a M.A. in linguistics from UTA may be able to waive up to 15 hours, at the discretion of the department, for equivalent courses completed at a B or higher in their master's program.

Theoretical Core Courses

21

Complete all seven of the following courses

LING 5320	PHONOLOGICAL THEORY
LING 5330	FORMAL SYNTAX
LING 5322	LABORATORY PHONOLOGY
LING 5328	PSYCHOLINGUISTICS: SENTENCE PROCESSING
LING 5331	ADVANCED FORMAL SYNTAX
LING 5345	SEMANTICS
LING 5347	PRAGMATICS

Methods Courses		6
Select two of the following four courses		
LING 5380	FIELD METHODS	
LING 5381	CORPUS LINGUISTICS	
LING 6380	FIELD METHODS SEMINAR	
LING 6381	STATISTICS FOR LINGUISTS (or an approved course in research design or statistics offered by another department)	
Professional Development Courses		4
(will include new 1-credit LING 6100)		
LING 6300	PROFESSIONAL WRITING SEMINAR	
Electives		15
Select five UTA graduate courses in consultation with your advisor		
Dissertation Proposal Hours		3
LING 6391	RESEARCH IN LINGUISTICS	
Dissertation Writing Hours		9
LING 6999	DISSERTATION	
Total Hours		58

All Ph.D. students must demonstrate knowledge of core areas in linguistics by passing the diagnostic examination requirement outlined on the departmental website.

Doctoral students must satisfy all the coursework requirements of the doctoral program prior to taking courses that do not fulfill the requirements. Any exception to this policy must be approved by a majority vote of the Graduate Studies Committee.

In addition, there are foreign language and professional activities requirements that must be met. Visit <http://www.uta.edu/linguistics/current-students/degrees/phd-linguistics/index.php> (<http://www.uta.edu/linguistics/current-students/degrees/phd-linguistics/>) for details.

Admissions Requirements for the Graduate Certificate in TESOL

Students wishing to apply to the UT Arlington Graduate School solely for the purpose of earning the Graduate Certificate in TESOL must have earned an undergraduate degree at an accredited institution and present an undergraduate GPA of at least 3.0 (as determined by the UT Arlington Graduate School). Applicants for whom English is not their native language and who have not been granted an undergraduate degree by an English-medium institution must also present an official Test of English as a Foreign Language (TOEFL) score of at least 100 iBT, or IELTS equivalent score.

Students seeking to transfer from Special Student or Certificate status into a graduate degree program at UT Arlington must re-apply to the U.T. Arlington Graduate School as degree-seeking students and meet all published admissions requirements, including those pertaining to standardized tests. No student will be "automatically" or "exceptionally" moved from Special Student or Certificate status into any graduate degree program.

The Web site for the UT Arlington Office of Graduate Studies provides additional information about graduate study at UT Arlington and about the admission process, including general testing requirements and other paperwork. Students may apply for admission online or request application materials be sent via post.

Certificate in Teaching English to Speakers of Other Languages (TESOL)

This program provides preparation through study and practice for the individual who wishes to teach English to speakers of other languages. It is available to any student who has been admitted to the Graduate School at UT Arlington.

The certificate requires:

Course Work		
LING 5300	LINGUISTIC ANALYSIS ^{1,3}	3
LING 5301	INTRO TO COMMUNICATIVE LANGUAGE TEACHING ^{2,3}	3
LING 5302	METHODS IN TEACHING READING AND WRITING	3
LING 5305	SECOND LANGUAGE ACQUISITION	3
LING 5304	PEDAGOGICAL GRAMMAR OF ENGLISH	3
LING 5307	PEDAGOGICAL PHONOLOGY OF ENGLISH	3
or LING 5306	TESOL CURRICULUM DESIGN	
or LING 5308	LANGUAGE ASSESSMENT	
or LING 5326	BILINGUALISM	

Practicum

LING 5110	TESOL PRACTICUM	1
Total Hours		19

¹ LING 5300 (or equivalent linguistics course work) is a prerequisite for LING 5301, LING 5302, and LING 5305.

² LING 5301 is a prerequisite for LING 5304 and LING 5307 PEDAGOGICAL PHONOLOGY OF ENGLISH.

³ Even if the student presents an equivalency of LING 5300, LING 5301, and/or other course work, the 18-hour requirement must be met.

A maximum of three credit hours of course work done at another institution can be transferred in and counted toward the certificate (with an official transcript submitted to show this course, and with approval of the graduate advisor.)

Upon beginning study for the certificate, the student should contact the Graduate Advisor in TESOL to declare the intention to earn the certificate.

Linguistics and TESOL - Undergraduate Programs

Overview

Linguistics is the discipline that studies the structures, acquisition, and histories of human languages around the world. Linguists are not, then, principally people who know many languages, but rather people who investigate how a language is organized and what features all languages exhibit.

The Department of Linguistics and TESOL seeks to deepen our understanding of language by examining how it is represented, used, and processed. Our faculty members work toward this goal through research and teaching in theoretical linguistics, focusing on phonology, syntax, semantics, pragmatics, and psycholinguistics as well as the interfaces among these domains of inquiry. In order to explore questions in these areas, we use multiple methods, including field methods, corpus-based methods, and experimental research methods, to collect and analyze data from a wide range of the world's languages, and from both native and non-native speakers of these languages. This approach to the scientific study of language is the primary focus of our BA degree in Linguistics.

In addition, the department has a separate track in the Teaching of English to Speakers of Other Languages (TESOL) offered through our TESOL minor and certificate. These courses train professionals who will teach English to second and foreign-language learners. Our TESOL students build a strong foundation in teaching methodologies, language testing, second language acquisition, and other applied areas of linguistics.

The study of linguistics prepares students for a variety of careers, among them teaching English to speakers of other languages in the United States and abroad, brand naming (lexicon work), information and intelligence analyst, language policy, forensic linguistics and the law, computer analysis of language, language education, and graduate study in linguistics. Above all, students in the Department of Linguistics and TESOL are made especially aware of the complex world in which we live by studying a universal and most definitive human experience: language.

Requirements for a Bachelor of Arts Degree in Linguistics

Pre-Major Core ¹		
General Core Requirements (p. 50)		42
UNIV 1131	STUDENT SUCCESS (either as a first time freshmen or as a transfer student)	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Electives		18
Major Requirements		
Linguistics Core		18
LING 2301	INTRODUCTION TO THE STUDY OF HUMAN LANGUAGE	
LING 2371	LANGUAGE IN A MULTICULTURAL USA	
LING 3311	PRINCIPLES OF LINGUISTIC ANALYSIS	
LING 3330	PHONETICS AND PHONOLOGY	
LING 3340	SYNTAX I	
LING 4327	SECOND LANGUAGE ACQUISITION	
Advanced Core		6
LING 4301	PHONOLOGICAL THEORY I	
or LING 4303	SYNTAX II	
LING 4345	FORMAL SEMANTICS	
or LING 4347	PRAGMATICS	
Linguistics Electives (3000 or 4000 level) ³		12
Enhanced Language Requirement ⁴		23
Total Hours		120

¹ For a list of approved **core** courses, contact the University Advising Center or the student's major department. Please note, UNIV 1131 (for Freshmen) or UNIV 1101 (for transfer students) is required of all majors.

³ Electives sufficient to complete the total number of hours required for the degree (120 hours) are required. The remaining hours of linguistics courses at the 3000/4000 level may include linguistics courses offered by other departments, with approval of the department advisor, provided those courses do not satisfy either the Enhanced Language Requirement or the Minor. Under no circumstances can courses used for the Enhanced Language Requirement or Minor be used to satisfy requirements for linguistics major courses.

⁴ The **enhanced language requirement** consists of coursework that covers the first year, second year, and third year levels of instruction in a single language. This requirement is equivalent of three years of language instruction, up to and including six hours at the 3000-level in a single language, where that language is not English and is not the student's home language. Classical, modern, signed or indigenous (for example, Native American) languages are all permissible languages to satisfy this requirement.

Requirements for a Minor in Linguistics

All undergraduate students who elect to minor in Linguistics must take:

LING 2301	INTRODUCTION TO THE STUDY OF HUMAN LANGUAGE	3
LING 3311	PRINCIPLES OF LINGUISTIC ANALYSIS	3
LING 3330	PHONETICS AND PHONOLOGY	3
or LING 3340	SYNTAX I	
One course at the 4000-level with a LING prefix		3
Any other two undergraduate-level courses bearing the LING prefix ¹		6
Total Hours		18

¹ Students intending to pursue graduate study in linguistics should, however, follow a course program that includes these courses as part of their minor: LING 2301, LING 3311, LING 3330, and LING 3340.

Requirements for a Minor in TESOL

All undergraduates who elect to minor in TESOL must take:

LING 2371	LANGUAGE IN A MULTICULTURAL USA	3
LING 3309	LINGUISTICS FOR LANGUAGE TEACHERS	3
or LING 3311	PRINCIPLES OF LINGUISTIC ANALYSIS	
LING 4325	SLA THEORIES AND THE TEACHING OF LANGUAGE	3
or LING 4327	SECOND LANGUAGE ACQUISITION	
LING 4353	TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE	3
LING 4354	METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE	3
LING 4395	INTERNSHIP IN TESOL	3
Total Hours		18

Requirements for an Alternate Minor

18 hours in an allied field (psychology, anthropology, philosophy, education, computer science, classical/modern languages) or another field approved by the undergraduate advisor.

A student may choose to use the same 18 hours to simultaneously satisfy the enhanced language requirement and the minor requirement. However, if language courses are used to fulfill both the Enhanced Language Requirement and the Minor Requirement, the student must complete the remaining 18 hrs with a second minor, to maintain a total of 120 hours for the degree.

Requirements for an Undergraduate Certificate in TESOL

Students interested in receiving theoretical and practical training in Teaching English to Speakers of Other Languages (TESOL) are encouraged to consider this five-course certificate program. The Undergraduate Certificate in TESOL offers a sequence of courses which introduces linguistics, second language acquisition, and methods and materials in TESOL instruction, paired with the an internship required to consist of 60 hours of volunteer ESL/ literacy teaching in a local community service organization. Students take:

LING 2371	LANGUAGE IN A MULTICULTURAL USA	3
or LING 3309	LINGUISTICS FOR LANGUAGE TEACHERS	
LING 4327	SECOND LANGUAGE ACQUISITION	3
LING 4353	TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE	3
LING 4354	METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE	3
LING 4395	INTERNSHIP IN TESOL	3
Total Hours		15

Ideally, students should start the sequence with LING 2371 or LING 3311 and use LING 4395 as the final course in this sequence. This certificate is ideal for students interested in earning a credential to increase employment opportunities, such as teaching English abroad. This certificate can be paired with a bachelor's degree in another discipline. Students who are interested in earning the BA in Linguistics with the Undergraduate Certificate in TESOL may apply the 4000 level courses required by the certificate to the degree requirement of 12 hours at the 3000/4000 level. This optimal sequencing will allow students to graduate with a BA in Linguistics and an Undergraduate Certificate in TESOL without adding additional hours to their degree requirements. Contact the Undergraduate Advisor for more information on this program.

COURSES

LING 2301. INTRODUCTION TO THE STUDY OF HUMAN LANGUAGE. 3 Hours.

An introduction to the scientific study of human language, using English as an example. Topics in the course include how sounds are produced, how words and sentences are structured, how and why language changes, how language is acquired by children and adults, how the brain processes language, and how language and society intersect.

LING 2321. CONSTRUCTED LANGUAGES. 3 Hours.

This course is an introduction to constructed languages. Presentation, examination, and analysis of constructed languages, such as Esperanto, Klingon, Dothraki, and many others.

LING 2351. E-LANGUAGES. 3 Hours.

Human languages can be spoken or written, but today much of our language use is also transmitted through electronic devices. This course looks at aspects of language as reflected in the use of the technologies of modern life. Topics may include the language used in texting, chat, gaming, machine tools for recognizing print and speech, and computer translators.

LING 2371. LANGUAGE IN A MULTICULTURAL USA. 3 Hours.

The relationship between language in the U.S. and social power. This course explores how negative attitudes toward some language varieties and languages spoken in the U.S. arise from social factors, rather than features of the languages themselves. In addition to studying language varieties, the course shows how American institutions such as the educational system and the media reinforce these negative attitudes and contribute to discrimination. Offered as AAST 2371 and LING 2371; credit will be granted in only one department.

LING 2391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in Linguistics and TESOL. Consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

LING 3301. TOPICS IN LINGUISTICS. 3 Hours.

Covers issues related to language and linguistics. Topics may include language and film/literature/pop culture, endangered languages, speech synthesis, applied linguistics, or other topics determined by instructor. May be repeated for credit when content changes. No prerequisites.

LING 3309. LINGUISTICS FOR LANGUAGE TEACHERS. 3 Hours.

An examination and analysis of the linguistic structures of languages of the world, with a focus on how this knowledge can inform language teaching. Prerequisite: LING 2371, or may be taken concurrently.

LING 3311. PRINCIPLES OF LINGUISTIC ANALYSIS. 3 Hours.

This course prepares students for the systematic study of human language. Drawing on data from a range of languages, it will examine the sound patterns of language (phonetics and phonology), words and word formation (morphology), sentence structure (syntax), meaning (semantics), and language in context (pragmatics). Emphasis will be placed on methods of linguistic analysis to solve problems in phonology, morphology, syntax, and semantics. Additional topics may include language acquisition; linguistic variation; and/or historical/comparative linguistics.

LING 3330. PHONETICS AND PHONOLOGY. 3 Hours.

Human speech sounds from both physiological and cognitive perspectives; the range of speech sounds in language and the patterning of such sounds within particular language systems. Prerequisite: LING 3311 with a grade of C or better.

LING 3340. SYNTAX I. 3 Hours.

An examination of syntactic investigation, developed primarily through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science. Prerequisite: LING 3311 with a grade of C or better.

LING 3345. CRITICAL REASONING IN LINGUISTICS. 3 Hours.

A survey of formal logical approaches used to describe and explain natural language phenomena. Topics include the fundamentals of logical representation and argumentation, the effective use of inductive and deductive reasoning, and the construction of more complex linguistic arguments. Prerequisites: LING 3311 and either PHIL 1301 or PHIL 3321.

LING 3350. LEXICAL SEMANTICS. 3 Hours.

Examines meaning at the lexical level. Topics may include ways of describing meaning (sense and reference, componential analysis and prototype theory), organizing meaning (the mental lexicon, connotation and euphemism, linguistic relativity), and applying these concepts to analyzing word classes. Prerequisite: LING 3311 with a grade of C or better.

LING 3360. LANGUAGE ACQUISITION. 3 Hours.

An examination of the principles and patterns that underlie the acquisition of language, with a focus on child language acquisition. Prerequisite: LING 3311 or LING 3309, with a grade of C or better.

LING 3366. TOPICS IN RACE/ETHNICITY AND LANGUAGE IN THE U.S.. 3 Hours.

Either an intensive focus within one racial/ethnic group or a comparison between two or more groups. Focus may include language in the U.S. as it pertains to one (or more) of these communities: African Americans, Mexican Americans and Latinos/as, Native Americans, and/or Asian Americans. May be repeated for credit as course content changes.

LING 3370. PSYCHOLOGY OF LANGUAGE. 3 Hours.

An examination of psycholinguistics, or the cognitive processes involved in the acquisition, comprehension, and production of language. The class will focus mainly on language perception and production by native speakers, but will also address issues related to bilingual/second language processing. Prerequisite: LING 3311 with a grade of C or better, or instructor approval.

LING 3391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in Linguistics and TESOL. Consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

LING 4301. PHONOLOGICAL THEORY I. 3 Hours.

An investigation into the principles governing sound systems in human languages. Prerequisite: LING 3330 with a grade of C or better.

LING 4303. SYNTAX II. 3 Hours.

Continuation of LING 3340, which explores further aspects of English syntax; universal and language-particular constraints on syntactic structure and rules. Further development and extensions of the generative approach to syntactic investigation. Prerequisite: LING 3340 with a grade of C or better.

LING 4317. SOCIOLINGUISTICS. 3 Hours.

Language in its social context, including linguistic variation, address and reference, speech levels, bilingualism, code switching, speech acts, conversation analysis, and language and gender. Prerequisite: LING 3311.

LING 4318. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, women's and men's language in other cultures, the acquisition of gendered ways of speaking, and sexism in language. Offered as LING 4318 and WOMS 4318; formerly offered as LING 4392/WOMS 4392; credit will be granted only once. Prerequisite: LING 3311.

LING 4320. HISTORICAL AND COMPARATIVE LINGUISTICS. 3 Hours.

(Also taught as LING 5314). Language development and change; the comparative method and its use in linguistic reconstruction; laws of language change. Prerequisite: LING 3311.

LING 4325. SLA THEORIES AND THE TEACHING OF LANGUAGE. 3 Hours.

An examination of a variety of theories in Second Language Acquisition, with a focus on how this knowledge informs classroom practice for teachers of ESL and other languages. Prerequisite: LING 3309 or LING 3311.

LING 4326. BILINGUALISM. 3 Hours.

An examination of issues related to bilinguals and bilingualism. The areas that will be covered include different types of bilinguals/bilingualism, bilingual education, the cognitive benefits or disadvantages of being a bilingual, and language processing in bilinguals. Prerequisite: LING 3311 with a grade of C or better.

LING 4327. SECOND LANGUAGE ACQUISITION. 3 Hours.

This course focuses on second language acquisition. Topics include the similarities and differences between first and second language acquisition, perception and production in native and non-native languages, and the implications of second language acquisition and processing research for theoretical linguistics and language teaching. Prerequisite: LING 2301, LING 2371, LING 3309, or LING 3311.

LING 4328. PSYCHOLINGUISTICS. 3 Hours.

This course will focus on the cognitive processes involved in the comprehension and production of language. The class will involve opportunities for hands-on experience using psycholinguistics research methods. Prerequisite: LING 3370 or LING 3311 with a grade of C or better, or instructor approval.

LING 4330. CORPUS LINGUISTICS. 3 Hours.

Applications of ways in which computer science and linguistics inform each other. Corpus linguistics focuses on how computers can be used to both obtain the data that we examine and to provide the tools we use for analysis. Includes readings, practical experience with several different software programs, and using sources of online corpora. Prerequisite: LING 3311.

LING 4334. MORPHOLOGY. 3 Hours.

A theoretical and typological investigation into the nature of word-structure and word-formation processes in human languages. Prerequisite: LING 4301 or LING 4303.

LING 4335. LANGUAGE UNIVERSALS & LINGUISTIC TYPOLOGY. 3 Hours.

Consideration of universals in human language, their explanation and description, and language types. Prerequisite: LING 4301.

LING 4345. FORMAL SEMANTICS. 3 Hours.

Examination of empirical facts, fundamental goals, and current techniques of formal semantic theory with a goal toward independent research. Topics include basic tools of current semantic theory and various core topics concerning meaning in English and other languages. Prerequisite: LING 3311 with a grade of C or higher.

LING 4347. PRAGMATICS. 3 Hours.

Analysis of how context and form interact with meaning. Topics may include deixis, reference, speech acts, presupposition, implicature, information structure and intonation. Prerequisite: LING 3311.

LING 4353. TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on teaching techniques of aural comprehension; speaking, reading, and writing skills; testing, language laboratory, and linguistic-cultural differences.

LING 4354. METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Systematic study of how to teach English to second/foreign language learners. Topics covered include the teaching of grammar, vocabulary, reading, writing, pronunciation, speaking, and listening. Prerequisite: LING 2301 or LING 2371; LING 4353.

LING 4360. NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Study of a selected non-Western language, language family or language area based on descriptive linguistic analysis. May be repeated once for credit as the topic varies. Prerequisite: LING 3330 and LING 3340.

LING 4362. LANGUAGE DOCUMENTATION. 3 Hours.

The course discusses fundamental issues that are part of language documenting and description. These include project design, research ethics and intellectual property, researcher and community rights and responsibilities, world language ecology, technology and software, archiving issues, grant-writing fundamentals, and related issues that form best practices for language documentation projects. (Also offered as LING 5362. Credit will be granted only once for LING 4362 or LING 5362.) Prerequisite: LING 3311.

LING 4363. LANGUAGE ENDANGERMENT AND REVITALIZATION. 3 Hours.

This course examines language endangerment and what it means for a language to become endangered, and studies language revitalization. Case studies are presented where communities seek to maintain the number of speakers or revive the language. (Also offered as LING 5363. Credit will be granted only once for LING 4363 or LING 5363.) Prerequisite: LING 3311.

LING 4370. HISTORY OF LINGUISTICS. 3 Hours.

Surveys the recent history of the field of linguistics and familiarizes students with the key figures and theories in recent linguistic history, with special attention to the development and emergence of generative theories of syntax, semantics, and phonology. Prerequisite: LING 3330 and LING 3340 and either LING 4301 or LING 4303.

LING 4389. TOPICS IN LINGUISTICS. 3 Hours.

Current topics in linguistics research. May be repeated if topic changes. Prerequisite: Either LING 3330, LING 3340, or LING 4317, and permission of undergraduate advisor.

LING 4391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Either LING 3311, LING 3330, or LING 3340, and permission of undergraduate advisor.

LING 4393. INTERNSHIP IN LINGUISTICS. 3 Hours.

Internship (paid or unpaid) in Linguistics, supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of Linguistics. Students are required to perform and report on designated career-related duties in a professional environment and submit assignments related to the work performed. May be repeated with the approval of the Undergraduate Advisor. May be repeated for credit once, as internship experience changes. Prerequisite: LING 3311 and permission of the instructor.

LING 4394. LING 4394 HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department. Approval of instructor required.

LING 4395. INTERNSHIP IN TESOL. 3 Hours.

Internship (paid or unpaid) in TESOL, supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of TESOL and/or the application of this knowledge. Students are required to perform significant teaching-related duties in an ESL/EFL environment and submit assignments related to the work performed. May be repeated with the approval of the Undergraduate Advisor, as internship experience changes. Prerequisite: LING 4353 and LING 4354 (may be concurrently enrolled in 4354).

LING 5100. THESIS WRITING SEMINAR. 1 Hour.

Techniques for researching and writing a thesis/dissertation in linguistics. Required of all students who have elected the Thesis or Thesis Substitute degree option in Linguistics. Prerequisite: completion of at least 9 hours of LING courses.

LING 5110. TESOL PRACTICUM. 1 Hour.

In this class, students will apply the principles presented in the TESOL Certificate coursework through observing and teaching ESOL classes. Prerequisite: Permission of adviser.

LING 5190. CONFERENCE COURSE IN LINGUISTICS. 1 Hour.

Graded P/F. Prerequisite: Permission of instructor.

LING 5300. LINGUISTIC ANALYSIS. 3 Hours.

This course introduces students to the field of linguistics, the systematic study of human language. Drawing on data from a range of languages, it will examine the sound patterns of language (phonetics and phonology), words and word formation (morphology), sentence structure (syntax), meaning (semantics), and language in context (pragmatics). Emphasis will be placed on methods of linguistic analysis to solve problems in phonology, morphology, syntax, and semantics. May be repeated for credit as the focus of the course or instructor changes. May not be used to fulfill Ph.D. degree requirements in linguistics.

LING 5301. INTRO TO COMMUNICATIVE LANGUAGE TEACHING. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on techniques of teaching aural comprehension; speaking, reading, and writing skills; attention to testing, language laboratory, and linguistic-cultural differences. Course includes a practical teaching requirement.

LING 5302. METHODS IN TEACHING READING AND WRITING. 3 Hours.

This course is an in-depth study of how to design ESL/EFL reading and writing classes and how to create instruction and assessment materials for these classes based on sound pedagogical principles.

LING 5303. ERROR ANALYSIS IN THE TEACHING OF ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

A study of error analysis as a means to diagnose particular patterns in language production of ESL/EFL students. Emphasis on current research and application to specific problems and contexts. Prerequisite: LING 5300 or LING 5309.

LING 5304. PEDAGOGICAL GRAMMAR OF ENGLISH. 3 Hours.

This course is a study of English sentence structure. Topics include article use, phrase structure, verb tense, agreement, pronouns, question forms, and embedded clauses. The course will focus on the second-language acquisition and processing of these structures as well as on ways that they can be addressed during ES/FL grammar instruction. Prerequisite: LING 5300 or LING 5309; LING 5301 or LING 5302.

LING 5305. SECOND LANGUAGE ACQUISITION. 3 Hours.

This course is the study of the processes of first and second language acquisition, their similarities and differences, language disorders, language perception and production, and implications of language acquisition research for linguistic theory and language teaching. May be repeated for credit as topic changes. Prerequisite: LING 5300 or permission of instructor.

LING 5306. TESOL CURRICULUM DESIGN. 3 Hours.

Systematic presentation of elements in development, management and evaluation of TESOL programs. Attention to needs analysis, syllabus design, materials selection and adaptation, teaching and evaluation in language curriculum design. Prerequisite: LING 5301.

LING 5307. PEDAGOGICAL PHONOLOGY OF ENGLISH. 3 Hours.

A study of the sound system of English. Topics include segmental phonemes, stress, length, intonation and variation at the lexical and utterance levels. Application to teaching English as a second or foreign language. Problems of description; means of application; adaptation to current pedagogical methods. Prerequisite: LING 5300; LING 5301 or LING 5302.

LING 5308. LANGUAGE ASSESSMENT. 3 Hours.

This is an introductory testing course. Topics will include different types of language assessment, issues related to language testing, measurement and evaluation of achievement and proficiency in a second language, and developing language tests of various language skills. Prerequisite: LING 5301, LING 5302, or permission of the instructor.

LING 5309. LINGUISTICS FOR LANGUAGE PROFESSIONALS. 3 Hours.

This course is an introduction to Applied Linguistics. It includes examination and analysis of the linguistic structures of languages of the world, with a focus on how this knowledge can inform language teaching.

LING 5310. SOCIOLINGUISTICS. 3 Hours.

The study of language and social context (made up of society and individuals). Content includes language as a social phenomenon, theoretical perspectives on relationship between language, society and individuals, basic concepts in sociolinguistics; and may include topics in macro- and micro-sociolinguistics such as multilingualism, language planning and standardization, linguistic variation, code switching, conversational analysis, and language and gender. May be repeated for credit as the topic changes.

LING 5311. SOCIOLINGUISTICS OF SOCIETY. 3 Hours.

The study of macro-sociolinguistics, including topics such as multilingualism, language standardization and planning, literacy, language dominance, maintenance and death, language and identity, diglossia, and pidgins and creoles. May be repeated for credit as the topic changes. Prerequisite: LING 5310.

LING 5312. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, men's and women's languages in other cultures, the acquisition of gendered ways of speaking, and sexism in language. May be repeated for credit as the topic changes. Prerequisite: LING 5310.

LING 5313. TOPICS IN SOCIOLINGUISTICS. 3 Hours.

Selected topics relating the scientific methodologies of linguistics to larger concerns of society and culture including cognition, motivation, description and analysis. May be repeated for credit when topic changes. Prerequisite: LING 5310.

LING 5314. HISTORICAL AND COMPARATIVE LINGUISTICS. 3 Hours.

The study of language development and change; comparative method and its use in linguistic reconstruction; laws of language change. May be repeated for credit as the topic changes. Prerequisite: LING 3330 or permission of instructor.

LING 5315. READINGS AND RESEARCH IN PEDAGOGY AND PRACTICE. 3 Hours.

This course focuses on selected readings for classroom practitioners, with a focus on work that connects current theory with classroom practice. Prerequisite: LING 5301 or LING 5302.

LING 5319. PHONETICS AND PHONOLOGY. 3 Hours.

Human speech sounds from both physiological and cognitive perspectives; the range of speech sounds in language and the patterning of such sounds within particular language systems. This course does not fulfill core PHD requirements for phonology.

LING 5320. PHONOLOGICAL THEORY. 3 Hours.

Ling 5320 is a foundations course for the study of the principles that govern sound systems in human languages. Students will work with sound patterns from a variety of languages in order to understand the fundamental aspects of phonological phenomena, and course assignments will require application of the descriptive and theoretical tools in working with sound pattern data. Lectures will further develop this description, analysis, and argumentation for phonological data. May be repeated for credit as the topic changes. Prerequisite: Permission of Advisor.

LING 5321. ADVANCED PHONOLOGICAL THEORY. 3 Hours.

A continuation of LING 5320. Topics include autosegmental analysis, lexical phonology, metrical phonology and phonological feature geometry. May be repeated for credit when topic changes. Prerequisite: LING 5320.

LING 5322. LABORATORY PHONOLOGY. 3 Hours.

An investigation into the physical properties of human speech. Students will gain hands-on experience with computer-assisted speech analysis. No prior computer experience is assumed. Prerequisite: LING 5320.

LING 5325. SLA AND CLASSROOM PRACTICE. 3 Hours.

An examination of a variety of theories in Second Language Acquisition, with a focus on how this knowledge informs classroom practice for teachers of ESL and other languages.

LING 5326. BILINGUALISM. 3 Hours.

This course introduces students to issues related to bilinguals and bilingualism. The areas that will be covered include different types of bilinguals/bilingualism, bilingual education, the cognitive benefits (or disadvantages) of being a bilingual, and language processing in bilinguals. May be repeated for credit as the topic changes. Prerequisite: LING 5300.

LING 5328. PSYCHOLINGUISTICS: SENTENCE PROCESSING. 3 Hours.

This course examines the cognitive processes involved in sentence comprehension. Students will learn current theories and research methods related to this area of psycholinguistics through in-depth discussion of the primary literature and by developing research projects based on this literature. May be repeated for credit as the specific topics dealt with in the course change. Prerequisite: LING 5300.

LING 5329. SYNTAX. 3 Hours.

An examination of syntactic investigation, developed primarily through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science. This course does not fulfill core PHD requirements for syntax.

LING 5330. FORMAL SYNTAX. 3 Hours.

Introduction to syntactic theory. Major topics include phrase structure, subcategorization, lexical entries, and passive and infinitival constructions. May be repeated for credit as the topic changes. Prerequisite: Permission of advisor.

LING 5331. ADVANCED FORMAL SYNTAX. 3 Hours.

Continuation of Ling 5330. Topics may include the syntax of unbounded dependencies, constraints on extraction, unbounded versus successive cyclic movement, and the licensing of gaps. May be repeated for credit as the topics change. Prerequisite: LING 5330.

LING 5334. MORPHOLOGY. 3 Hours.

A theoretical and typological investigation into the nature of word-structure and word-formation processes in human languages. May be repeated for credit as the topics of focus change. Prerequisite: LING 5320 or LING 5330.

LING 5335. LANGUAGE UNIVERSALS AND LINGUISTIC TYPOLOGY. 3 Hours.

Consideration of universals in human language, their explanation and description, and language types. May be repeated for credit as the topics of focus change. Prerequisite: LING 5330.

LING 5338. PSYCHOLINGUISTICS: VISUAL WORD RECOGNITION. 3 Hours.

This course examines the cognitive processes involved in visual word recognition. Students will learn current theories and research methods related to this area of psycholinguistics through in-depth discussion of the primary literature and by developing research projects based on this literature. May be repeated for credit as the specific topics dealt with in the course change. Prerequisite: LING 5300.

LING 5345. SEMANTICS. 3 Hours.

Graduate-level introduction to formal semantics, designed to prepare students for research with basic tools in Model-theoretic semantics and compositionality, including core topics such as negation, quantification, mood and modality, noun phrases, indefinites, definiteness, tense, aspect, and events, from a semantic and cross-linguistic perspective. May be repeated for credit as the topics of focus change. Prerequisite: LING 3340 or permission of instructor.

LING 5346. TOPICS IN APPLIED LINGUISTICS. 3 Hours.

This is a special topics course in Applied Linguistics. Topics may change semester-by-semester, based on instructor and other factors; may be repeated for credit as the topics of focus change.

LING 5347. PRAGMATICS. 3 Hours.

Analysis of how context and form interact with meaning. Topics may include deixis, reference, speech acts, presupposition, implicature, information structure and intonation. May be repeated for credit as the topics of focus change.

LING 5350. TEXT ANALYSIS. 3 Hours.

Methods of charting and analyzing texts to reveal the systematic contributions of pragmatic choices to their organization and meaning. May be repeated for credit as the topics of focus change. Prerequisite: LING 3340.

LING 5353. TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on techniques related to Communicative Language Teaching.

LING 5354. METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Systematic study of how to teach English to second/foreign language learners. Topics covered include the teaching of grammar, vocabulary, reading, writing, pronunciation, speaking, and listening.

LING 5360. NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Study of a selected non-Western language, language family or language area based on descriptive linguistic analysis. May be repeated for credit as the topic varies. Prerequisite: LING 3330 and LING 3340.

LING 5361. READINGS IN NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Readings in the linguistic structures of non-Western languages. Enrollment in the course is not sufficient to fulfill the non-Western language requirement. May be repeated for credit as the readings and topics of focus change.

LING 5362. LANGUAGE DOCUMENTATION. 3 Hours.

The course discusses fundamental issues that are part of language documenting and description. These include project design, research ethics and intellectual property, researcher and community rights and responsibilities, world language ecology, technology and software, archiving issues, grant-writing fundamentals, and related issues that form best practices for language documentation projects. May be repeated for credit as the topics of focus change. Prerequisite: LING 5300.

LING 5363. LANGUAGE ENDANGERMENT AND REVITALIZATION. 3 Hours.

This course examines language endangerment and what it means for a language to become endangered, and studies language revitalization. Case studies are presented where communities seek to maintain the number of speakers or revive the language. May be repeated for credit as the topics of focus change. Prerequisite: LING 5300.

LING 5370. HISTORY OF LINGUISTICS. 3 Hours.

Surveys the recent history of the field of linguistics and familiarizes students with the key figures and theories in recent linguistic history, with special attention to the development and emergence of key generative theories such as those of syntax, semantics, and phonology. May be repeated for credit as the topics of focus change. Prerequisite: LING 5320 or LING 5330.

LING 5371. SURVEY OF THEORIES IN APPLIED LINGUISTICS. 3 Hours.

A comparison and contrast of various linguistic theories, with consideration of their implications for application to real-world problems involving language. May be repeated for credit as the topics of focus change. Prerequisite: LING 5305.

LING 5372. READINGS IN LINGUISTICS. 3 Hours.

Readings in linguistics, tailored to student's areas of interest and instructor's expertise. May be repeated for credit when topic changes. Prerequisite: LING 5330.

LING 5380. FIELD METHODS. 3 Hours.

The principles, techniques and practical aspects of linguistic field research. The course includes extensive practice in eliciting data (phonological, morpho-syntactic, textual and lexical) directly from a native speaker, as well as in managing, analyzing and describing the data obtained. Course may be repeated for credit when topic changes. Prerequisite: LING 5300. Permission of the Graduate Advisor.

LING 5381. CORPUS LINGUISTICS. 3 Hours.

Applications of ways in which computer science and linguistics inform each other. Corpus linguistics focuses on how computers can be used to both obtain the data that we examine and to provide the tools we use for analysis. Includes readings, practical experience with several different software programs, and using sources of online corpora. May be repeated for credit as the topics of focus change.

LING 5391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.**LING 5392. THESIS SUBSTITUTE. 3 Hours.****LING 5393. TESOL TEACHING AND OBSERVATION. 3 Hours.**

In this course, students will work regularly and consistently with an organization where English is taught. Students will observe, teach, guide, and participate in activities in order to demonstrate ability to apply the principles of Communicative Language Teaching in an English Language Learning environment. Prerequisite: LING 5302; LING 5305.

LING 5395. GRADUATE INTERNSHIP. 3 Hours.

Employment (paid or unpaid) supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of linguistics and/or TESOL. Students are required to submit an approved academic project related to the work performed. May be repeated with approval of Graduate Advisor.

LING 5398. THESIS. 3 Hours.**LING 5691. CONFERENCE COURSE IN LINGUISTICS. 6 Hours.**

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

LING 5698. THESIS. 6 Hours.**LING 5998. THESIS. 9 Hours.****LING 6100. LINGUISTICS GRADUATE PROGRAM SUCCESS. 1 Hour.**

This course introduces PhD students in Linguistics to the expectations of graduate school, including being a good TA, recognizing the importance of research and revision, and general academic success skills to aid the transition into a graduate program.

LING 6191. RESEARCH IN LINGUISTICS. 1 Hour.

Prerequisite: permission of instructor.

LING 6199. DISSERTATION. 1 Hour.**LING 6291. RESEARCH IN LINGUISTICS. 2 Hours.**

Prerequisite: permission of instructor.

LING 6300. PROFESSIONAL WRITING SEMINAR. 3 Hours.

Workshop in producing the writing genres expected of professional academic linguists. May be repeated for credit as the topics of focus change.

Prerequisite: Completion of at least 9 hours of graduate LING courses.

LING 6360. DISCOURSE THEORY SEMINAR. 3 Hours.

Seminar on the theory of discourse in linguistics. May be repeated for credit as the instructor and topics of focus change. Prerequisite: permission of instructor.

LING 6380. FIELD METHODS SEMINAR. 3 Hours.

Second part of field methods sequence. May be repeated for credit as the student's topic of focus changes. Prerequisite: LING 5380.

LING 6381. STATISTICS FOR LINGUISTS. 3 Hours.

In this course, students learn the fundamentals of quantitative research in linguistics and language-related fields. Students learn how to develop viable research hypotheses, how to collect and manage the data necessary to evaluate these hypotheses, and how to analyze data using standard statistical tests. May be repeated for credit as the topics of focus change.

LING 6390. LINGUISTICS SEMINAR. 3 Hours.

Seminar in linguistics. Course may be repeated for credit when topic or instructor changes. Prerequisite: permission of instructor.

LING 6391. RESEARCH IN LINGUISTICS. 3 Hours.

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6392. SEMINAR IN PHONETICS AND PHONOLOGY. 3 Hours.

In-depth investigation of research into a specialized area of phonetics and/or phonology. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5321 or permission of the instructor.

LING 6393. SEMINAR IN SYNTAX. 3 Hours.

In-depth investigation of research into a specialized area of syntax. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5331 or permission of instructor.

LING 6394. SEMINAR IN SEMANTICS AND PRAGMATICS. 3 Hours.

In-depth investigation of research into a specialized area of meaning: semantics and/or pragmatics. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5345 or LING 5347 or permission of instructor.

LING 6395. SEMINAR IN SECOND LANGUAGE ACQUISITION. 3 Hours.

In-depth investigation of research into a specialized area of second language acquisition. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5305 or permission of the instructor.

LING 6399. DISSERTATION. 3 Hours.**LING 6491. RESEARCH IN LINGUISTICS. 4 Hours.**

Prerequisite: permission of instructor.

LING 6591. RESEARCH IN LINGUISTICS. 5 Hours.**LING 6691. RESEARCH IN LINGUISTICS. 6 Hours.**

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6699. DISSERTATION. 6 Hours.**LING 6991. RESEARCH IN LINGUISTICS. 9 Hours.**

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6999. DISSERTATION. 9 Hours.**LING 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Medical Humanities and Bioethics

Overview

Medical humanities is an interdisciplinary program that explores the historical, literary, philosophical, ethical, and spiritual dimensions of medicine and health. It includes instruction in the visual arts, social sciences, narrative medicine, cultural studies, and clinical practice. There is a common focus on creative and compassionate approaches to professional relationships and patient care.

Bioethics focuses on the ethical dimensions of medical practice and research. It includes instruction in applying philosophical ethics, policy analysis, and decision theory to real world issues in healthcare. Topics include end of life care, disability, resource allocation, organ transplantation, research on human and animal subjects, reproduction and fertility, health care justice, and other topics relevant to clinical practice.

Combining approaches from the medical humanities and bioethics, students are encouraged to take a humanistic perspective on the practice of medicine, using methods from philosophy, the social sciences, and the arts. This program provides students with an opportunity to earn a Certificate in Medical Humanities (12 hours) or a Minor in Medical Humanities and Bioethics (18 hours) and is relevant to a wide range of fields including healthcare, disability studies, public health, social work, and biomedical engineering.

Minor

The Minor in Medical Humanities and Bioethics requires 18 hours. There are three required courses: HUMA 3300, PHIL 3319, and the student's choice from the listed Disability Studies courses. This minor offers independent study and internship opportunities.

Required core courses (two courses)

HUMA 3300	MEDICAL HUMANITIES	3
PHIL 3319	BIOMEDICAL ETHICS	3

Required Disability Studies course (1 course)

DS 2301	TOPICS IN DISABILITY STUDIES	3
DS/HIST 3307	HISTORY OF DISABILITY	3
DS 3312	DISABILITY & SOCIAL WORK	3
DS 3321	TOPICS IN DISABILITY STUDIES	3
DS 3327/HIST 4327	CYBORGS AND PROSTHETICS	3
DS 3331	RESEARCH IN DISABILITY STUDIES	3
DS/COMM 3346	DISABILITY IN MASS MEDIA	3
DS/THEA 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	3
DS/ART 3399	DISABILITY & ART	3
DS 4329	DISABILITY & WORK	3

Elective courses (3 courses)

ANTH 2307	BIOLOGICAL ANTHROPOLOGY	3
ANTH 3307	EVOLUTIONARY MEDICINE	3
ANTH 3316	LATINO HEALTH ISSUES	3
ANTH 3369	MEDICAL ANTHROPOLOGY	3
ANTH 4406	HUMAN OSTEOLOGY	4
ANTH 4459	BIOARCHAEOLOGY	4
ART 4304	ART AND THE HUMAN CONDITION	3
BIOL 4357	HEALTH PSYCHOLOGY	3
COMM 4350	HEALTH COMMUNICATION	3
CRCJ 3370	INTRODUCTION TO FORENSICS	3
CRCJ 4340	FORENSIC DEATH INVESTIGATION	3
DS 2301	TOPICS IN DISABILITY STUDIES	3
DS/HIST 3307	HISTORY OF DISABILITY	3
DS 3312	DISABILITY & SOCIAL WORK	3
DS 3321	TOPICS IN DISABILITY STUDIES	3
DS/HIST 3327	CYBORGS AND PROSTHETICS	3
DS 3331	RESEARCH IN DISABILITY STUDIES	3

DS/COMM 3346	DISABILITY IN MASS MEDIA	3
DS/THEA 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	3
DS 3399	DISABILITY & ART	3
DS 4329	DISABILITY & WORK	3
FREN/MODL 4310	GRAPHIC NOVELS AND THE MEDICAL WORLD	3
GEOG 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
HIST 4307	HISTORY OF MEDICINE	3
HIST 4309	SOCIAL DARWINISM AND EUGENICS	3
HUMA 3340	TOPICS IN HUMANITIES	3
HUMA 3350	CLINICAL MEDICINE AND THE HUMAN EXPERIENCE	3
HUMA 3360	AMERICAN HEALTHCARE THROUGH FILM	3
HUMA 4391	CONFERENCE COURSE IN MEDICAL HUMANITIES	3
HUMA 4395	INTERNSHIP IN MEDICAL HUMANITIES	3
NURS 3347	SPECIALIZED TOPICS IN NURSING (When relevant and with permission of program coordinator)	3
PHIL 3340	TOPICS IN APPLIED ETHICS (When relevant and with permission of program coordinator.)	3
PHIL 3341	TOPICS IN BIOETHICS	3
PHIL 4392	CONFERENCE COURSE IN BIOETHICS	3
POLS 3309	HEALTH POLITICS, POLICY, AND ADVOCACY	3
POLS 4350	HEALTH POLITICS AND POLICY	3
PSYC 3303	DRUGS AND BEHAVIOR	3
SCIE 4301	ISSUES IN AMERICAN HEALTHCARE	3
SCIE 4303	CLINICAL MEDICINE AND THE HUMAN EXPERIENCE	3
SCIE 4304	DIAGNOSIS OF HUMAN DISEASE	3
SOCW 3315	INTRODUCTION TO SUBSTANCE USE DISORDERS	3
SPAN 3308	SPANISH FOR HEALTH AND HUMAN SERVICES	3
SPAN 4343	INTERPRETING IN HEALTHCARE SETTINGS	3
SOCI 3332	SOCIOLOGY OF REPRODUCTION	3
SOCI 4320	MEDICAL SOCIOLOGY	3
THEA 3351	ROBOTS, DIGITAL HUMANITIES, AND THEATRE	3
WOMS 3305	WOMEN'S HEALTH ISSUES	3

Other courses as approved by the program coordinator.

Certificate

To receive the certificate, a student must complete HUMA 3300 and three courses from the following list. Students can count toward the certificate no more than two courses from a single department. At least three courses must be from the College of Liberal Arts.

College of Liberal Arts

ANTH 2307	BIOLOGICAL ANTHROPOLOGY	3
ANTH 3307	EVOLUTIONARY MEDICINE	3
ANTH 3316	LATINO HEALTH ISSUES	3
ANTH 3369	MEDICAL ANTHROPOLOGY	3
ANTH 4406	HUMAN OSTEOLOGY	4
ANTH 4459	BIOARCHAEOLOGY	4
ART 4304	ART AND THE HUMAN CONDITION	3
ART 4396	SPECIAL STUDIES IN ART HISTORY	3
COMM 4350	HEALTH COMMUNICATION	3
CRCJ 3370	INTRODUCTION TO FORENSICS	3
CRCJ 4340	FORENSIC DEATH INVESTIGATION	3
DS 2301	TOPICS IN DISABILITY STUDIES	3
DS 3307	HISTORY OF DISABILITY	3
DS 3312	DISABILITY & SOCIAL WORK	3
DS 3321	TOPICS IN DISABILITY STUDIES	3

DS 3327	CYBORGS AND PROSTHETICS	3
or HIST 4327	CYBORGS AND PROSTHETICS	
DS 3346	DISABILITY IN MASS MEDIA	3
or COMM 3346	DISABILITY IN MASS MEDIA	
DS 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	3
DS 4329	DISABILITY & WORK	3
FREN 4310	GRAPHIC NOVELS AND THE MEDICAL WORLD	3
or MODL 4310	GRAPHIC NOVELS AND THE MEDICAL WORLD	
HUMA 3300	MEDICAL HUMANITIES (Required Course)	3
HUMA 3340	TOPICS IN HUMANITIES	3
HUMA 3350	CLINICAL MEDICINE AND THE HUMAN EXPERIENCE	3
HUMA 3360	AMERICAN HEALTHCARE THROUGH FILM	3
PHIL 3319	BIOMEDICAL ETHICS	3
PHIL 3341	TOPICS IN BIOETHICS	3
POLS 4350	HEALTH POLITICS AND POLICY	3
SOCI 3332	SOCIOLOGY OF REPRODUCTION	3
SOCI 4320	MEDICAL SOCIOLOGY	3
SPAN 4342	TRANSLATION IN HEALTHCARE SETTINGS	3
SPAN 4343	INTERPRETING IN HEALTHCARE SETTINGS	3
THEA 3355	UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS	3
WOMS 3305	WOMEN'S HEALTH ISSUES	3
College of Science		
BIOL 4357	HEALTH PSYCHOLOGY	3
PSYC 3303	DRUGS AND BEHAVIOR	3
SCIE 4301	ISSUES IN AMERICAN HEALTHCARE (College of Science)	3
SCIE 4303	CLINICAL MEDICINE AND THE HUMAN EXPERIENCE	3
SCIE 4304	DIAGNOSIS OF HUMAN DISEASE	3
School of Social Work		
SOCW 3315	INTRODUCTION TO SUBSTANCE USE DISORDERS	3
SOCW 4314	INTIMATE PARTNER VIOLENCE	3

Other courses as approved by the program coordinator.

Military Science - Undergraduate Program

Purpose

The ROTC program at The University of Texas at Arlington offers a unique opportunity for quality students to assess and develop their leadership skills. A wide variety of settings are provided to expose students to the styles, techniques, and tools of leadership. It also develops college-educated officers for the active Army and the reserve components (U.S. Army Reserve and Army National Guard). This affords the student the opportunity to pursue either a civilian or a military career after completing college.

Programs Available

General Information

Classroom: Examine theory, principles and techniques. Review leadership from a historical perspective through case studies and presentations. Communications skills emphasized.

Lab: Practical application of theory and opportunity for each student to be assessed. Immediate feedback provided enabling students to build on the experience gained. Individual skills and team-building emphasized.

Corps of Cadets: Leadership positions assigned according to demonstrated individual progress. Provides a forum for individual growth by working within a structured organization. Emphasis on counseling, coaching, mentorship, and coordination.

Field Training: A unique opportunity to gain experience under stressful and challenging situations. Students are placed in environments to test their abilities and reactions in leading small groups. Emphasis on decision-making, endurance, and reaction under stress to build self-confidence.

Simultaneous Membership Program: An opportunity to serve in a National Guard or Reserve unit as an officer trainee while participating in ROTC and attending UT Arlington. Emphasis on planning and organizing. Programs tailored to meet individual needs.

Army Schools: Develop skills through exposure to other students and soldiers from around the country by attending Airborne, Air Assault, or other schools. Emphasis on increased experience.

Leadership Development Assessment Course: Five weeks of high-intensity training with students from across the nation, designed to evaluate individual leadership potential. Emphasis placed on evaluation/development of the individual. Student receives pay. Travel, lodging and most meal costs are paid for by the Army.

Leadership Training Camp: A five-week summer camp conducted at an Army post. The environment is rigorous and stresses leadership, initiative and self-discipline. No military obligation incurred. The student receives pay. Travel, lodging and most meal costs are paid for by the Army.

Four-Year Program: The traditional program of Army ROTC is a program of instruction which extends over four years of college. The four-year program is divided into two phases—a two-year basic course and a two-year advanced course. The basic course is normally taken by students during their freshman and sophomore years. The purpose of the basic course is to introduce students to general military subjects and leadership principles. There is no military obligation incurred for attending the basic course.

The student who wishes to enter the advanced course, normally taken during the junior and senior years, must apply for it; must meet eligibility requirements including a physical examination; and must sign an agreement to complete the last two years of Army ROTC and accept a commission as a U.S. Army Officer. Students auditing courses or students not eligible for commissioning into the Army will receive P/F grades only.

Two-Year Program: This program is offered for students who have had two years of college remaining to graduate. Students must meet ROTC advanced course eligibility requirements. Prior military service, JROTC experience, and attendance at the Leadership Training Camp (LTC) are some of the ways to meet ROTC advanced course enrollment eligibility.

Scholarships

The U.S. Army Scholarship Program provides an excellent way for young men and young women to obtain assistance in financing a college education. Every scholarship provides for payment of all expenses incurred for fees and tuition, an allowance for books and supplies, and up to \$400 a month for up to 10 months per year. There are scholarships offered in all four years with payments ranging from one to four years. Initial application may be made during the student's senior year in high school or freshman year in college. Each year more scholarships are added to the program. These scholarships are merit based and are not contingent on financial need. All students are encouraged to make application through the Military Science Department.

Minor in Military Science

Military science may be used as a minor course of study in many degree programs at The University of Texas at Arlington.

To be eligible, the student must:

MILS 3341	LEADERSHIP I	3
MILS 3342	LEADERSHIP II	3
MILS 4341	ADVANCED LEADERSHIP I	3
MILS 4342	ADVANCED LEADERSHIP II	3
MILS 4391	CONFERENCE COURSE	3

1. be enrolled in the ROTC program,
2. receive acceptance of military science as a minor from his/her major degree department,
3. successfully complete with a grade of B or better in four of the following:
4. successfully complete 6 additional military science hours with a grade of B or better of any level (MILS 0180 LEADERSHIP LAB can be repeated to meet this requirement),
5. successfully complete the Army's Leader Development and Assessment Course offered annually in the Summer, and,
6. meet all Army prerequisites to earn a commission as an Army officer upon graduation.

COURSES

MILS 0180. LEADERSHIP LAB. 1 Hour.

A practical laboratory of applied leadership and skills. Student-planned, -organized and -conducted training, oriented toward leadership development. Laboratory topics include marksmanship, small unit tactics, multi-tiered programs focused on individual skill levels. Uniform and equipment provided. Concurrent enrollment in appropriate Military Science course (MILS 1141, MILS 1142, MILS 2251, MILS 2252, MILS 3341, MILS 3342, MILS 4341, MILS 4342, MILS 2291 and/or MILS 4391) required. Prerequisite: permission from the Professor of Military Science (PMS). May be repeated for credit.

MILS 1141. FOUNDATIONS OF LEADERSHIP. 1 Hour.

Fundamental concepts of leadership in a profession in both classroom and outdoor laboratory environments. The study of time management skills, basic drill and ceremony, physical fitness, repelling, leadership reaction course, first aid, making presentations and marksmanship. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in independent physical fitness training, plus optional participation in a weekend field training exercise.

MILS 1142. INTRODUCTION TO LEADERSHIP. 1 Hour.

Application of principles of leadership through participation in physically and mentally challenging exercises with upper division ROTC students. Course focuses on communication skills, organizational ethics, and study and time management techniques. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in individual physical fitness training, plus optional participation in a weekend field training exercise.

MILS 2251. INDIVIDUAL/TEAM DEVELOPMENT. 2 Hours.

Application of ethics-based leadership skills and fundamentals of ROTC's Leadership Development Program. Develop skills in oral presentations, concise writing, event planning, coordination of group efforts, advanced first aid, land navigation, and military tactics. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in individual physical fitness training, plus optional participation in a weekend field training exercise.

MILS 2252. INDIVIDUAL/TEAM MILITARY TACTICS. 2 Hours.

Introduction to individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security, and pre-execution checks. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in individual physical fitness training, plus optional participation in a weekend field training exercise.

MILS 2291. CONFERENCE COURSE. 2 Hours.

Independent study. Designed to supplement the military science curricula by a student's concentrated study in a narrower field of military skill or subject matter. May be repeated for credit. Does not count for PE credit. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 2343. LEADERSHIP TRAINING CAMP (LTC). 3 Hours.

A rigorous five-week summer camp conducted at an Army post, stresses leadership, initiative and self-discipline. No military obligation incurred. Completion of MILS 2343 qualifies a student for entry into the Advanced Course. Three different cycles offered during the summer, but spaces are limited by the Army. Candidates can apply for a space any time during the school year prior to the summer. Open only to students who have not taken all four of MILS 1141, MILS 1142, MILS 2251, and MILS 2252, and who pass an ROTC physical examination. P/F grade only.

MILS 3333. SMALL UNIT TACTICS AND LEADERSHIP. 3 Hours.

A study of military tactics and leadership at squad, platoon, and company level in both classroom and outdoor laboratory environments. Includes mission planning; movement and maneuver formations and techniques; offensive operations, defensive operations, patrolling, and convoy movement; indirect fires planning; terrain analysis, route selection, danger areas, and security measures; risk management; and motivating subordinates.

MILS 3341. LEADERSHIP I. 3 Hours.

Development of ability to evaluate situations, plan and organize training, learn military tactics, review case studies in leadership management and develop teaching and briefing skills. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 3342. LEADERSHIP II. 3 Hours.

Practical application of squad and platoon leadership in tactical situations; operation of small unit communications systems. Development of the leaders' ability to express themselves, analyze military problems, and prepare and deliver logical solutions. Demanding physical fitness training and performance-oriented instruction, in preparation for Summer Field Training. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 3443. LEADER DEVELOPMENT AND ASSESSMENT COURSE. 4 Hours.

A five-week off-campus field training course stressing the practical application of leadership management, with emphasis on tactical and technical military field skills. Open only to students who have successfully completed MILS 3341 and MILS 3342, P/F grade only.

MILS 3495. NURSING ADVANCED SUMMER TRAINING. 4 Hours.

Seven-week off-campus internship at a major U.S. Army hospital for ROTC nursing students. A nursing practicum with the focus on providing the student with hands-on experience which integrates clinical, interpersonal, and leadership knowledge and skills. Practical experience and familiarization with Army nursing in a variety of clinical tasks in the areas of medical-surgical nursing, pediatrics, obstetrics, and, in some cases, intensive care in ICUs. May be used for partial credit for NURS 3647 or NURS 3347 with prior arrangement and approval of the Dean of Nursing.

MILS 4341. ADVANCED LEADERSHIP I. 3 Hours.

Stresses leadership qualities necessary for Command and Staff functions and operations. Plan and conduct meetings, briefings and conferences. Introduction to the Army Logistical System and the Personnel Management System. Preparation of after-action reports. Plan and conduct physical training programs. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 4342. ADVANCED LEADERSHIP II. 3 Hours.

Provides students with a basic working knowledge of the Military Justice System with emphasis on company-level actions and requirements, including Law of Land Warfare. Examines the ethical standards, professional roles, responsibilities, and uniqueness of the profession of officership. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 4391. CONFERENCE COURSE. 3 Hours.

Independent study on an individual basis on current topics in military science. Performance will be assessed by oral examination, written test, or research paper as arranged. May be repeated for credit. Prerequisite: permission of the Professor of Military Science (PMS).

Modern Languages

Undergraduate Degrees

- Bachelor of Arts in French (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#bafrench>) Global Studies (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#bachelorstext>)
- Bachelor of Arts in Spanish for Global Competence (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#baspanish>)
- Bachelor of Arts in Spanish Translation and Interpreting (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#baspanish>)
- Bachelor of Arts in Critical Languages and International Studies (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#bacriticallanguages>)
- Bachelor of Business Administration in International Business and Chinese, French, German, Korean, Russian, or Spanish (in cooperation with College of Business Administration) (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#bba>)
- Minor in Arabic (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#chineseminor>)
- Minor in Chinese (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#chineseminor>)
- Minor in French (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#frenchminor>)
- Minor in German (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#germanminor>)
- Minor in Korean (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#minorstext>)
- Minor in Russian (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#russianminor>)
- Minor in Spanish for Global Competence (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#spanishminor>)
- Minor in Spanish Translation (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#spanishminor>)
- Minor in Spanish Interpreting (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#minorstext>)
- Minor in Spanish for Global Health and Human Services (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#minorstext>)
- Minor in Spanish Linguistics (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#minorstext>)
- Minor in Mexican Culture (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#minorstext>)
- Minor in Localization and Translation (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#minorstext>)
- Minor in Modern Language Teaching (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#minorstext/#minorstext>)

Graduate Degrees

- Modern Languages, M.A. (Spanish or French Concentration) (p. 872)
- Modern Languages, French Certificate
- Modern Languages, Spanish Certificate

Certificates

- Certificate in French Translation (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#certificatestext/#certificatestext>)
- Certificate in Spanish Translation (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#certificatestext/#certificatestext>)
- Certificate in Spanish Interpreting (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#certificatestext>)
- Certificate in Spanish for the Professions (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#certificatestext/#certificatestext>)
- Certificate in Spanish for Global Health and Human Services (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#certificatestext/#certificatestext>)
- Certificate in Spanish Linguistics (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#certificatestext/#certificatestext>)
- Certificate in Mexican Culture (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#certificatestext>)
- Certificate in Localization and Translation (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#certificatestext/#certificatestext>)
- Certificate in Localization and Translation Dual Language (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#certificatestext/#certificatestext>)

COURSES

ARAB 1441. BEGINNING ARABIC I. 4 Hours. (TCCN = ARAB 1411)

Multimedia Immersion in the culture and language of Arabic-speaking countries. Designed to enable students to understand and communicate effectively in Arabic at the beginning level.

ARAB 1442. BEGINNING ARABIC II. 4 Hours. (TCCN = ARAB 1412)

Continuation of beginning Arabic. Prerequisite: ARAB 1441 with a grade of C or better.

ARAB 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

ARAB 2301. LITERATURE IN TRANSLATION. 3 Hours.

The works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. ARAB 2301 may be taken to fulfill the foreign language requirement. Prerequisite: ENGL 1301 and ENGL 1302.

ARAB 2310. ARABIC CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Arabic-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

ARAB 2313. INTERMEDIATE ARABIC I. 3 Hours. (TCCN = ARAB 2311)

Continued immersion in the culture and language of Arabic-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: ARAB 1442 with a grade of C or better.

ARAB 2314. INTERMEDIATE ARABIC II. 3 Hours. (TCCN = ARAB 2312)

Continuation of intermediate Arabic. Prerequisite: ARAB 2313 with a grade of C or better.

ARAB 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

ARAB 3303. ARABIC CONVERSATION & CULTURE. 3 Hours.

Practice in oral expression with an emphasis on developing conversational skills and improving language proficiency in reading and writing. This course looks at the differences between classical and regional colloquialisms as well as elements of Middle Eastern culture. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3304. ARABIC CONVERSATION & CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge through the use of readings, film, and other media. Extensive conversation practice allows students to develop intermediate high level oral skills in a broad range of communicative and cultural contexts. Students learn to express more abstract ideas through description, comparison, and narration. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3305. ARABIC READING AND COMPOSITION. 3 Hours.

The analysis of Arabic texts and composition with emphasis on reading comprehension, grammar, writing skills, and compositional techniques. Readings may include newspaper articles, short stories, and essays on various topics of Arabic culture. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3310. ARABIC LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Arabic language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: ARAB 2314 or the equivalent with a grade of B or better. May not be repeated for credit.

ARAB 3311. ARABIC LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Arabic and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: ARAB 3310 with a grade of B or better.

ARAB 3312. TOPICS IN ARABIC LITERATURE AND CULTURE. 3 Hours.

Multimedia immersion in the language and culture of Arabic speaking countries through the study of selected literary texts in various genres and literary structures. Has an emphasis on developing language skills of reading, writing, and oral communication. May be repeated for credit as topic changes. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Arabic. ARAB 3310 is strongly recommended before ARAB 3345.

ARAB 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

An introduction to the business of localization with an emphasis on translation relevance, speed, and quality. The art of machine translation as well as the areas of cost and metrics will be addressed. Students will work with two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Arabic. Prerequisite: ARAB 3310.

ARAB 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Arabic. Prerequisite: ARAB 3310 or ARAB 3311.

ARAB 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

ARAB 3393. ARABIC INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

ARAB 4393. ARABIC INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Arabic, outside readings, and formal presentations. Prerequisite: Two ARAB 3000 level courses and permission of the instructor.

COURSES**CHIN 1441. BEGINNING CHINESE I. 4 Hours. (TCCN = CHIN 1411)**

Multimedia immersion in the culture and language of China. Designed to enable students to understand and communicate effectively in Chinese at the beginning level. No prerequisites.

CHIN 1442. BEGINNING CHINESE II. 4 Hours. (TCCN = CHIN 1412)

Continuation of beginning Chinese. Prerequisite: CHIN 1441 with a grade of C or better.

CHIN 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

CHIN 2301. LITERATURE IN TRANSLATION. 3 Hours.

The works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. CHIN 2301 may be taken to fulfill the foreign language requirement. Prerequisite: ENGL 1301 and ENGL 1302.

CHIN 2310. CHINESE CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Chinese-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

CHIN 2313. INTERMEDIATE CHINESE I. 3 Hours. (TCCN = CHIN 2311)

Continued immersion in the culture and language of China. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: CHIN 1442 with a grade of C or better.

CHIN 2314. INTERMEDIATE CHINESE II. 3 Hours. (TCCN = CHIN 2312)

Continuation of intermediate Chinese. Prerequisite: CHIN 2313 with a grade of C or better.

CHIN 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

CHIN 3303. CHINESE CONVERSATION. 3 Hours.

Practice in oral expression with an emphasis on vocabulary building, listening comprehension, and speaking skills. Of special interest to students who wish to improve their skills in pronunciation, comprehension, and oral expression. Credit will not be granted to native speakers of Mandarin Chinese. However, heritage students may register for this course when they pass the Chinese CLEP test administered by the instructor. Prerequisite: CHIN 2314 with a grade of C or better.

CHIN 3304. CHINESE CONVERSATION AND CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge through the use of readings, film, and other media. Extensive conversation practice allows students to develop advanced-intermediate level oral skills in a broad range of communicative and cultural contexts. Students learn to express abstract ideas through description, comparison, and narration. Credit will not be granted to native speakers of Mandarin Chinese. Heritage speakers may register for the course with consent of the department. Prerequisite: CHIN 2314 with a grade of C or better.

CHIN 3305. CHINESE READING AND COMPOSITION. 3 Hours.

Analysis of Chinese texts and composition with emphasis on reading comprehension, grammar and vocabulary, and writing techniques. Readings may include newspaper/website articles and short stories, online postings, text messages, comic books, print advertisements, and essays on various topics of Chinese culture. Prerequisite: CHIN 2314 with a grade of C or better.

CHIN 3310. CHINESE LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Chinese language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: CHIN 2314 or the equivalent with a grade of B or better. May not be repeated for credit.

CHIN 3311. CHINESE LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Chinese and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated. Prerequisite: CHIN 3310 with a grade of B or better.

CHIN 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Chinese. CHIN 3310 is strongly recommended before CHIN 3345.

CHIN 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Chinese. Prerequisite: CHIN 3310.

CHIN 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Chinese. Prerequisite: CHIN 3310 or CHIN 3311.

CHIN 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

CHIN 3393. CHINESE INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

CHIN 4334. CONTEMPORARY CHINESE CULTURE. 3 Hours.

Examination of contemporary Chinese culture, with a focus on current events relevant to the Chinese-speaking world. Topics may include: language and culture, literature, film, business culture, and traditions. Students may take the course in English or in Chinese.

CHIN 4335. BUSINESS CHINESE. 3 Hours.

Study of skills and etiquette vital to functioning in business environments using Chinese. Emphasis is placed on Chinese cultural traditions including traditions of Chinese philosophy and major differences in ideological perspectives between the East and West. Business etiquette and terminology for use in business environments are introduced and practiced. Vocabulary and cultural knowledge are reinforced through lecture, translation, peer discussion, readings, and digital media. Taught in English. No prior Chinese language background is required.

CHIN 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper or a translation on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

CHIN 4393. CHINESE INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Chinese, outside readings, and formal presentations. Prerequisite: Two CHIN 3000 level courses and permission of the instructor.

COURSES

FREN 1441. BEGINNING FRENCH I. 4 Hours. (TCCN = FREN 1411)

Multimedia immersion in the culture and language of French-speaking countries. Designed to enable students to understand and communicate effectively in French at the beginning level. No prerequisites.

FREN 1442. BEGINNING FRENCH II. 4 Hours. (TCCN = FREN 1412)

Continuation of beginning French. Prerequisite: FREN 1441 with a grade of C or better.

FREN 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

FREN 2301. TOPICS IN FRENCH LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. FREN 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302 with a grade of C or better.

FREN 2310. FRENCH AND FRANCOPHONE CULTURES IN THE WORLD. 3 Hours.

An overview of the cultures of the French-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

FREN 2313. INTERMEDIATE FRENCH I. 3 Hours. (TCCN = FREN 2311)

Continued immersion in the culture and language of French-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: FREN 1442 with a grade of C or better.

FREN 2314. INTERMEDIATE FRENCH II. 3 Hours. (TCCN = FREN 2312)

Continuation of intermediate French. Prerequisite: FREN 2313 with a grade of C or better.

FREN 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

FREN 3300. PHONOLOGY & PRONUNCIATION. 3 Hours.

This course provides a practical introduction to sound patterns in standard, metropolitan French, stressing the acquisition of pronunciation. Students will also be introduced to theoretical aspects of French phonetics and phonology. Not open to native and heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3303. ADVANCED FRENCH CONVERSATION. 3 Hours.

Practice in oral expression with an introduction to practical phonetics and vocabulary building. Of special interest to students who wish to improve their skill in pronunciation, comprehension, and oral expression. Credit will not be granted to native or heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3304. READINGS AND WRITING IN FRENCH. 3 Hours.

This course emphasizes reading comprehension, writing skills, and compositional techniques. Grammar is reviewed. Short stories, essays, movies, and social media provide content material. Credit will not be granted to native or heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3305. FRENCH CULTURE AND CIVILIZATION. 3 Hours.

Historical development of the social, institutional, intellectual, and artistic life of France from inception to the present. Credit will not be granted to native or heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3309. FRENCH FILM: ART, TECHNOLOGY AND SOCIETY. 3 Hours.

The course is an overview of major movements in French film from the Lumières brothers and Méliès to the contemporary cinema of Leconte, Varda, Bonello, and Denis. It introduces students to the technologies that helped shape French films and uses film to raise important issues about national identity, politics, and gender in France and in the wider Francophone world. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3310. INTRODUCTION TO LITERATURE. 3 Hours.

Principles of literary analysis pertaining to genre, concepts of literary structure, language, and criticism through examination of selected works. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3311. CATHEDRALS, CASTLES, AND REVOLUTIONS. 3 Hours.

This course examines the conditions that shaped France from medieval times to the Renaissance, and onward to the Enlightenment and the Revolution of 1789. The course explores main currents of French literature, art, and thought. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3312. FRENCH LITERATURE AND CULTURE 19th to 21st CENTURIES. 3 Hours.

This course examines the conditions that shaped French culture From Napoleon I to modern times by exploring main currents of French literature, art, film, and thought. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3316. TOPICS IN CITIES OF FRANCE AND THE FRENCH-SPEAKING WORLD. 3 Hours.

The course explores cities and other places as geographical and cultural constructs in literature, the visual arts (including film), and the media. Topics may include large cities like Paris, Lyon, Montreal, Cairo, and Algiers, for example, as well as museums, metros, parks, and other public spaces in France, the Middle East, North Africa, Africa, the Americas, and Asia. FREN 3316 may be repeated for credit when content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3318. TOPICS OF IDENTITY IN FRANCE AND THE FRENCH-SPEAKING WORLD. 3 Hours.

Study of the individual and/or group from the medieval times to the present. Topics may include language choice, the child, women, workers, the bourgeoisie, peasants, artists, immigrants and other strangers. FREN 3318 may be repeated for credit when the content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3320. LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of French language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May be repeated for credit as focus of course changes. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 2314 with a grade of B or better.

FREN 3321. LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of French and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 3320 with a grade of B or better.

FREN 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM), and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-French. FREN 3345 cannot be applied toward the minor in French. FREN 3320 is strongly recommended before FREN 3345.

FREN 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 3320.

FREN 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 3320 or FREN 3321.

FREN 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of instructor.

FREN 3393. FRENCH INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

FREN 4310. GRAPHIC NOVELS AND THE MEDICAL WORLD. 3 Hours.

This course examines the ways in which the comic book medium can bring new insights to patient, healthcare, and clinical experiences. Students will become familiar with both major works of graphic medicine and key theoretical texts related to sequential art and to pathographies (autobiographies that revolve particularly around health issues). Includes a cultural comparison component through patient and practitioner stories from an American and from a French perspective. Taught in English. Students in French can read the material in French and write assignments in French with permission of the instructor. Prerequisite: FREN 2314.

FREN 4314. IMPROVING FRENCH GRAMMAR AND WRITING. 3 Hours.

A detailed study of French grammar with practice in composition requiring original themes, essays, and research papers. An overview of the history of the French language and the influences of other languages and cultures on its evolution. Recommended for senior French majors. Prerequisite: FREN 3304 or equivalent with a grade of C or better.

FREN 4316. GLOBAL FRENCH CUISINES. 3 Hours.

This course examines the history and culture of French cuisines across the globe from the Metropole (France) to its colonies, protectorates, and spheres of influence in the Middle East, North Africa, West Africa, Asia, North America, Central America, and other geographic spaces across time. Topics include North African and Middle Eastern Cuisines, The Culinary Traditions of Provence, Caribbean Cuisine: History and Cultures, West African Cuisine: Colonial and Postcolonial Encounters, French Foods and Revolutions: The Socialist Baguette and the Bourgeois Croissant, Street Food and the Rise of Café and Bistro Cultures, and others. Prerequisite: FREN 2314 with a grade of C or better or permission of the instructor.

FREN 4318. INTRODUCTION TO FRENCH LINGUISTICS. 3 Hours.

An introductory course on the linguistic structure of modern standard French, including phonology, morphology and syntax. Prerequisite: Any two 3000 level French courses with a grade of C or better. FREN 3300 is strongly recommended before taking FREN 4318.

FREN 4322. TOPICS IN 17TH-CENTURY FRANCE. 3 Hours.

This course takes a close look at the political and artistic climate of a defining period in French culture. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4324. TOPICS IN 19TH-CENTURY FRANCE. 3 Hours.

The course surveys major currents like Romanticism, Realism, Impressionism, and Orientalism in literature and art. Strong emphasis on the possibilities of leisure (theatre, travel, the phenomena that are department stores, trains, cameras, moving pictures, and high fashion), bourgeois tastes and institutions, the role of Capitalism, and the Alliance network in empire building. FREN 4324 may be repeated for credit when the content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4325. TOPICS IN 18TH-CENTURY FRANCE. 3 Hours.

Major currents such as Sensibility, Libertinism, the Republic of Letters, Exoticism, and Orientalism in literature and art. Patterns of French thought comprising the Enlightenment leading to the Revolution. May be repeated for credit when content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4328. TOPICS IN GLOBAL FRENCH IN THE 20TH-21ST CENTURIES. 3 Hours.

Cultural and literary output of France, the Middle East, North Africa, Africa, the Americas, and Asia before and after the Second World War. Patterns of French thought, writing, and self-representation, New Europe, decolonization, and nationalism through various media. May be repeated for credit when content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4332. MEDIEVAL AND RENAISSANCE CULTURES. 3 Hours.

Readings in modern French of Medieval and Renaissance French literature. Works include the adventures of King Arthur and the Knights of the Round Table, Gargantua, reflections on the self, friendship, education, and the "Other" in Montaigne's Essais, and the love poems of Ronsard. Emphasis on the importance of religion, the evolution and the meaning of cathedrals and monasteries, and the effect of the discovery of the "New World" on perceptions of self and of community. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4334. GLOBAL FRENCH CULTURES TODAY. 3 Hours.

This course examines French media, advertisement, journalism, and business culture. It explores the historical context and the social, political, and economic environment that informs these activities. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4335. BUSINESS FRENCH. 3 Hours.

Students learn to function in French in business environments, with emphasis on writing business letters, conducting telephone conversations and business meetings, using terminology for transactions in places such as banks, post offices, airports, and hotels. Video segments and interactive computer packages are used extensively to reinforce vocabulary and knowledge acquired through lectures, translations, and readings. Preparation for the DFP (Diplôme de Français Professionnel) Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4338. GLOBAL FRENCH LITERATURES AND CULTURES. 3 Hours.

This course focuses on French-speaking cultures in Europe, the Middle East, North Africa, West Africa, the Americas, and Asia from the 17th century to the present through literature, music, film, and other forms of expression. Topics include The French Caribbean Novel, World War II in French Literature and Film, Colonial and Postcolonial Experience, French Canada: History and Culture, Mediterranean Readings, The Maghreb and the Levant. May be repeated for credit when topic changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4339. ACQUISITION OF FRENCH. 3 Hours.

Theory and practice of language acquisition. Techniques needed to understand and analyze the sounds, vocabulary, and grammar of the French language. Primarily for students seeking teacher certification. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4341. TRANSLATION: THEORY & PRACTICE. 3 Hours.

An examination of translation methodology and approaches to various types of texts, with emphasis on the structural, lexical, and conceptual differences between French and English. Prerequisite: FREN 3304 or FREN 4314 with a grade of C or better, or permission of the instructor.

FREN 4342. TOPICS IN TRANSLATION. 3 Hours.

This course provides additional practice translating texts, comparing and evaluating professional or amateur translations, and/or post-editing machine translations. May be repeated for credit when content changes. Prerequisite: FREN 4341 with a grade of C or better or permission of the instructor.

FREN 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic and consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission.

FREN 4393. FRENCH INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in French, outside readings, and formal presentations. Prerequisite: Two FREN 3000 level courses and permission of the instructor.

FREN 4394. HONORS THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit.

FREN 5101. TEACHING PRACTICUM I. 1 Hour.

Required of all teaching assistants in French in their first semester. May not be counted toward a master's degree. Graded P/F/R.

FREN 5102. TEACHING PRACTICUM II. 1 Hour.

Required of all teaching assistants in French in their second semester. May not be counted toward a master's degree. Graded P/F/R.

FREN 5314. ADVANCED STYLISTICS. 3 Hours.

Focuses on advanced problems of grammar and style, including syntax, morphology, semantics and stylistics. Surveys the history of the French language, including influences of other languages and cultures on its evolution. Attention given to pedagogical models and approaches as well as intensive composition practices.

FREN 5316. MEDIEVAL AND RENAISSANCE LITERATURE AND CULTURE. 3 Hours.

A study of the main currents of French literature and culture in their social, economic and political context through the representative genres of the period: epic verse, poetry, tales, fabliaux, comic narrative, and theatre to name a few.

FREN 5317. 17TH AND 18TH CENTURY LITERATURE AND CULTURE. 3 Hours.

A study of the main currents of French literature and culture in their social, economic and political context through the representative genres of the period: theatre, the romance, the novel, the portrait and maxim, the philosophic dialogue and tale, among others.

FREN 5318. 19TH AND 20TH CENTURY LITERATURE AND CULTURE. 3 Hours.

A study of the main currents of French literature and culture in their social, economic and political context through the representative genres of the period: theatre, the nouvelle, poetry, the novel, the anti-novel, etc.

FREN 5320. TOPICS IN FRENCH LANGUAGE & LINGUISTICS. 3 Hours.

Special studies in French language and linguistics not ordinarily covered by regular course offerings. Topics may include "Socio-Phonetics," French Phonetics and Phonology," and "History of the French Language." May be repeated for credit when content changes.

FREN 5321. TOPICS IN GENRES OF THE 17TH CENTURY. 3 Hours.

Investigates ideology and practice through literature, the visual arts, music and other cultural "texts." Major topics may include "Versailles: Architecture, Literature, and Politics," "Jansenism and its Discontents: Pascal, Racine, de Lafayette," "Libertins: Masks and Counter Masks." May be repeated for credit when topic changes.

FREN 5325. TOPICS IN GENRES OF THE 18TH CENTURY. 3 Hours.

Studies oppositional discourse as expressed through the different genres (theatre, poetry, fiction, political and philosophical writings) popular in the 18th century as well as the role and the effect of these works in constituting the Republic of Letters. May be repeated for credit when topic changes.

FREN 5330. TOPICS IN GENRES OF THE 19TH CENTURY. 3 Hours.

Concentrates on literature, the visual arts, entertainment, and fashion as expressions of popular culture. The rise of the "petite bourgeoisie,"; social utopias, the rebuilding of Paris, and responses to modernity will be studied in such courses as "Paris and Its Subcultures," Impressionism and the Bourgeoisie," "The Novel and the Body." May be repeated for credit when topic changes.

FREN 5331. TOPICS IN GENRES OF THE 20TH CENTURY. 3 Hours.

Focuses on the work of French and Francophone writers in the light of modernist and post-modernist aesthetics. Literature, art, architecture, music, film, video, television, and other forms of popular production are studied as reflections of an era in crisis. May be repeated for credit when topic changes.

FREN 5338. TOPICS IN FRENCH CULTURE. 3 Hours.

Survey of themes and structures on a range of topics such as "Women in/as Fiction," "Self and Society," & "Revolutions," "French Film." May be repeated for credit when topic changes.

FREN 5391. CONFERENCE COURSE IN FRENCH LINGUISTICS, CULTURE, OR LITERATURE. 3 Hours.

Graded R. Prerequisite: permission of Graduate Advisor. Course may be repeated for credit when the topic changes.

FREN 5398. THESIS. 3 Hours.**FREN 5698. THESIS. 6 Hours.****FREN 5998. THESIS. 9 Hours.****FREN 6310. FRENCH STUDIES. 3 Hours.****COURSES****GERM 1441. BEGINNING GERMAN I. 4 Hours. (TCCN = GERM 1411)**

Multimedia immersion in the culture and language of German-speaking countries. Designed to enable students to understand and communicate effectively in German at the beginning level.

GERM 1442. BEGINNING GERMAN II. 4 Hours. (TCCN = GERM 1412)

Continuation of beginning German. Prerequisite: GERM 1441 with a grade of C or better.

GERM 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

GERM 2301. TOPICS IN GERMAN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. GERM 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

GERM 2310. GERMAN CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the German-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

GERM 2313. INTERMEDIATE GERMAN I. 3 Hours. (TCCN = GERM 2311)

Continued immersion in the culture and language of German-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: GERM 1442 with a grade of C or better.

GERM 2314. INTERMEDIATE GERMAN II. 3 Hours. (TCCN = GERM 2312)

Continuation of intermediate German. Prerequisite: GERM 2313 with a grade of C or better.

GERM 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

GERM 3301. TOPICS IN GERMAN LITERATURE AND CULTURE IN TRANSLATION. 3 Hours.

Intellectual and literary trends in life and literature of German-speaking countries as reflected in text, film, and video. Topics: 20th century cinema, the Holocaust experience in literature and culture, women writers from the Enlightenment to the present, postwar in two Germanies, among others. May be repeated as topic varies. The course will be count only once, however, toward a minor in German. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3310. LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of German language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May be repeated once. Prerequisite: GERM 2314 with a grade of B or better.

GERM 3311. LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of German and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: GERM 3310 with a grade of B or better.

GERM 3312. ADVANCED GERMAN GRAMMAR. 3 Hours.

A detailed study of German grammar. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3313. TOPICS IN GERMAN CULTURE & CONVERSATION. 3 Hours.

Topics in German culture with emphasis on conversation and reading skills in German with grammar review. Course may be repeated for credit with departmental permission as topic varies. Credit will not be given to native speakers of German, except with permission of the department. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3316. GERMAN COMPOSITION & GRAMMAR. 3 Hours.

Introduction to the analysis of literary texts with emphasis on reading comprehension, grammar, writing skills and compositional techniques. Prerequisite: GERM 2314, or the equivalent, with a grade of C or better.

GERM 3317. INTRODUCTION TO LITERATURE AND CULTURE STUDIES. 3 Hours.

Introduction to the study of literature and culture including approaches to texts, basic theoretical considerations, fundamentals of scholarship. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3318. SPECIAL TOPICS IN GERMAN STUDIES I. 3 Hours.

German courses that may be cross-period or thematically oriented like Kinderliteratur or Film but also those courses targeted at specific groups (e.g. Business, Science, etc.). Course may be repeated for credit with departmental permission as topic varies.

GERM 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM), and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-German. GERM 3310 or GERM 4334 is strongly recommended before GERM 3345.

GERM 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-German. Prerequisite: GERM 3310 or GERM 4334.

GERM 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-German. Prerequisite: GERM 3310, GERM 4334, GERM 3311 or GERM 4335.

GERM 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: consent of the department.

GERM 3393. GERMAN INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

GERM 4313. GERMAN LITERATURE AND CULTURE I. 3 Hours.

Literary and cultural history from the Renaissance to Romanticism. The course focuses on the history of cultural (including literary) texts and surveys the history of written texts in German-speaking Europe. Course is taught in German. Students may elect to read some of the texts in German. Prerequisite: GERM 2314 with a grade of B or better.

GERM 4314. GERMAN LITERATURE AND CULTURE II. 3 Hours.

Literary and cultural history from Romanticism to the present. Course focuses on the history of cultural (including literary) texts and surveys the history of written texts in German-speaking Europe. Course is taught in German. Students will read texts in German. Prerequisite: GERM 2314 with a grade of B or better.

GERM 4317. TOPICS IN GERMAN TRANSLATION. 3 Hours.

Introduction to the theory and practice of translation. Examples will cover a wide range of texts including literature, business, newspapers, etc. (May substitute for GERM 4335). May be repeated for credit when subject changes up to 3 times total. Prerequisite: One GERM 3000-level course with a grade of C or better, or permission of the instructor.

GERM 4321. TOPICS IN LITERATURE & CULTURE. 3 Hours.

Literary periods, genres, authors, and research themes from German speaking countries. May include literature and thought from the Enlightenment and Classical period; Romanticism; the German Novelle and drama; German opera; banned books and postwar works from modern Germany. May be repeated as topics and texts vary. Prerequisite: GERM 2314 with a grade of B or better.

GERM 4322. SPECIAL TOPICS IN GERMAN STUDIES II. 3 Hours.

German courses that may be cross-period or thematically oriented, such as Culture of Obedience, Classical Tradition, or Women Writers, as well as specific time periods. Course may be repeated for credit with departmental permission as topic varies. Prerequisite: GERM 2314 with a grade of C or better.

GERM 4334. THE CULTURE OF BUSINESS. 3 Hours.

The relationship of culture, language, and meaning to issues affecting business and e-commerce in the German-speaking world, with emphasis on intercultural communication in an international business environment. Web-based media segments about international business in German-speaking Europe and the United States are used as an aid in the acquisition of pertinent cultural knowledge, as well as vocabulary. Prerequisite: GERM 2314 with a grade of C or better.

GERM 4335. BUSINESS GERMAN. 3 Hours.

Students learn to function in business environments, with emphasis on the skills needed for conducting e-commerce. Web-based media segments from the United States and German-speaking Europe are used to reinforce vocabulary and other linguistic knowledge. Prerequisite: GERM 4334 with a grade of C or better.

GERM 4339. THE ACQUISITION OF GERMAN. 3 Hours.

Theory and practice of acquisition of German. Techniques needed to understand and analyze the sounds, vocabulary, and grammar of the German language. Introduction to reading strategies, the development of oral communication skills, and writing strategies.

GERM 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission.

GERM 4393. GERMAN INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in German, outside readings, and formal presentations. Prerequisite: Two GERM 3000 level courses and permission of the instructor.

GERM 4394. HONORS THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit.

COURSES

GLOBAL 2301. INTRODUCTION TO GLOBAL ISSUES. 3 Hours.

Comparative perspectives on a broad range of cultural, linguistic, economic, political, and social issues confronting a globalized world today. Designed to draw attention to the multifaceted connections among nation-states, nongovernmental organizations, diverse ethnic, cultural and religious groups, and populations around the world.

GLOBAL 2315. INTRODUCTION TO LOCALIZATION AND LANGUAGE TECHNOLOGY. 3 Hours.

An introduction to localization and computational approaches to language and culture. Topics will include: computer-aided translation, machine translation, natural language processing, mining and semantic analysis of language data, machine learning/AI with natural language.

GLOBAL 3301. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS I. 3 Hours.

Intensive study of a particular world region and/or culture including, but not limited to, its language, geography, history, arts, commerce, politics, and government. Focus on its uniqueness as a culture and its integral place in global society. Repeatable for credit as topic varies. No prerequisite. Recommend enrollment in GLOBAL 2301 concurrently or previously.

GLOBAL 3302. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS II. 3 Hours.

Advanced study of a particular world region and/or culture including, but not limited to, its language, geography, history, arts, commerce, politics, and government. Emphasis on film, media, international communication, or other subjects of global study. Repeatable for credit as topic changes. No prerequisite. Strongly recommended: GLOBAL 2301 and GLOBAL 3301, concurrently or previously.

GLOBAL 3310. LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: GLOBAL 3301 in the language under study or permission of the instructor.

GLOBAL 4301. RESEARCH IN GLOBAL STUDIES. 3 Hours.

This course examines multidisciplinary problems that fall within the scope of human rights and the UN's Sustainable Development Goals (SDGs). Students complete coursework which culminates in an original research project on a topic of their choice, which might involve novel approaches toward sustainability, food security, infrastructure, health, water conservation, sanitation, ecosystem resilience, urbanization, recycling, or other issues related to globalization. Students will investigate and propose solutions in the form of a proposal to carry out active field work in partnership with a non-governmental agency or non-profit organization working to promote sustainable global development. For students pursuing a minor or certificate in Global Studies, this course serves as their Capstone. Prerequisite: ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304.

GLOBAL 4312. INTERCULTURAL COMPETENCE FOR GLOBAL COMMUNICATION. 3 Hours.

A study of the differences between the U.S. and other cultures of the world with a focus on the development of intercultural competence: verbal and non-verbal communication, interpersonal skills, effective management strategies, and professional etiquette in multicultural settings.

GLOBAL 4393. INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, and formal presentations. Prerequisite: Two GLOBAL 3000 level courses and/or permission of the instructor.

COURSES

KORE 1441. BEGINNING KOREAN I. 4 Hours. (TCCN = KORE 1411)

Multimedia immersion in the culture and language of Korea. Designed to enable students to understand and communicate effectively in Korean at the beginning level.

KORE 1442. BEGINNING KOREAN II. 4 Hours. (TCCN = KORE 1412)

Continuation of Beginning Korean I. Prerequisite: KORE 1441 with a grade of C or better.

KORE 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

KORE 2301. TOPICS IN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. KORE 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

KORE 2310. KOREAN CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Korean-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

KORE 2313. INTERMEDIATE KOREAN I. 3 Hours. (TCCN = KORE 2311)

Continued immersion in the culture and language of Korea. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: KORE 1442 with a grade of C or better.

KORE 2314. INTERMEDIATE KOREAN II. 3 Hours. (TCCN = KORE 2312)

Continuation of Intermediate Korean I. Prerequisite: KORE 2313 with a grade of C or better.

KORE 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

KORE 3301. TOPICS IN KOREAN LITERATURE AND CULTURE IN TRANSLATION. 3 Hours.

Main currents in contemporary Korean literature, art, film, and thought in relation to Korean political and social history. May be repeated for credit as topics or periods vary. May be taken to fulfill the foreign language literature requirement.

KORE 3303. KOREAN CONVERSATION AND CULTURE I. 3 Hours.

Practice in oral expression with an emphasis on vocabulary building, developing conversational skills, and cultural knowledge through the use of readings, film, and other media. Of special interest to students who wish to improve their skills in oral expression, reading comprehension, and writing. Credit will not be granted to native speakers of Korean. However, heritage speakers of Korean may register for the course when they pass the Korean Placement Test administered by the instructor. Prerequisite: KORE 2314 with a grade of C or better.

KORE 3304. KOREAN CONVERSATION AND CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge through the use of readings, film, and other media. Extensive conversation practice allows students to develop advanced-intermediate level oral skills in a broad range of communicative and cultural contexts. Students learn to express more abstract ideas through description, comparison, and narration. Credit will not be granted to native speakers of Korean. Heritage speakers of Korean may register for the course when they pass the Korean Placement Test administered by the instructor. Prerequisite: KORE 2314 with a grade of C or better.

KORE 3305. KOREAN READING AND COMPOSITION. 3 Hours.

An analysis of Korean texts and composition with emphasis on reading comprehension, grammar, writing skills, and compositional techniques. Readings may include newspaper articles, short stories, and essays on various topics of Korean culture. Prerequisite: KORE 2314 with a grade of C or better.

KORE 3310. KOREAN LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Korean language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May not be repeated for credit. Prerequisite: KORE 2314 or the equivalent with a grade of B or better.

KORE 3311. KOREAN LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Korean and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: KORE 3310 with a grade of B or better.

KORE 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Korean. KORE 3310 is strongly recommended before KORE 3345.

KORE 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Korean. Prerequisite: KORE 3310.

KORE 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Korean. Prerequisite: KORE 3310, KORE 4334, KORE 3311 or KORE 4335.

KORE 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

KORE 3393. KOREAN INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

KORE 4321. TOPICS IN KOREAN LINGUISTICS. 3 Hours.

Topics may include fundamentals of the linguistic structure of modern Korean, including phonology, morphology, syntax, and semantics, as well as pragmatics and typology. Focus on linguistic applications to the problems of learning Korean. Taught in English. Students who are working toward a major or minor in Korean will be required to complete some assignments in the target language. May be repeated for credit as topics may change. Prerequisite: KORE 1442 with a grade of C or better.

KORE 4331. TOPICS IN KOREAN CULTURE AND CIVILIZATION. 3 Hours.

Historical survey of the social, political, and economic aspects of Korean culture. Topics may include language, culture, history, literature, art, music, film, and other means of mass communication. No prior knowledge of Korean language or culture is necessary. Taught in English. Students who are working toward a major or minor in Korean will be required to complete some assignments in the target language. May be repeated as the topic changes.

KORE 4332. CONTEMPORARY KOREAN CULTURE. 3 Hours.

Study of the social, political, and economic aspects of Korean culture with focus on current events relevant to Korea. The course also explores language, literature, art, film, food, and music, including K-pop. No prior knowledge of Korean language or culture is necessary. Taught in English. Students who are working toward a major or minor in Korean will be required to complete some assignments in the target language.

KORE 4334. THE CULTURE OF BUSINESS. 3 Hours.

The relationship of culture, language, and meaning to issues affecting business and e-commerce in the Korean-speaking world, with emphasis on intercultural communication in an international business environment. Web-based media segments about international business in Korea and North America are used as an aid in the acquisition of pertinent cultural knowledge, as well as vocabulary. Prerequisite: KORE 2314 with a grade of C or better.

KORE 4335. BUSINESS KOREAN. 3 Hours.

Students learn to function in business environments, with emphasis on the skills needed for conducting e-commerce. Web-based media segments from Korea and North America are used to reinforce vocabulary, as well as cultural, and other linguistic knowledge. Prerequisite: KORE 2314 with a grade of C or better.

KORE 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper or a translation on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

KORE 4393. KOREAN INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Korean, outside readings, and formal presentations. Prerequisite: Two KORE 3000 level courses and permission of the instructor.

COURSES

MODL 1441. TOPICS IN MODERN LANGUAGE LEVEL I. 4 Hours. (TCCN = CZEC 1411)

(Chinese, etc.). This course parallels the 1441 courses in FREN 1441, GERM 1441, RUSS 1441, and SPAN 1441.

MODL 1442. TOPICS IN MODERN LANGUAGE LEVEL II. 4 Hours. (TCCN = CZEC 1442)

(Chinese, etc.). This course parallels the 1442 courses in FREN 1442, GERM 1442, RUSS 1442, and SPAN 1442.

MODL 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

MODL 2301. INTRODUCTION TO WORLD LANGUAGES. 3 Hours.

An overview of the linguistic features of some of the world's most widely spoken languages, as well as issues affecting languages in a globalized world. Topics include language families; global distribution; writing systems and vocabulary; language and society; languages and globalization. This course satisfies the University of Texas at Arlington core curriculum requirement in social and behavioral sciences. Taught in English.

MODL 2313. TOPICS IN MODERN LANGUAGE LEVEL III. 3 Hours. (TCCN = CZEC 2311)

(Chinese, etc.). This course parallels the 2313 courses in FREN 2313, GERM 2313, RUSS 2313, and SPAN 2313.

MODL 2314. TOPICS IN MODERN LANGUAGE LEVEL IV. 3 Hours. (TCCN = CZEC 2312)

(Chinese, etc.). This course parallels the 2314 courses in FREN 2314, GERM 2314, RUSS 2314, and SPAN 2314 .

MODL 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

MODL 3301. TOPICS IN COMPARATIVE LANGUAGES, CULTURE, AND LITERATURES. 3 Hours.

Comparisons of language and language/culture issues across languages and/or time. Topics may include folklore across cultures, comparison of language and cultural production (e.g., international film and international feminism). May be counted toward fulfilling core curriculum requirement in literature or culture. May be repeated for credit when content changes. No prerequisites.

MODL 3310. LOCALIZATION & TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: ARAB 2314, CHIN 2314, PORT 2314, or MODL 2314 with a grade of C or better.

MODL 3311. LOCALIZATION & TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of foreign language and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May be repeated once. Prerequisites: MODL 3310 with a grade of B or better.

MODL 3391. INDEPENDENT STUDY. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit.

MODL 3393. MODERN LANGUAGE INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

MODL 4305. METHODS OF MODERN LANGUAGE TEACHING. 3 Hours.

An applied linguistics course for modern language professionals, focusing on the application of research and theory in linguistics and second language acquisition to the classroom setting. May include specific methods, language learning strategies, cooperative language learning, component and performance skills, lesson planning, and intercultural communication. Prerequisite: Two language courses at the 3000 level with a grade of C or better, or consent of the instructor.

MODL 4310. GRAPHIC NOVELS AND THE MEDICAL WORLD. 3 Hours.

This course examines the ways in which the comic book medium can bring new insights to patient, healthcare, and clinical experiences. Students will become familiar with both major works of graphic medicine and key theoretical texts related to sequential art and to pathographies (autobiographies that revolve particularly around health issues). Includes a cultural comparison component through patient and practitioner stories from an American and from a French perspective. Taught in English. Students in French can read the material in French and write assignments in French with permission of the instructor.

MODL 4339. LANGUAGE ACQUISITION. 3 Hours.

Theory and practice of language acquisition. Techniques needed to understand and analyze the sounds, vocabulary, and grammar of the target language and how this knowledge informs classroom practice. Prerequisite: Completion of two 3000 level courses in the same language (Arabic, Chinese, French, German, Korean, Russian, or Spanish) with a grade of C or better, or consent of the instructor.

MODL 4340. TOPICS IN MODERN LANGUAGE PEDAGOGY. 3 Hours.

Topics, methods, and techniques specific to the teaching of modern languages and the creation of an effective and communicative language classroom. Recommended for students seeking teacher certification. May be repeated for credit as topic changes. Prerequisite: Completion of one 4000-level class or two 3000-level classes in the same language (Arabic, Chinese, French, German, Korean, Russian, or Spanish) with a grade of B or better.

MODL 4391. INDEPENDENT STUDY. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit.

MODL 4393. MODERN LANGUAGE INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Spanish, outside readings, and formal presentations. Prerequisite: Two 3000-level courses and permission of the instructor.

MODL 5300. HISTORY OF THE FRENCH LANGUAGE. 3 Hours.

Development of the French language from its earliest forms to the present. Required for the MA in MODL with French concentration.

MODL 5301. MODERN LANGUAGES FOR GRADUATE READING. 3 Hours.

An intensive one-semester course designed for Ph.D. candidates and other graduate students to fulfill departmental foreign language requirements. Sections may be offered in French, German, Russian, or other applicable or appropriate languages. Does not fulfill any graduate degree requirements.

MODL 5302. TOPICS ACROSS THE LANGUAGES. 3 Hours.

This topic course varies in focus and will be taught by in-house faculty or visiting scholars. Taught in English, it will consider issues to cultural and literary concerns across the languages. Possible course offerings include: From Novel to Film, History and/as Literature, Propaganda as Literature, The History and Aesthetics of Film, The Other in Literature and Culture, Freud and the Literary Imagination, and Modernism.

MODL 5304. CURRENTS IN EUROPEAN AND LATIN AMERICAN LITERATURES AND THOUGHT. 3 Hours.

An examination of the mainstream genres and movements in European and Latin American literatures from 1600 to the present. Taught in English. Required for MA students in Modern Languages. May not be repeated for credit.

MODL 5305. METHODS OF MODERN LANGUAGE TEACHING. 3 Hours.

Methods of Modern Language Teaching is an applied linguistics course for modern language professionals, focusing on the application of research and theory in linguistics and second language acquisition to the classroom setting. May include specific methods, language learning strategies, cooperative language learning, component and performance skills, and intercultural communication.

MODL 5306. L2 ACQUISITION. 3 Hours.**MODL 5307. TOPICS IN SECOND LANGUAGE ACQUISITION. 3 Hours.**

May include topics in the areas of second language acquisition, methodologies, culture, and disciplines related to second language acquisition. May be repeated for credit as topics change.

MODL 5308. TECHNOLOGY AND LANGUAGE INSTRUCTION. 3 Hours.

Presentation and critique of research regarding the use of electronic media in language instruction; emphasis on computer and video, with attention to the application of research findings to the language classroom.

MODL 5309. TRANSLATION THEORY. 3 Hours.

Provides an introduction to basic concepts and offers a general conceptual framework for the study of translation theory. Students acquire the tools to identify, analyze and resolve translation problems while developing a rational approach to translation. (Following the completion of this course, students are encouraged to enroll in FREN 5309, GERM 5309 or SPAN 5309, Practicum in Translation.).

MODL 5310. THEORIES OF LITERATURE AND CULTURE. 3 Hours.

Readings, analyses, and applications of recent literary and cultural theories. Particular attention to how such theories may serve to focus or refocus literature as cultural production. Required for the M.A. in French, German, and Spanish.

MODL 5391. CONFERENCE. 3 Hours.**MODL 5393. MODL GRADUATE INTERNSHIP. 3 Hours.**

Graduate internship in the Department of Modern Languages with the student performing duties related to the field of modern languages. A combination of field-related experience at the graduate level with an academic component. Students are required to submit an approved academic project related to the work performed. May be repeated with approval of Graduate Advisor.

COURSES

PORT 1441. BEGINNING PORTUGUESE I. 4 Hours. (TCCN = PORT 1411)

Multimedia immersion in the culture and language of Portuguese-speaking countries. Designed to enable students to understand and communicate effectively in Portuguese at the beginning level. No prerequisites.

PORT 1442. BEGINNING PORTUGUESE II. 4 Hours. (TCCN = PORT 1412)

Continuation of beginning Portuguese. Prerequisite: PORT 1441 with a grade of C or better.

PORT 2301. TOPICS IN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. PORT 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

PORT 2313. INTERMEDIATE PORTUGUESE I. 3 Hours. (TCCN = PORT 2311)

Continued immersion in the culture and language of Portuguese -speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: PORT 1442 with a grade of C or better.

PORT 2314. INTERMEDIATE PORTUGUESE II. 3 Hours. (TCCN = PORT 2312)

Continuation of intermediate Portuguese. Prerequisite: PORT 2313 with a grade of C or better.

PORT 3303. PORTUGUESE CONVERSATION AND CULTURE. 3 Hours.

Practice in oral expression with an emphasis on developing conversational skills and cultural knowledge. Of special interest to students who wish to improve their skills in pronunciation, comprehension, and oral expression. Prerequisite: PORT 2314 with a grade of C or better. Credit will not be granted to native speakers of Portuguese. Heritage speakers of Portuguese need the consent of the instructor to register.

PORT 3304. PORTUGUESE CONVERSATION AND CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge. Emphasis on speaking, listening, building vocabulary, and providing practice in a broad range of communicative and cultural contexts. Credit will not be granted to native speakers of Portuguese. Heritage speakers of Portuguese need the consent of the instructor to register. Prerequisite: PORT 3303 with a grade of C or better.

PORT 3310. PORTUGUESE LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Portuguese language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: PORT 2314 or the equivalent with a grade of B or better. May not be repeated for credit.

PORT 3311. PORTUGUESE LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Portuguese and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: PORT 3310 with a grade of B or better.

PORT 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Arabic. ARAB 3310 is strongly recommended before ARAB 3345.

PORT 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: consent of the department.

PORT 4334. CONTEMPORARY BRAZILIAN CULTURE. 3 Hours.

Examination of contemporary Brazilian culture, with a focus on current events relevant to the Portuguese-speaking world. Topics may include: language and culture, literature, film, business culture, and traditions. Students may take the course in English or in Portuguese.

PORT 4393. PORTUGUESE INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Portuguese, outside readings, and formal presentations. May be repeated once for credit if student undertakes a different internship. Prerequisite: Two PORT 3000 level courses and/or permission of the instructor.

COURSES

RUSS 1441. BEGINNING RUSSIAN I. 4 Hours. (TCCN = RUSS 1411)

Multimedia immersion in the culture and language of Russian-speaking countries. Designed to enable students to understand and communicate effectively in Russian at the beginning level. No prerequisites.

RUSS 1442. BEGINNING RUSSIAN II. 4 Hours. (TCCN = RUSS 1412)

Continuation of beginning Russian. Prerequisite: RUSS 1441 with a grade of C or better.

RUSS 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

RUSS 2301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. RUSS 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

RUSS 2310. RUSSIAN CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Russian-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

RUSS 2313. INTERMEDIATE RUSSIAN I. 3 Hours. (TCCN = RUSS 2311)

Continued immersion in the culture and language of Russian-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 2314. INTERMEDIATE RUSSIAN II. 3 Hours. (TCCN = RUSS 2312)

Continuation of intermediate Russian. Prerequisite: RUSS 2313 with a grade of C or better.

RUSS 2315. INTRODUCTION TO RUSSIAN LANGUAGE AND CULTURE. 3 Hours.

A fully online course devoted to immersion in Russian culture through print and digital media as well as conversation and collaboration with native speakers of Russian. Students will gain broad exposure to social and historical contexts of Russian culture as well as reading ability of the Russian Cyrillic alphabet, and practice in basic reading, writing and speaking skills in Russian. No prerequisites. Prior knowledge of Russian is useful but not required. Credit will not be granted to native or heritage speakers of Russian.

RUSS 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

RUSS 3301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Russian authors during the period from the beginning of Russian literature until the 1917 Revolution, focusing on the interrelationship of various literary movements and philosophies. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3301 and RUSS 3301; credit will be granted in only one department. Prerequisites: ENGL 3301-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

RUSS 3304. TOPICS IN RUSSIAN LANGUAGE STUDY. 3 Hours.

Study of Modern Russian with a focus on pronunciation, word formation, and syntax. Students develop advanced listening, reading, speaking, and writing skills through cultural analysis. Cultural topics come from linguistics, literature, music, film, visual and performing arts, sports, and science. Repeatable for credit when the topic changes.

RUSS 3305. TOPICS IN RUSSIAN POETRY. 3 Hours.

Literary analysis of selected works of Russian poetry in the original Russian. Topics will come from different periods of Russian literary and cultural history. Students develop reading, writing, and language skills at an advanced level. Repeatable for credit when the topic changes.

RUSS 3306. TOPICS IN SOVIET AND POST-SOVIET LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Soviet and post-Soviet authors from 1917 to the present against the background of unfolding social and political development in the USSR and post-USSR. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3306 and RUSS 3306; credit will be granted in only one department. Prerequisites: ENGL 3306-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

RUSS 3310. LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Russian language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May be repeated once. Prerequisite: RUSS 2314 with a grade of B or better.

RUSS 3311. LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Russian and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: RUSS 3310 with a grade of B or better.

RUSS 3314. POLITICAL SYSTEMS OF EASTERN AND CENTRAL EUROPE. 3 Hours.

POLS 3314 or RUSS 3314. Examination of the political institutions and processes of the former communist systems of Eastern Europe and the Baltics, as well as selected Central European states. Credit will be given in only one department. Students receiving credit in Russian will complete projects using the Russian language.

RUSS 3333. CONVERSATION AND TOPICS IN RUSSIAN CULTURE. 3 Hours.

Intermediate practice in spoken Russian using print and media resources on a range of cultural topics. Students actively master the discourse of the source media through dialogue, debate, and short presentations in Russian. May be repeated as topic varies. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 3343. RUSSIAN PHONETICS. 3 Hours.

Introduction to the articulatory phonetics of Russian. Of special interest to students who wish to improve their pronunciation, comprehension, and oral expression. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Russian. RUSS 4334 or RUSS 3310 is strongly recommended before RUSS 3345.

RUSS 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Russian. Prerequisite: RUSS 3310 or RUSS 4334.

RUSS 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Russian. Prerequisite: RUSS 3310, RUSS 4334, RUSS 3311 or RUSS 4335.

RUSS 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission.

RUSS 3393. RUSSIAN INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of the instructor.

RUSS 4301. SELECTED AUTHORS AND TOPICS. 3 Hours.

Detailed reading and analysis of selected Russian writers such as Alexander Pushkin, Nikolai Gogol, Fyodor Dostoevsky, Leo Tolstoy, Ivan Turgenev and Anton Chekhov. Their works are compared in the light of urgent social, political, literary and philosophical questions of their day. May be repeated as topic varies. No prerequisites. Students majoring in Russian read some texts in the original. Taught in English. Satisfies the core curriculum requirement for literature.

RUSS 4302. RUSSIAN AND SOVIET CINEMA. 3 Hours.

A survey of Russian and Soviet cinema from their beginnings to the present. Special attention is paid to film theory and formal analysis, the ideological uses of film art, and cinema as a medium of cultural dissent and witness to social change. No prerequisites. May also be offered as ENGL 3300; credit will be granted in only one department. Taught in English.

RUSS 4303. PROPAGANDA AND IDEOLOGY IN SOVIET ART AND LITERATURE. 3 Hours.

An examination of the purpose, value and influence of the arts in revolutionary Russia with the aid of diverse source documents and artistic media. Focus is on the symbols, stories, rituals and ideologies that defined the Russian experience of 'building socialism' in the early decades of the Soviet Union. No prerequisites. Students majoring in Russian read some texts in the original. Taught in English. Satisfies the core curriculum requirement for literature.

RUSS 4304. BANNED AND CENSORED WORKS OF RUSSIAN LITERATURE. 3 Hours.

An examination of selected works of Russian literature that were censored, banned or otherwise prohibited, from tsarist Russia through the Soviet period. The role of censorship in Russian cultural life, and the great works of literature that flourished in spite of it. No prerequisites. Students majoring in Russian read some texts in the original. Taught in English. Satisfies the core curriculum requirement for literature.

RUSS 4334. THE CULTURE OF BUSINESS. 3 Hours.

The relationship of culture, language, and meaning to issues affecting business and e-commerce in the Russian-speaking world, with emphasis on intercultural communication in an international business environment. Web-based media segments about international business in Russia, Europe, and North America are used as an aid in the acquisition of pertinent cultural knowledge, as well as vocabulary and other linguistic knowledge. Prerequisite: RUSS 2314 with a grade of C or better.

RUSS 4335. BUSINESS RUSSIAN. 3 Hours.

Students learn to function in business environments, with emphasis on the skills needed for conducting e-commerce. Web-based media segments from Russia, Europe, and North America are used to reinforce vocabulary and other linguistic knowledge. Prerequisite: RUSS 4334 with a grade of C or better.

RUSS 4338. TOPICS IN INTERCULTURAL COMMUNICATION AND COLLABORATION. 3 Hours.

This course is devoted to intercultural communication and collaboration. Through telecollaboration with native speakers of Russian, students will gain active practice in listening comprehension and spoken and written Russian. Active learning tasks employing multimedia in collaboration with language partners will contribute to a broadening of knowledge in the social and historical contexts of Russian culture and media, increased ability to express ideas in everyday contexts in spoken and written Russian, and advancement of strategies for autonomous learning. May be repeated for credit as topic changes. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 4342. TOPICS IN SIMULTANEOUS INTERPRETING: THEORY AND PRACTICE. 3 Hours.

This fully online course focuses on the theory and practice of simultaneous interpreting through active translation and interpreting tasks. Through telecollaboration with native speakers of Russian, students will gain active practice in listening comprehension and spoken and written Russian. A major focus is on translation and simultaneous interpreting in a variety of professional contexts including health and legal settings, politics and media, and business negotiations. Active learning projects will involve role-play, simultaneous interpreting tasks, and creating audio/visual presentations. Prerequisite: RUSS 2314 or equivalent.

RUSS 4361. THE POLITICAL ENVIRONMENT OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The domestic political systems of Russia and the other former Soviet republics. The communist state in retrospect. Development of political actors, institutions, and parties. Offered as POLS 4361 and RUSS 4361; credit will be given in only one department. Taught in English; for Russian language credit, research will be done in Russian.

RUSS 4362. RUSSIA AND THE SUCCESSOR STATES TODAY. 3 Hours.

The metamorphosis of the Communist Party and the current political philosophies of the post-Soviet states. Examination of attitudes and self-perceptions of citizens of these states in the post-period. Emphasis is on area studies and culture. The course will be taught in English, but for Russian language credit; research will be done in the Russian language. May be repeated for credit as topics change. Offered as POLS 4362 & RUSS 4362. Credit will be granted in only one department.

RUSS 4365. FOREIGN POLICIES OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The foreign policies of Russia and other former Soviet republics. Development of their policymaking structures and the major issues confronting them. Emphasis on Russia and the superpower relationship, European security and cooperation, relations with developing states, and the interactions of the former Soviet republics. Also listed as RUSS 4365; credit will be given in only one department.

RUSS 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper or a translation on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

RUSS 4393. RUSSIAN INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Russian, outside readings, and formal presentations. Prerequisite: Two RUSS 3000 level courses and permission of the instructor.

RUSS 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit.

COURSES**SPAN 1441. BEGINNING SPANISH I. 4 Hours. (TCCN = SPAN 1411)**

Beginning study of Spanish language with emphasis on speaking, listening, reading, and writing. No prerequisites. Native or heritage speakers of Spanish may not take this course.

SPAN 1442. BEGINNING SPANISH II. 4 Hours. (TCCN = SPAN 1412)

Continuation of beginning Spanish. Prerequisite: SPAN 1441 with a grade of C or better. Native or heritage speakers of Spanish may not take this course.

SPAN 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

SPAN 2300. SPANISH IN THE UNITED STATES. 3 Hours.

An overview of the historical, social, and cultural issues related to the use of Spanish in the United States alongside other languages, mainly English. Explores topics such as bilingualism, code-switching, Spanglish, and language maintenance vs. loss. Taught in English.

SPAN 2301. TOPICS IN SPANISH LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. SPAN 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

SPAN 2310. HISPANIC CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Spanish-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

SPAN 2313. INTERMEDIATE SPANISH I. 3 Hours. (TCCN = SPAN 2311)

Intermediate study of Spanish language with emphasis on speaking, listening, reading, and writing. Prerequisite: SPAN 1442 with a grade of C or better. Native or heritage speakers of Spanish may not take this course.

SPAN 2314. INTERMEDIATE SPANISH II. 3 Hours. (TCCN = SPAN 2312)

Continuation of intermediate Spanish. Prerequisite: SPAN 2313 with a grade of C or better. Native or heritage speakers of Spanish may not take this course.

SPAN 2315. INTERM SPAN HERITAGE SPEAKERS. 3 Hours. (TCCN = SPAN 2315)

This course focuses on the development of reading, writing, speaking and listening skills in Spanish, as well as an understanding of Hispanic cultures and issues of identity of heritage speakers in the United States. This course is intended for heritage speakers of Spanish and is the equivalent of SPAN 2314. This course satisfies the University of Texas at Arlington core curriculum requirement in language, philosophy and culture. Prerequisite: SPAN 2313 with a Grade of C or better or the equivalent, or consent of the department.

SPAN 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. Prerequisite: Permission of the instructor.

SPAN 3302. HISPANIC LITERATURE IN TRANSLATION. 3 Hours.

The works of major authors and intellectual trends of a given period. May be repeated for credit as topics or periods vary. SPAN 3302 cannot be applied toward the B.A. in Spanish or toward a Spanish minor, but may be taken to fulfill the foreign language literature requirement. Prerequisite: 2314 of a Modern or Classical language and six hours of English.

SPAN 3303. ADVANCED SPANISH CONVERSATION. 3 Hours.

Practice in oral expression with an emphasis on vocabulary building and grammar review. Of special interest to students who wish to improve their skills in pronunciation, comprehension, and oral expression. Credit will not be granted to native or heritage speakers of Spanish. Prerequisite: SPAN 2314 with a grade of C or better.

SPAN 3304. LANGUAGE IN MEXICO. 3 Hours.

An analysis of language in Mexico. Topics may include language variation, language and society, languages in contact, indigenous languages, or the history of Spanish in Mexico. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3305. ADVANCED SPANISH FOR HERITAGE SPEAKERS. 3 Hours.

A detailed study of Spanish grammar for heritage speakers. Capitalizes upon students' existing language skills, expands their knowledge base, and develops their ability to read, write, and communicate more effectively. Special attention is given to regional and dialectal differences. Prerequisite: SPAN 2315, or the equivalent, with a grade of C or better.

SPAN 3308. SPANISH FOR HEALTH AND HUMAN SERVICES. 3 Hours.

Practice in Spanish-language skills needed in the fields of healthcare, social work, and other human services. Emphasis on specialized vocabulary building, grammar, role play, and an understanding of Hispanic/Latino culture. For students interested in working with Spanish-speaking clients in nursing/medicine, translation/interpreting, social work, or mental health settings. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better or consent of instructor.

SPAN 3309. SPANISH FOR THE PROFESSIONS. 3 Hours.

Practice in Spanish-language skills needed in the professional fields in order to communicate with Spanish-speaking individuals. Emphasis on specialized vocabulary building, role play, and an understanding of Hispanic culture. Topics may include Spanish for law enforcement, social services, education, medicine, business, and communications. Prerequisite: SPAN 2314 or SPAN 2315, or the equivalent, with a grade of C or better.

SPAN 3310. SPANISH LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to linguistic and cultural issues in the translation of Spanish language texts. Students will explore current technologies used in various real-world localization and translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 2314 or SPAN 2315 or the equivalent with a grade of B or better.

SPAN 3311. SPANISH CULTURE AND CIVILIZATION. 3 Hours.

Spanish history with emphasis on cultural, intellectual, and artistic trends and existing social institutions. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3312. LATIN AMERICAN CULTURE AND CIVILIZATION. 3 Hours.

An interdisciplinary introduction to Latin American society, history and culture. Offered as MAS 3312 and SPAN 3312; credit will be granted for either MAS or SPAN. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3313. TOPICS IN HISPANIC LANGUAGE, LITERATURE & CULTURE. 3 Hours.

Topics may include Peninsular or Latin American film, music, radio, politics, human rights movements, literature, language or Hispanic linguistics. May be repeated as the topic changes. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3314. ADVANCED SPANISH GRAMMAR. 3 Hours.

A detailed study of Spanish grammar for non-native speakers. Credit will not be granted to native or heritage speakers of Spanish. Prerequisite: SPAN 2314 with a grade of C or better.

SPAN 3315. SPANISH COMPOSITION. 3 Hours.

Practice in writing and original composition in Spanish, including the study of a variety of texts. Of special interest to students who wish to improve their reading comprehension and their writing skills. Prerequisite: SPAN 3305 or SPAN 3314, with grade C or better.

SPAN 3316. SPANISH LANGUAGE STUDY. 3 Hours.

An overview of the Spanish language as a system. Topics include sounds and spelling, language structure, word meanings, language functions, and varieties of Spanish. Prerequisite: SPAN 3305 or SPAN 3314, with a grade of C or better.

SPAN 3317. MEXICAN CULTURE AND CIVILIZATION. 3 Hours.

An examination of Mexican society, history, and culture with emphasis on intellectual and artistic trends. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3318. MEXICAN POPULAR CULTURE. 3 Hours.

An interdisciplinary examination of Mexican popular culture. Topics include: Mexican popular literature, film, comics, television, music, mass media, and the internet. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3320. INTRODUCTION TO HISPANIC LITERATURE AND CULTURE. 3 Hours.

An introduction to the tools of literary and cultural criticism as well as Spanish and Latin American literary history. Study of representative literary texts with the object of developing students' understanding of historical change and cultural crosscurrents. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 3321. SPANISH LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of linguistic and cultural issues in the translation of Spanish and English language texts. Systematic development of advanced skills in localization and computer-aided translation tools. Students will build and train machine translation engines and explore text analytics in modern research and the enterprise. Prepares localization and translation specialists for real-world careers in the language-services industry of the 21st Century. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 3310 with a grade of B or better.

SPAN 3340. INTRODUCTION TO TRANSLATION. 3 Hours.

This course is an introduction to the theory, methods and practice of English to Spanish translation and Spanish to English translation. The student will learn how to address translation problems related to culture and language as well as the fundamentals of translating general material from different fields such as journalism, advertisement, tourism, gastronomy, health, business, etc. The student will also acquire basic knowledge of translation theory. SPAN 3340 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3315 with grade of B or better.

SPAN 3341. INTRODUCTION TO INTERPRETING. 3 Hours.

Introduction to the theory, methods and practice of interpreting. The student will become familiar with community interpreting (interpreting in school, medical and legal settings) and interpreting theory. The student will begin to interpret in the simultaneous and consecutive (bilateral) modes. The student will also learn about sight translation. Non-native/heritage speakers are also encouraged to take SPAN 3303 prior to enrolling in SPAN 3341. SPAN 3341 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of B or better.

SPAN 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. For students enrolled in Localization and Translation/Interpreting programs only. Exclusively for students pursuing a minor in Localization and Translation-Spanish. SPAN 3310 is strongly recommended before SPAN 3345.

SPAN 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 3310.

SPAN 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 3310 or SPAN 3321.

SPAN 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

SPAN 3393. SPANISH INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

SPAN 4191. CONFERENCE COURSE. 1 Hour.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

SPAN 4310. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE TO THE EIGHTEENTH CENTURY. 3 Hours.

Topics may include: Medieval Spanish literature and culture, Golden Age Spanish literature and culture, or any particular movement, genre, work or author prior to the eighteenth century. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4311. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE, EIGHTEENTH CENTURY TO THE PRESENT. 3 Hours.

Topics may include: Neoclassical peninsular Spanish literature and culture, peninsular Spanish literature and culture of the Romantic period, Realist or Naturalist Spanish literature and culture, peninsular Spanish literature and culture since 1900, as well as any particular movement, genre, work or author from the eighteenth century to the present. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4312. INTERCULTURAL COMPETENCE FOR GLOBAL COMMUNICATION. 3 Hours.

A study of the cultural differences between the U.S. and the Hispanic world with a focus on the development of intercultural competence: verbal and non-verbal communication, interpersonal skills, effective management strategies, and professional etiquette in multicultural settings. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4313. TOPICS IN HISPANIC CULTURE. 3 Hours.

Among the topics are Spanish or Latin American music, television, radio, film, and literature as culture. May be repeated for credit as topic changes. Prerequisite: SPAN 3315 with a grade of C or better. Offered as MAS 4313 and SPAN 4313; credit will be given for MAS 4313 or SPAN 4313 but not both in a given semester.

SPAN 4314. TOPICS IN LATIN-AMERICAN LITERATURE AND CULTURE TO MODERNISM. 3 Hours.

Topics may include: Colonial Latin-American literature and culture, pre-modern Latin-American literature and culture, Latin-American literature and culture of the Enlightenment, or any particular movement, genre, work or author prior to Modernism. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4315. TOPICS IN CONTEMPORARY LATIN-AMERICAN LITERATURE AND CULTURE, MODERNISM TO THE PRESENT. 3 Hours.

Topics may include: Latin-American literature and culture of Modernism, modern Latin-American literature and culture, or any particular movement, genre, work or author from Modernism to the present. May be repeated for credit when content changes. Offered as MAS 4315 and SPAN 4315; credit will be given for MAS 4315 or SPAN 4315 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4316. ADVANCED SPANISH LANGUAGE STUDY. 3 Hours.

Study of the structure of the Spanish language including phonology, morphology, and syntax, as well as historical, regional, and social variation. Prerequisite: SPAN 3314 or SPAN 3305 with a grade of C or better.

SPAN 4317. CHICANO LITERATURE. 3 Hours.

Mexican-American literature, with special attention to its social, cultural, and linguistic background. Offered as MAS 4317 and SPAN 4317; credit will be given for MAS 4317 or SPAN 4317 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4318. MEXICAN LITERATURE. 3 Hours.

Studies in Mexican fiction, poetry, drama, and literary essay. Offered as MAS 4318 and SPAN 4318; credit will be given for MAS 4318 or SPAN 4318 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4320. TOPICS IN SPANISH LANGUAGE, WRITING AND THEORY. 3 Hours.

Review of advanced research methods and topics in Spanish, Latino and Latin American literature, culture and linguistics. Topics may include: literary and cultural theory in relation to Hispanic literature and culture, research trends, and methods in Spanish linguistics. Students conduct original research or writing projects in relation to the course topic. May be repeated for credit as topic changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Considers women as characters in and writers of Hispanic literature. Includes the analysis of themes, language, and how the writings of women often give voice to lesser known aspects of culture. Offered as SPAN 4327, MAS 4327, and WOMS 4327; credit will be granted only once. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4330. TOPICS IN SPANISH LINGUISTICS. 3 Hours.

Topics may include: Spanish phonetics and phonology, morphology, syntax, semantics, lexicography, history of the Spanish language, Old Spanish, Spanish sociolinguistics, as well as the application of any theoretical approach to the study of the Spanish language, excluding the study of either peninsular or American Spanish dialectology. May be repeated for credit when content changes. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of C or better.

SPAN 4332. TOPICS IN SPANISH DIALECTOLOGY. 3 Hours.

Topics may include: Modern peninsular Spanish dialectology, modern Spanish-American dialectology, Old Spanish dialectology, early American Spanish dialectology, as well as a detailed study of any one dialect or regional dialect of Spanish from either a synchronic or a diachronic perspective. Emphasis may be given to phonetics, phonology, morphology, syntax, semantics, or lexicon, as applied to the study of peninsular or American Spanish dialectology. May be repeated for credit when content changes. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of C or better.

SPAN 4334. CONTEMPORARY HISPANIC CULTURE. 3 Hours.

An introduction to contemporary Spanish and/or Latin American culture, with special emphasis on globalization and current events affecting the Spanish-speaking world. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4335. BUSINESS SPANISH. 3 Hours.

The study of business terminology and skills needed for writing business letters, conducting telephone conversations, engaging in commercial transactions, and understanding international procedures. Operational and strategic issues involved in interaction with Hispanic firms and markets; international trade; competitive, vendor-customer, and collaborative relations. Prerequisite: SPAN 3315 with a grade of C or better. Exclusively for International Business Spanish students, or students pursuing a Certificate in Spanish for the Professions.

SPAN 4336. TOPICS IN SPANISH FOR THE PROFESSIONS. 3 Hours.

Development of Spanish-language skills needed to work in a specific profession. Emphasis on reading and formal communication, including technical papers, letters, reports, proposals, and presentations. Topics may include Spanish for legal, medical, educational, or communications fields. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4339. THE ACQUISITION OF SPANISH. 3 Hours.

Topics, methods, and techniques specific to the teaching of the Spanish language. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of C or better.

SPAN 4341. BUSINESS AND LEGAL TRANSLATION. 3 Hours.

An advanced course in translation with a focus on business and legal texts. Students deepen their knowledge of translation theory and are trained to build and consolidate their skills in specialized translation. May be taken concurrently with SPAN 4342. SPAN 4341 cannot be applied toward the B.A. in Spanish. Prerequisite: SPAN 3340 with a grade of C or better.

SPAN 4342. TRANSLATION IN HEALTHCARE SETTINGS. 3 Hours.

An advanced course in translation with a focus on healthcare translation. Particular attention will be paid to healthcare terminology in English and Spanish, text types, and cultural elements. Students deepen their knowledge of translation theory and are trained to build and consolidate their skills in specialized translation. May be taken concurrently with SPAN 4341. SPAN 4342 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3340 with a grade of C or better.

SPAN 4343. INTERPRETING IN HEALTHCARE SETTINGS. 3 Hours.

A study of different types of interpretation. Healthcare terminology in English and Spanish will be addressed with a special emphasis on the diverse roles of healthcare interpreters as well as various locations where they are needed, such as hospital clinics, doctors' offices, and hearings that deal with medical issues. Ethical standards of practice in healthcare interpreting will be examined. SPAN 4343 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3341 with a grade of B or better.

SPAN 4344. INTERPRETING IN LEGAL SETTINGS. 3 Hours.

A study of different types of interpretation. Legal terminology in English and Spanish will be addressed with special emphasis on the diverse roles of legal interpreters as well as various locations where they are needed, such as courtrooms, lawyer's offices, and state, federal, or local law-enforcement facilities. Ethical standards of practice in legal interpreting will be examined. SPAN 4344 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3341 with a grade of B or better.

SPAN 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: two 3000 level courses and permission of the instructor.

SPAN 4392. SPANISH TRANSLATION AND INTERPRETING INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Spanish, outside readings, and formal presentations. Prerequisite: Two Spanish 3000 level courses and permission of the instructor.

SPAN 4393. SPANISH INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Spanish, outside readings, and formal presentations. Prerequisite: Two SPAN 3000 level courses and permission of the instructor.

SPAN 4394. HONORS THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit. Prerequisite: two 3000 level courses and permission of the instructor.

SPAN 5101. TEACHING PRACTICUM I. 1 Hour.

Required of all teaching assistants in Spanish in their first semester. May not be counted toward a master's degree. Graded P/F/R.

SPAN 5102. TEACHING PRACTICUM II. 1 Hour.

Required of all teaching assistants in Spanish in their second semester. May not be counted toward a master's degree. Graded P/F/R.

SPAN 5190. CONFERENCE COURSE IN SPANISH LANGUAGE AND LITERATURE. 1 Hour.

Graded P/F/R.

SPAN 5300. HISTORY OF THE SPANISH LANGUAGE. 3 Hours.

Study in topics related to the development of the Spanish language, from its earliest forms to the present.

SPAN 5302. SPANISH DIALECTOLOGY. 3 Hours.

Phonological, grammatical, and lexical features of Spanish dialects worldwide.

SPAN 5303. APPLIED SPANISH LINGUISTICS. 3 Hours.

Pedagogy, pronunciation and orthography, morphology, syntax, semantics, and culture.

SPAN 5310. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE TO THE EIGHTEENTH CENTURY. 3 Hours.

Topics may include: Medieval Spanish literature and culture, Golden Age Spanish literature and culture, or any particular movement, genre, work or author prior to the eighteenth century. May be repeated for credit when content changes.

SPAN 5311. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE, EIGHTEENTH CENTURY TO THE PRESENT. 3 Hours.

Topics may include: Neoclassic peninsular Spanish literature and culture, peninsular Spanish literature and culture of the Romantic period, Realist or Naturalist Spanish literature and culture, peninsular Spanish literature and culture since 1900, as well as any particular movement, genre, work or author from the eighteenth century to the present. May be repeated for credit when content changes.

SPAN 5313. TOPICS IN HISPANIC LITERATURE AND CULTURE. 3 Hours.

Special studies in areas not ordinarily covered by regular course offerings. Different topics may be repeated for credit.

SPAN 5314. TOPICS IN SPANISH-AMERICAN LITERATURE AND CULTURE TO MODERNISM. 3 Hours.

Topics may include: Colonial Spanish-American literature and culture, pre-modern Spanish-American literature and culture, Spanish-American literature and culture of the Enlightenment, or any particular movement, genre, work or author prior to Modernism. May be repeated for credit when content changes.

SPAN 5315. TOPICS IN CONTEMPORARY SPANISH-AMERICAN LITERATURE AND CULTURE, MODERNISM TO THE PRESENT. 3 Hours.

Topics may include: Spanish-American literature and culture of Modernism, modern Spanish-American literature and culture, or any particular movement, genre, work or author from Modernism to the present. May be repeated for credit when content changes.

SPAN 5317. U.S. LATINO LITERATURE AND CULTURE. 3 Hours.

Readings of poetry, theater, and prose in relation to the specific socio-historical and political context of U.S. Latino life. Charts changing concepts of cultural identity and the evolution of cultural coding in texts written after 1960.

SPAN 5318. MEXICAN LITERATURE AND CULTURE. 3 Hours.

Readings in all Mexican literary genres from various critical perspectives. Particular attention given to the novel, poetry, and essay of the 20th Century and to interrelationships between text and culture.

SPAN 5320. TOPICS IN SPANISH LINGUISTICS. 3 Hours.

Special studies in linguistics not ordinarily covered by regular course offerings. May be repeated for credit when content changes.

SPAN 5327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Readings of literary texts by women writers from medieval Spain to contemporary Spanish America. Attention to recurrent motifs as well as to the literary expression of historical and cultural transformation.

SPAN 5330. ADVANCED STUDIES IN SPANISH LINGUISTICS I. 3 Hours.

Topics may include: sociolinguistics, bilingualism, modern Spanish dialectology, as well as a detailed study on any one dialect or regional dialect of contemporary Spanish. May be repeated for credit when content changes.

SPAN 5332. ADVANCED STUDIES IN SPANISH LINGUISTICS II. 3 Hours.

Topics may include: Old Spanish, Spanish philology, Spanish text linguistics, and Old Spanish dialectology, as well as a detailed study of any one dialect or regional dialect of Spanish. May be repeated for credit when content changes.

SPAN 5366. SPANISH FOR SCHOOL ADMINISTRATORS AND TEACHERS. 3 Hours.

Development of Spanish proficiency for teachers and administrators through an immersion approach. Emphasis on concepts and terminology related to education, program administration, community involvement and communication with Spanish-speaking parents. This course can be repeated.

SPAN 5391. CONFERENCE COURSE IN SPANISH LINGUISTICS AND LITERATURE. 3 Hours.

Graded R.

SPAN 5393. GRADUATE SPANISH INTERNSHIP. 3 Hours.

Graduate internship with the student performing duties within the field of Spanish. A combination of field-related experience at the graduate level with an academic component. Students are required to submit an approved academic project related to the work performed. May be repeated with approval of Graduate Advisor.

SPAN 5398. THESIS. 3 Hours.**SPAN 5698. THESIS. 6 Hours.****SPAN 5998. THESIS. 9 Hours.**

Modern Languages - Graduate Program

Objectives

Graduate programs in modern languages are designed to enhance students' competence in the language and literature of their major language field. Specific objectives are to prepare students for a career in teaching or in any area in private or public life in which knowledge of a modern language is essential and to help them develop the techniques of independent research necessary for work beyond the master's level.

Fellowships

Fellowships, when available, will be awarded on a competitive basis. Nominees for the Graduate School Master's Fellowship in Modern Languages will be selected based on the following criteria:

- Candidates must be new students entering in the fall semester, with a minimum of 6 hours of enrollment in both long semesters to retain their fellowships.
- The minimum undergraduate GPA requirement is 3.0, as calculated by the Graduate School, plus as GPA of 3.0 for any graduate credit hours.
- Transcript of a completed bachelor's degree in French or Spanish (or appropriate related field) from an accredited institution.
- Three letters of recommendation.
- A written statement explaining the applicant's reasons for graduate study in Spanish.

Teaching Assistantships

Teaching assistantships are available for graduate students in the Department of Modern Languages. Graduate students who obtain teaching assistantships are urged to take MODL 5305.

Admission Standards

In compliance with HB 1641, the UT Arlington Department of Modern Languages does not use unwritten criteria, it does not assign a specific weight to any one factor being considered, and it does not use standardized tests (i.e., the GRE) in the admissions or competitive fellowship or scholarship process as the sole criterion for consideration or as the primary criterion to end consideration of an applicant to the M.A. program. However, the GRE is required and it is used as a criterion, without specific weight, in the Department's evaluation of candidates for admission to programs at each of three levels: Unconditional, Provisional, and Probationary Admission.

The Department wishes to be as thorough and fair as possible in evaluating applicants for admission. It recognizes that some applicants may appear to be stronger according to some criteria than according to other criteria. When an applicant does not completely meet the minimum expectations for Unconditional Admission, the Department considers the applicant for possible Provisional or Probationary Admission. When the applicant is not granted any of the three levels of admission, the decision may be deferred or the application is denied. We do not wish to exclude a qualified and potentially successful candidate who perhaps has approached but not met all the criteria completely. However, we do not wish to admit candidates who, based on the criteria, are deemed to have a poor chance of successfully completing the graduate program.

Unconditional Admission

The criteria for admission below are used, without specific weights, as positive indicators of potential success in the program. All four criteria for unconditional admission must be met in order to receive unconditional admission.

- degree in the language to be studied of 18 upper level hours in the language or equivalent¹
- 3.0 undergraduate GPA (last 60 hours)
- submission of GRE scores²
- 3 letters of recommendation (from faculty if possible) sent to the Department of Modern Languages Graduate Advisor.

¹ A student with a bachelor's degree in a field other than French or Spanish may become an unconditionally admitted graduate student after fulfilling the upper level requirements in the language:

- 18 hours of upper level Spanish, or French or
- a combination of coursework and testing.

(A person with a bachelor's degree in a major other than French or Spanish must have the equivalent of 18 hours of upper level French or Spanish in order to become a master's student. The equivalency may take one of the following forms: A student may obtain 18 hours at the 3000 and 4000 level, or s/he may attempt to test out of nine hours of grammar, composition, and conversation. If a student tests out of grammar, composition, and conversation, s/he must take nine hours of literature, in order to demonstrate ability to do literary studies).

² Under specific circumstances the GRE may be waived for those who received their B.A. from UT Arlington or have already earned an advanced graduate degree.. See GRE Waiver or Advanced Admission. International students must also take the TOEFL test and score 550 on the paper-and-pencil test or 213 on the computerized test, in order to qualify for unconditional admission.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Deferred Admission

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate.

Fast Track Program in Modern Languages

The Fast Track Program allows outstanding undergraduate students in French or Spanish at UT Arlington to take up to three graduate seminars in Spanish or French that will earn credit toward both the Bachelor's degree and the Master's degree in Modern Languages. It is designed to encourage high standards of performance, to facilitate the transition from undergraduate to graduate study, and to reduce time needed to complete the M.A.. Interested undergraduate students should apply for the Fast Track Program when they are within 30 hours of completing the Bachelor's degree. To qualify, students must have completed at least 30 hours at UTA with a GPA of 3.0 in all courses and 3.25 in the last 30 hours. Before entering the Fast Track, students must also have completed the required core courses in the French or Spanish major with a GPA of at least 3.50. Additionally, they must have already completed at least two additional 3000/4000-level courses in either French or Spanish, excluding International Business, interpreting, and/or translation courses, with a GPA of 3.5 or higher.

Students who successfully complete the Fast Track Program will be admitted automatically to the Graduate School to continue their graduate work in the Modern Languages M.A. Program once the Bachelor's degree is awarded. They will not be required to take the GRE, complete an additional application for admission to the Graduate School, supply letters of recommendation, or pay an application fee. An undergraduate student completing the maximum of nine graduate hours would be admitted to the Modern Languages M.A. Program with only nine additional courses and a comprehensive written examination remaining to complete the requirements for the M.A. in Modern Languages, non-thesis option.

To remain in the Fast Track Program, students must receive no grade lower than B in any graduate seminars taken as an undergraduate, selected with the advice and approval of the Modern Languages Graduate Advisor. Undergraduate students who do not maintain grades of B or better in the graduate courses taken will be unable to continue in the Fast Track Program but, if the courses are completed with a passing grade, will still receive credit toward their undergraduate degree requirements. Students originally denied entry into the Fast Track Program, discontinued after provisional admission, subsequently dropped or opting out are still welcome to apply to the Modern Languages M.A. Program in the usual way and will be considered without prejudice.

For an application form or to obtain more details about this program, contact the Modern Languages Graduate Advisor.

Master's Degree Requirements

Master's Degree Requirements:

In addition to the Graduate School requirements for Master's degree programs, the following exit requirements apply in the Department of Modern Languages:

Comprehensive Examination: Students specializing in French or Spanish are examined on their coursework and their respective M.A. reading lists. An additional oral defense may be required at the discretion of the student's supervising committee. At least 30 hours must be in coursework.

Portfolio: Students specializing in Spanish may instead elect to develop a portfolio of original research and other special projects under the supervision of a committee of graduate faculty. At least 30 hours must be in coursework.

Thesis: Subject to the approval of the graduate faculty, students specializing in French or Spanish may elect to research and write a substantial and original work of scholarly significance. At least 30 hours must be in coursework.

Modern Languages (French; Spanish)

Those wishing to major in a modern language or literature must upon admission have a baccalaureate degree with a major in that modern language or have a minimum of 18 advanced hours, or the equivalent in language proficiency and course content.

Students pursuing the M.A. in Modern Languages with concentration in French are required to take a minimum of 9 hours in the core MODL courses, along with 27 hours in their concentration or, alternatively, a maximum of 12 hours in the core MODL courses and 24 hours in their concentration. All French students are required to take MODL 5304 CURRENTS IN EUROPEAN AND LATIN AMERICAN LITERATURES AND THOUGHT.

Students pursuing the M.A. in Modern Languages with concentration in Spanish will take a maximum of 6 hours in the core MODL courses, along with 30 hours in their concentration. All Spanish students are required to take two of the following three courses: SPAN 5300: HISTORY OF THE SPANISH LANGUAGE, SPAN 5302: SPANISH DIALECTOLOGY, SPAN 5303: APPLIED SPANISH LINGUISTICS.

A knowledge of a second foreign language will be required, including listening, speaking, reading and writing skills as demonstrated by the successful completion of two semesters of coursework at the second-year level, MODL 5301, or by an appropriate examination.

Modern Languages - Undergraduate Programs

The Department of Modern Languages (MODL) offers courses in American Sign Language (<https://www.uta.edu/modl/asl/>), (<http://www.uta.edu/modl/arabic/>) Arabic (<http://www.uta.edu/modl/arabic/>), Chinese (<http://www.uta.edu/modl/chinese/>), French (<http://www.uta.edu/modl/french/>), German (<http://www.uta.edu/modl/german/>), Korean (<http://www.uta.edu/modl/kore/>), Russian (<http://www.uta.edu/modl/russian/>), and Spanish (<http://www.uta.edu/modl/spanish/>).

MODL offers a Bachelor of Arts in French (<http://www.uta.edu/modl/french/>) Global Studies (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#bachelorstext>), Spanish for Global Competence (<http://www.uta.edu/modl/spanish/>), Spanish Translation and Interpreting (<http://www.uta.edu/modl/spanish/>), and a Bachelor of Arts with major in Critical Languages and International Studies (<http://www.uta.edu/modl/clis/>) (Chinese, German, Korean, and Russian), as well as minors in certificate programs in Translation (French (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#certificatestext>)), Translation (Spanish) (<http://www.uta.edu/modl/spanish/>), Interpreting (Spanish) (<http://www.uta.edu/modl/spanish/>), Spanish for the Professions (<https://www.uta.edu/modl/spanish/>), Spanish for Global Health and Human Services (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#certificatestext>), Spanish Linguistics (<http://catalog.uta.edu/liberalarts/languages/undergraduate/#bachelorstext/#certificatestext>), and Localization and Translation (<http://www.uta.edu/modl/spanish/>) (Arabic, Chinese, French, German, Korean, Russian, and Spanish). At the graduate level, MODL offers a Master of Arts in Modern Languages with concentrations in French (<http://www.uta.edu/modl/french/>) or Spanish (<http://www.uta.edu/modl/spanish/>). The department also offers minors in Arabic, Chinese, French, German, Korean, Russian, Spanish for Global Competence, Spanish Translation, Spanish Interpreting, Spanish Linguistics, and Localization and Translation, as well as area studies and other options.

Learning other languages has always formed a critical part of a well-rounded education. In today's global economy, the ability to communicate in languages other than one's own has become an increasingly valuable asset sought after by employers across the public and private sectors. Our substantive programs prepare students for success in an increasingly interconnected world, in fields such as the language services industry—interpreting, localization, and translation; education; research; writing, publishing, and the media; health, legal, and social services; business; government; international relations; the cultural heritage sector—museums, libraries, and archives.

The goal of language study is to develop deep translingual and transcultural competence. In view of these aims, MODL provides a full range of language offerings from beginning to advanced courses in a variety of world languages. In addition to development in the four basic language skills -- speaking, listening, reading, and writing -- a major aim is to gain understanding of the diversity of human culture as represented in several of the world's languages, literatures, and other cultural media.

Ultimately, these aims contribute to the development of well-rounded and well-informed 21st-century global citizens who are not only able to communicate and interact with others locally, nationally, and internationally, but who are also able to reflect on the world and themselves through the lens of other languages and cultures.

Criteria for Admission to a Major in the Department of Modern Languages

In addition to satisfying the entrance requirements for the College of Liberal Arts, prospective majors in the Department of Modern Languages must meet the following criteria:

- A 3.0 GPA is required in the 1441-2314 Modern Language sequence, or a grade of B on the Modern Language placement test, or approval of the departmental advisor.
- After admission to the Modern Language major, students must maintain a 2.00 GPA in major classes.

Accelerated Language Program

Students with no previous experience or courses in a modern language may choose to begin by enrolling in one of our Accelerated Programs, i.e. completing Levels I and II (8 credit hours) of a language in one semester, or Levels III and IV (6 credit hours) in one semester.

These classes may not be offered every semester. Check with the Department of Modern Languages for available courses.

Students are cautioned to take these courses prior to their senior year because of the possibility of enrollment limitations.

Language Acquisition Center

The Department of Modern Languages maintains a fully equipped computer lab on the third floor of Trimble Hall, the Language Acquisition Center (LAC). The LAC has an extensive collection of analog and digital media for student use, as well as course-related software and self-study software.

Credit by Examination and Placement Tests

Spanish, French, and German. Students with one year of background in the language they will study are strongly recommended to take an advanced placement examination for placement at the appropriate level. Students wishing to earn credit by examination for any of the first four (1441, 1442, 2313, 2314) levels of French, German, or Spanish must present an official score received on one of two nationally administered examinations recognized by the department:

1. Advanced Placement Examination (AP) of the College Board, or
2. College-Level Examination Program (CLEP) of the College Board.

Chinese. Students wishing to earn credit by examination for any of the first four (1441, 1442, 2313, 2314) levels of Chinese must present an official score received on Advanced Placement Examination (AP) of the College Board.

At UT Arlington the CLEP examinations will be administered by Testing Services of University College on dates to be announced. Native or heritage speakers in the French, German, or Spanish program must take either the AP or CLEP exam, as described above.

American Sign Language, Arabic, Chinese, Korean, Russian. Non-native speakers with previous exposure to these languages who intend to enroll in these courses at UT Arlington may be eligible to take a placement test at the discretion of the department. Native or heritage speakers intending to major or minor in Arabic, Chinese, Korean, or Russian must take the appropriate placement test.

Placement tests for American Sign Language, Arabic, Chinese, Korean, and Russian are administered on site in the Department of Modern Languages and are not offered by Testing Services. For more information, contact the Department of Modern Languages. Testing fees may apply.

Advanced Standing Exam Policy

The Advanced Standing Exam (ASE) is a departmental exam designed to test proficiency in American Sign Language, Arabic, Chinese, Korean, or Russian. Non-native speakers with previous exposure to these languages who intend to enroll in language courses at UT Arlington, may be eligible to take the ASE at the discretion of the department. Native or heritage speakers intending to major or minor in Arabic, Chinese, Korean, or Russian must take the ASE.

Each exam will test receptive and productive skills, e.g. listening, reading, writing, and speaking for spoken languages; expressive and receptive skills for American Sign Language. Emphasis is placed on (oral) proficiency; mastery of grammar and sentence structure; and comprehension of cultural topics. There is a required administration fee, to be paid to UTA.

The credits received through the ASE may only be applied to UTA transcripts if the following conditions are met: 1) the examinee enrolls in the next appropriate language class in the sequence at UTA and remains enrolled in the class after Census Day, and 2) the administration fee is paid before the last semester prior to graduation.

To take the ASE, the examinee must contact the appropriate Language Coordinator to set up an appointment to take the exam. The ASE will not be administered to Seniors in their last semester at UTA. Advanced registration for the ASE is required. Students are encouraged to take the exam before the end of their junior year to have time to take the next language class and have their credits posted in time for graduation application reviews. The ASE will grant credit up to intermediate level II (2314).

Study Abroad

Students should give serious consideration to the unique learning experience of studying abroad. Students wishing to study for a summer, a semester, or a year may obtain UT Arlington credit, continue with their financial aid, and receive scholarship aid to attend any UT Arlington-approved program for Arabic, Chinese, French, German, Korean, Russian, or Spanish.

Summer Study: The department offers several opportunities for gaining credit while studying abroad. Regular programs are offered which provide opportunities for summer study in various countries, including China, France, Germany, Mexico, and Russia. All arrangements must be made through the department.

Competence in Computer Use

Students majoring in French, Spanish for Global Competence, Spanish Translation and Interpreting, or Critical Languages and International Studies may demonstrate competency in computer use by:

- passing CSE 1301 (or equivalent); or
- passing any 1441, 1442, 2313 or 2314 CHIN, FREN, GERM, KORE, RUSS or SPAN course(s) in residence at UT Arlington; or
- passing the University computer competency examination; or
- passing any other course approved by the Undergraduate Assembly for this purpose.

Competence in Oral Presentations

Students majoring in French, Spanish for Global Competence, Spanish Translation and Interpreting, or Critical Languages and International Studies may demonstrate competence in oral presentations by one of the following:

ARAB 3303	ARABIC CONVERSATION & CULTURE
CHIN 3303	CHINESE CONVERSATION
FREN 3300	PHONOLOGY & PRONUNCIATION
FREN 3303	ADVANCED FRENCH CONVERSATION

GERM 3313	TOPICS IN GERMAN CULTURE & CONVERSATION
KORE 3303	KOREAN CONVERSATION AND CULTURE I
RUSS 3333	CONVERSATION AND TOPICS IN RUSSIAN CULTURE
SPAN 3303	ADVANCED SPANISH CONVERSATION
SPAN 3312	LATIN AMERICAN CULTURE AND CIVILIZATION
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING
COMS 1302	VOICE AND DICTION
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION (or equivalent)

- Or passing any other course approved by the Undergraduate Assembly for this purpose

Critical Cultures Summer Institute

The Critical Cultures Summer Institute (CCSI) highlights a different, less commonly taught cultural area of the globe each summer, providing up to 9 credits of upper-division coursework, along with GLOBAL 2301, the anchor course of UTA's Critical Languages and International Studies (CLIS) major.

GLOBAL 2301 will provide an introduction to global studies and couple with GLOBAL 3301 and GLOBAL 3302 in such areas as language and civilization, film, media, or other subjects of global study. An introductory class in Localization and Translation will also be offered under the aegis of the Summer Institute as GLOBAL 3310. GLOBAL 3301, 3302, and 3310 will fulfill three of the four international studies courses required for the BA in Critical Languages and International Studies. GLOBAL 2301 is also a requirement for the degree. GLOBAL 2301 and GLOBAL 3301 will be offered during Summer Session I, and GLOBAL 3302 and 3310 will be offered during Summer Session II. Students at any level of language study may take these courses.

Requirements for a Bachelor of Arts Degree in French Global Studies, Spanish for Global Competence, Spanish Translation and Interpreting, and Critical Languages & International Studies

GENERAL CORE REQUIREMENTS (P. 50)

Student Success Requirement: UNIV 1101 or UNIV 1131

Major

GLOBAL 2301

1441, 1442, 2313, 2314, or equivalent; plus 27 hours at 3000/4000 level in the major language field, at least nine of which must be at the 4000 level. Of these 27 hours, specific course requirements by language are listed below.

Electives

Sufficient number of hours to complete the total hours required for a degree.

Total

120 hours, at least 36 of which must be 3000/4000 level.

Bachelor of Arts in French Global Studies

FREN 1441	BEGINNING FRENCH I
FREN 1442	BEGINNING FRENCH II
FREN 2313	INTERMEDIATE FRENCH I
FREN 2314	INTERMEDIATE FRENCH II

or equivalent; plus 27 hours at 3000/4000 level in French, at least nine of which must be at the 4000 level. Of these 27 hours, specific course requirements by language are listed below:

All French majors must take FREN 3312, FREN 3304 and either FREN 3300 or FREN 3303

- For Native or Heritage speakers: An appropriate substitute for FREN 3304 and either FREN 3300 or FREN 3303 will be selected in consultation with an advisor.

Bachelor of Arts in Spanish for Global Competence

SPAN 1441	BEGINNING SPANISH I
SPAN 1442	BEGINNING SPANISH II
SPAN 2313	INTERMEDIATE SPANISH I
SPAN 2314	INTERMEDIATE SPANISH II
OR	
SPAN 2315	INTERM SPAN HERITAGE SPEAKERS

or equivalent; plus 27 hours at 3000/4000 level in Spanish, at least nine of which must be at the 4000 level. Of these 27 hours, specific course requirements by language are listed below:

All Spanish majors must take SPAN 3315 and SPAN 3316

- For Non-heritage speakers: SPAN 3314
- For Native or Heritage speakers: SPAN 3305 . Native or heritage speakers of a language may not enroll in courses below 3000, with the exception of SPAN 2315.

Bachelor of Arts in Critical Languages and International Studies

GLOBAL 2301 as well as 15 advanced hours in the chosen language and 12 hours in international studies from the 3 categories: International Issues (Business, Ethics, and Sustainability), Humanities (Culture, History, and Literature), Socio-Cultural Perspectives (Social, Political, and Cultural Studies). See advisor for a complete listing of relevant courses.

All students who wish to earn a Bachelor of Arts degree in Critical Languages and International Studies must complete the following coursework in language and allied fields:

Select one of the following languages:

Chinese	
CHIN 1441	BEGINNING CHINESE I
CHIN 1442	BEGINNING CHINESE II
CHIN 2313	INTERMEDIATE CHINESE I
CHIN 2314	INTERMEDIATE CHINESE II
German	
GERM 1441	BEGINNING GERMAN I
GERM 1442	BEGINNING GERMAN II
GERM 2313	INTERMEDIATE GERMAN I
GERM 2314	INTERMEDIATE GERMAN II
Korean	
KORE 1441	BEGINNING KOREAN I
KORE 1442	BEGINNING KOREAN II
KORE 2313	INTERMEDIATE KOREAN I
KORE 2314	INTERMEDIATE KOREAN II
Russian	
RUSS 1441	BEGINNING RUSSIAN I
RUSS 1442	BEGINNING RUSSIAN II
RUSS 2313	INTERMEDIATE RUSSIAN I
RUSS 2314	INTERMEDIATE RUSSIAN II

Students in **German** can choose between two different tracks:

Track A (Global):

Course Requirements:

- Five 3000 or 4000 level courses in German including GERM 3313 and GERM 3316
- Four 3000 or 4000 level courses in International Studies (see above)

Track B (Professional Track):

Course Requirements:

- Five 3000 or 4000 level courses in German: GERM 3312, GERM 3313, GERM 3316, GERM 3318, GERM 4322
- Four 3000 or 4000 level courses in International Studies in the Humanities category: GERM 3317, GERM 4313, GERM 4314, GERM 4321

Bachelor of Arts in Spanish Translation and Interpreting

All Spanish Translation and Interpreting majors must take:

SPAN 1441	BEGINNING SPANISH I	
SPAN 1442	BEGINNING SPANISH II	
SPAN 2313	INTERMEDIATE SPANISH I	
SPAN 2314	INTERMEDIATE SPANISH II	
OR		
SPAN 2315	INTERM SPAN HERITAGE SPEAKERS	
For Non-Heritage Speakers		
SPAN 3314	ADVANCED SPANISH GRAMMAR	
For Heritage Speakers		
SPAN 3305	ADVANCED SPANISH FOR HERITAGE SPEAKERS	
For All Students		
SPAN 3315	SPANISH COMPOSITION	
SPAN 3316	SPANISH LANGUAGE STUDY	3
SPAN 3340	INTRODUCTION TO TRANSLATION	
SPAN 3341	INTRODUCTION TO INTERPRETING	3
SPAN 4341	BUSINESS AND LEGAL TRANSLATION	
SPAN 4342	TRANSLATION IN HEALTHCARE SETTINGS	
SPAN 4343	INTERPRETING IN HEALTHCARE SETTINGS	3
SPAN 4344	INTERPRETING IN LEGAL SETTINGS	3
SPAN 3316	SPANISH LANGUAGE STUDY	3

Non-Heritage Speakers are strongly recommended to take SPAN 3303 before enrolling in SPAN 3341

Options

The following options may be selected, but courses listed under options do not substitute for courses specified by number in the basic degree plan above.

Fast Track Program in Modern Languages

The Fast Track Program allows outstanding undergraduate students in French or Spanish at UT Arlington to take up to three graduate seminars in Spanish or French that will earn credit toward both the Bachelor's degree and the Master's degree in Modern Languages. It is designed to encourage high standards of performance, to facilitate the transition from undergraduate to graduate study, and to reduce time needed to complete the MA . Interested undergraduate students should apply for the Fast Track Program when they are within 30 hours of completing the Bachelor's degree. To qualify, students must have completed at least 30 hours at UTA with a GPA of 3.0 in all courses and 3.25 in the last 30 hours. Before entering the Fast Track, students must also have completed the four required core courses in the French or Spanish major with a GPA of at least 3.50. Additionally, they must have already completed at least two additional 3000-4000 level courses in either French or Spanish, excluding International Business and/or translation courses, with a GPA of 3.5 or higher.

Students who successfully complete the Fast Track Program will be admitted automatically to the Graduate School to continue their graduate work in the Modern Languages MA Program once the Bachelor's degree is awarded. They will not be required to take the GRE, complete an additional application for admission to the Graduate School, supply letters of recommendation, or pay an application fee. An undergraduate student completing the maximum of nine graduate hours would be admitted to the Modern Languages MA Program with only five additional courses and a thesis remaining to complete the requirements for the thesis option.

To remain in the Fast Track Program, students must receive no grade lower than a B in any graduate seminars taken as an undergraduate, selected with the advice and approval of the Modern Languages Graduate Advisor. Undergraduate students who do not maintain grades of B or A in the graduate courses taken will be unable to continue in the Fast Track Program but, if the courses are completed passing, will still receive credit toward their undergraduate degree requirements. Students originally denied entry into the Fast Track Program, discontinued after provisional admission, subsequently dropped or opting out are still welcome to apply to the Modern Languages MA Program in the usual way and will be considered without prejudice.

For an application form or to obtain more details about this program, contact the Modern Languages Graduate Advisor.

BBA in International Business/Modern Language

In cooperation with the Department of Modern Languages, the School of Business Administration offers a Bachelor of Business Administration with dual concentrations in international business and a modern language. The BBA in International Business offers concentrations in Chinese, French, German, Korean, Russian, or Spanish. In addition to 26 hours in a modern language with an additional six hours of modern language electives highly recommended, students in this program get a solid foundation in business courses, including accounting, economics, finance, management, marketing, and information systems. Students are encouraged to include six hours of degree specific language electives.

Requirements for a Minor in Arabic, Chinese, German, Korean, and Russian

A minor consists of 19 semester hours (excluding 1441 Language Level I), at least nine of which must be 3000/4000 level including six credit hours taught in the target language.

Requirements for a Minor in French Global Studies, Spanish for Global Competence, Spanish Translation, and Spanish Interpreting

A minor consists of 19 semester hours (excluding 1441 Language Level I), at least nine of which must be 3000/4000 level.

- For a minor in Spanish Translation students need to take the 3 following courses:

SPAN 3340, SPAN 4341, and SPAN 4342

- For a minor in Spanish Interpreting students need to take the 3 following courses:

SPAN 3341, SPAN 4343, and SPAN 4344

- The following courses do not count towards the Minor in French Global Studies:

FREN 3320, FREN 3321, FREN 3345, and FREN 3346

Minor in Spanish for Global Health and Human Services

Students interested in receiving theoretical and practical training in Spanish for Global Health and Human Services are eligible to apply to the Department of Modern Languages for this 18-hour minor, which will prepare them to work with Spanish-speaking clients and in Spanish-language contexts.

The Minor in Spanish for Global Health and Human Services will provide students with the skills, both linguistic and cross-cultural, that will enable them to communicate with Spanish-speaking patients, understand the differences between the U.S. and Hispanic healthcare systems and beliefs, and comprehend and produce written and oral texts in Spanish in the fields of healthcare and human services.

Required courses:

1. Spanish language and culture courses (9 credits)

a. Choose one:

SPAN 2300

SPAN 2310

SPAN 3312

SPAN 3316

b. Choose one:

SPAN 2314

SPAN 2315

c. Choose one:

SPAN 3305

SPAN 3314

2. Specialized courses in Spanish (6 credits)

a. Required:

SPAN 3308

b. Choose one:

SPAN 4312

SPAN 4336

SPAN 4342

SPAN 4343

3. Interdisciplinary course (3 credits)

Students must complete one (1) three-hour interdisciplinary course in the fields of Anthropology, Communication, Disability Studies, Kinesiology, Medical Humanities, Nursing, Philosophy, Political Science, Psychology, or Social Work, etc. See advisor for a complete listing of relevant courses.

Minor in Spanish Linguistics**Requirements for a Minor in Spanish Linguistics:**

The Minor in Spanish Linguistics includes foundational courses that provide students with a solid background in the core areas of Spanish linguistics, as well as elective options at the 4000 level that allow students to tailor their program of study to meet their interests and academic and professional goals. Students will learn about modern linguistic theory and the application of those theories to teaching, research, translation and interpreting, as well as other professions in the healthcare, business, and government sectors. The minor consists of 18 semester hours.

For a minor in Spanish Linguistics students need to take the following courses:

Prerequisite courses: SPAN 2313, and SPAN 2314 or SPAN 2315. **Upper-division courses:** SPAN 3305 or SPAN 3314, SPAN 3316, and any two of the following: SPAN 4316, SPAN 4330, SPAN 4332 or SPAN 4339.

Minor in Mexican Culture

The Minor in Mexican Culture includes foundational courses that provide students with a solid background in the core areas of Mexican culture, as well as elective options at the 4000 level that allow students to tailor their program of study to meet their interests and academic and professional goals. Students will learn about some of the most important characteristics of Mexican culture (literature, comics, film, food, art, music, popular culture, literary journalism, feminism, Colonial documents and texts, the study and conservation of endangered Mexican indigenous languages, etc.), and the relations between cultural production and the society, and the application of that knowledge to teaching, research, translation and interpreting, as well as other professions in the healthcare, business, and government sectors. The minor consists of 18 semester hours.

For a Minor in Mexican Culture students need to take the following courses:

The Mexican Culture Certificate program will consist of the following courses for a total of 18 semester credit hours: **Required courses:** SPAN 2313, and SPAN 2314 or SPAN 2315. **Prescribed Elective Courses:** Any 2 of the following courses: SPAN 3304, SPAN 3317, SPAN 3318, and SPAN 4318. **Elective Courses:** Any 2 of the following courses: SPAN 3312, SPAN 3313, SPAN 4313, SPAN 4315, SPAN 4332, and SPAN 4334.

Minor in Localization and Translation with options in Arabic, Chinese, French German, Korean, Russian, Spanish and Dual-Language

Students pursuing the minor in localization and translation study the processes of localization and develop specialized skills in translation for future employment in the language services industry. Localization adapts language, texts, products, software and websites to the locale for which they are intended. By using specialized computer-assisted translation workflow software and simulating a collaborative work environment, students become conversant with the tools and procedures required for twenty-first century localization and translation work. Extensive practice in translating a variety of oral and written documents in the target language provides the skills to work in business, non-profit, and academic contexts. **Three required translation and localization courses and two upper-level elective courses comprise the minor. It is strongly recommended that students take ARAB 3310, CHIN 3310, FREN 3320, GERM 3310, KORE 3310, RUSS 3310, or SPAN 3310 prior to taking ARAB 3345, CHIN 3345, FREN 3345, GERM 3345, KORE 3345, RUSS 3345, or SPAN 3345.**

The minor consists of the following courses, including ARAB, CHIN, FREN, GERM, KORE, RUSS 2314, SPAN 2314 (or SPAN 2315 for heritage speakers) which must be completed with the grade of B or better.

Arabic Option (18 hours)

- ARAB 2314
- ARAB 3310
- ARAB 3311
- ARAB 3345
- ARAB 3XXX or 4XXX Upper-level Elective
- ARAB 3XXX or 4XXX Upper-level Elective

Chinese Option (18 hours)

- CHIN 2314
- CHIN 3310
- CHIN 3311

- CHIN 3345
- CHIN 3XXX or 4XXX Upper-level Elective
- CHIN 3XXX or 4XXX Upper-level Elective

French Option (18 hours)

- FREN 2314
- FREN 3320*
- FREN 3321*
- FREN 3345*
- FREN 3XXX or 4XXX Upper-level Elective
- FREN 3XXX or 4XXX Upper-level Elective

**These courses cannot be applied toward the minor in French*

German Option (18 hours)

- GERM 2314
- GERM 3310 *or* GERM 4334
- GERM 3311 *or* GERM 4335
- GERM 3345
- GERM 3XXX or 4XXX Upper-level Elective
- GERM 3XXX or 4XXX Upper-level Elective

Korean Option (18 hours)

- KORE 2314
- KORE 3310
- KORE 3311
- KORE 3345
- KORE 3XXX or 4XXX Upper-level Elective
- KORE 3XXX or 4XXX Upper-level Elective

Russian Option (18 hours)

- RUSS 2314
- RUSS 3310 *or* RUSS 4334
- RUSS 3311 *or* RUSS 4335
- RUSS 3345
- RUSS 3XXX or 4XXX Upper-level Elective
- RUSS 3XXX or 4XXX Upper-level Elective

Spanish Option (18 hours)

- SPAN 2314 *or* SPAN 2315
- SPAN 3310
- SPAN 3321
- SPAN 3345
- SPAN 3XXX or 4XXX Upper-level Elective
- SPAN 3XXX or 4XXX Upper-level Elective

Minor in Localization and Translation with a Dual Language Option (24 hours)

The minor with the dual language option consists of two localization/translation courses and two upper-level language courses in each language, as follows:

One Localization and Translation I Course in Language 1: (3 hours)

- ARAB 3310
- CHIN 3310
- FREN 3320
- GERM 3310 or GERM 4334

- KORE 3310
- RUSS 3310 or RUSS 4334
- SPAN 3310

One Localization and Translation II Course in Language 1: (3 hours)

- ARAB 3311
- CHIN 3311
- FREN 3321
- GERM 3311 or GERM 4335
- KORE 3311
- RUSS 3311 or RUSS 4335
- SPAN 3321

One Introduction to Computer-Assisted Translation Course in Language 2: (3 hours)

- ARAB 3345
- CHIN 3345
- FREN 3345
- GERM 3345
- KORE 3345
- RUSS 3345
- SPAN 3345

One Localization and Translation II Course in Language 2: (3 hours)

- ARAB 3311
- CHIN 3311
- FREN 3321
- GERM 3311 or GERM 4335
- KORE 3311
- RUSS 3311 or RUSS 4335
- SPAN 3321

Four Additional Upper-Level Courses (Two in Each Language) Are Also Required. (12 hours)

• STUDENTS MAY SELECT FROM:

- Arabic (two 3000 or 4000 level courses)
- Chinese (two 3000 or 4000 level courses)
- French (two 3000 or 4000 level courses)
- German (two 3000 or 4000 level courses)
- Korean (two 3000 or 4000 level courses)
- Russian (two 3000 or 4000 level courses)
- Spanish (two 3000 or 4000 level courses)

Minor in Modern Language Teaching

The Minor in Modern Language Teaching provides foundational academic and professional preparation for students interested in teaching modern languages, as well as a framework for students wishing to pursue alternative certification after graduation. The program includes language and culture courses at the intermediate and advanced levels, as well as foreign language pedagogy courses. These are complemented by an internship component that provides hands-on training to pre-service teacher candidates.

Required courses:

1. Prerequisite Course (3 credits)

Choose one of the following:

ARAB 2314

CHIN 2314

FREN 2314

GERM 2314

KORE 2314

RUSS 2314

SPAN 2314 or SPAN 2315

2. Upper-division language and culture courses (6 credits):

Choose two of the following (in the same language prefix):

ARAB 3303 or ARAB 3304; ARAB 3305; ARAB 3312

CHIN 3303; CHIN 3304; CHIN 3305

FREN 3303; FREN 3304; FREN 3305; FREN 3312

GERM 3312; GERM 3313; GERM 3316; GERM 3318

KORE 3303; KORE 3304; KORE 3305

RUSS 3304; RUSS 3333

SPAN 3303; SPAN 3305 or SPAN 3314; SPAN 3311 or SPAN 3312; SPAN 3315

3. Pedagogy, Methods, or Second Language Acquisition (3 credits):

Choose one of the following:

MODL 4305

MODL 4340

MODL 4339, FREN 4339, GERM 4339, or SPAN 4339

4. EDUC 2302 (3 credits)

5. Internship (3 credits):

Choose one of the following:

ARAB 4393

CHIN 4393

FREN 4393

GERM 4393

KORE 4393

MODL 4393

RUSS 4393

SPAN 4393

Certificate in Spanish Translation

Students interested in receiving theoretical and practical training in Spanish-English and English-Spanish translation are eligible to apply to the Department of Modern Languages for this 15-hour certificate program in translation and translation theory. Topics to be covered by coursework in the Certificate Program include medical, business, technical, scientific, legal, and literary translation. To be admitted to the program, students must demonstrate writing proficiency in both Spanish and English. Students should also have completed SPAN 3305 or SPAN 3314, and SPAN 3315, or have consent of the department. Once in the program, students begin by taking SPAN 3340. After completing this class with a grade of B or better, students must take SPAN 4341 and SPAN 4342. SPAN 3340, 4341 and 4342 cannot be applied toward the B.A. in Spanish for Global Competence. To receive the certificate, students are also required to pass an Exit Examination in translation. In order to be eligible to take the Exit Examination, students must pass SPAN 4341 and 4342 with a grade of C or better. The Exit Examination in translation may only be taken once.

Certificate in Spanish Interpreting

Students interested in receiving theoretical and practical training in Spanish-English and English-Spanish interpreting are eligible to apply to the Department of Modern Languages for this 15-hour certificate program in interpreting. Topics to be covered by coursework in the Certificate Program include interpreting in school, legal and medical settings. To enter the program, students must demonstrate oral proficiency in both Spanish and

English. Students should also have completed SPAN 3305 or SPAN 3314. Taking SPAN 3303 (Advanced Spanish Conversation for Non-heritage speakers) before SPAN 3341 is highly recommended for Non-heritage speakers. Once in the program, students begin by taking SPAN 3341 (Introduction to Interpreting). After completing this class with a grade of B or better, students must take SPAN 4343 (Interpreting in Medical Settings) and SPAN 4344 (Interpreting in Legal Settings). SPAN 3341, 4343 and 4344 cannot be applied toward the B.A. in Spanish to Global Competence. To receive the certificate, students are also required to pass an Exit Examination in interpreting. In order to be eligible to take the Exit Examination, students must pass SPAN 4343 and 4344 with a grade of C or better. The Exit Examination in interpreting may only be taken once.

Certificate in Spanish for the Professions

Students interested in receiving theoretical and practical training in Spanish for the Professions are eligible to apply to the Department of Modern Languages for this 15-hour certificate program, which will prepare them to work with Spanish-speaking individuals and in Spanish-language contexts. Topics to be covered by coursework in the Certificate Program include Spanish for law enforcement, social services, education, medical professions, business, communications; Hispanic culture; and intercultural competence.

Required courses:

- SPAN 3309 Spanish for the Professions
- SPAN 3314 Advanced Spanish Grammar or SPAN 3305 Advanced Spanish for Heritage Speakers
- SPAN 3315 Composition Through Literature
- **Two (2) 4000-level courses from the following:**
- SPAN 4312 Intercultural Competence for Global Communication
- SPAN 4334 Contemporary Hispanic Culture
- SPAN 4335 Business Spanish
- SPAN 4336 Topics in Spanish for the Professions

Certificate in Spanish for Global Health and Human Services

Students interested in receiving theoretical and practical training in Spanish for Global Health and Human Services are eligible to apply to the Department of Modern Languages for this 15-hour certificate program, which will prepare them to work with Spanish-speaking clients and in Spanish-language contexts.

The Certificate in Spanish for Global Health and Human Services will provide students with the skills, both linguistic and cross-cultural, that will enable them to communicate with Spanish-speaking patients, understand the differences between the U.S. and Hispanic healthcare systems and beliefs, and comprehend and produce written and oral texts in Spanish in the fields of healthcare and human services.

Required courses:

1. Spanish language courses (6 credits)

a. Choose one:

SPAN 2314

SPAN 2315

b. Choose one:

SPAN 3305

SPAN 3314

2. Specialized courses in Spanish (6 credits)

a. Required:

SPAN 3308

b. Choose one:

SPAN 3309

SPAN 4312

SPAN 4336

SPAN 4342

SPAN 4343

3. Interdisciplinary course (3 credits)

Students must complete one (1) three-hour interdisciplinary course in the fields of Anthropology, Communication, Disability Studies, Kinesiology, Medical Humanities, Nursing, Philosophy, Political Science, Psychology, or Social Work, etc. See advisor for a complete listing of relevant courses.

Certificate in Spanish Linguistics

Requirements for a Certificate in Spanish Linguistics

The Spanish Linguistics Certificate program will consist of the following courses for a total of 15 semester credit hours: **Prerequisite courses:** SPAN 2313, and SPAN 2314 or SPAN 2315. **Upper-division courses:** SPAN 3305 or SPAN 3314, SPAN 3316 **and any one of the following** Spanish Linguistics courses at the 4000 level: SPAN 4316, SPAN 4330, SPAN 4332 or SPAN 4339.

Certificate in Mexican Culture

The Certificate in Mexican Culture includes foundational courses that provide students with a solid background in the core areas of Mexican culture, as well as elective options at the 4000 level that allow students to tailor their program of study to meet their interests and academic and professional goals. Students will learn about some of the most important characteristics of Mexican culture (literature, comics, film, food, art, music, popular culture, literary journalism, feminism, Colonial documents and texts, the study and conservation of endangered Mexican indigenous languages, etc.), and the relations between cultural production and the society, and the application of that knowledge to teaching, research, translation and interpreting, as well as other professions in the healthcare, business, and government sectors. The certificate consists of 15 semester hours.

Requirements for a Certificate in Mexican Culture

The Mexican Culture Certificate program will consist of the following courses for a total of 15 semester credit hours: **Required courses:** SPAN 2313, and SPAN 2314 or SPAN 2315. **Prescribed Elective Courses:** Any 2 of the following courses: SPAN 3304, SPAN 3317, SPAN 3318, and SPAN 4318. **Elective Courses:** Any 1 of the following courses: SPAN 3312, SPAN 3313, SPAN 4313, SPAN 4315, SPAN 4332, and SPAN 4334.

Certificate in French Translation

The 15-credit hour Certificate in French Translation meets the increasing demands of local, national, and international organizations for professionals who can address the challenges of modern multicultural societies. The program is designed for students that have an interest in pursuing careers in translation, localization, business, marketing, human resources, health care, law, and linguistics. The certificate gives students conceptual tools and hands-on practice for written translation. The 15-credit hour undergraduate Certificate in French Translation will include: FREN 3320, FREN 4314, FREN 4335, FREN 4341, and FREN 4342. Relevant special topics courses can be substituted with the approval of the advisor in consultation with the Section Head of French. A Certificate in French Translation would be awarded upon successful completion of the program and demonstration of excellence by successfully presenting a Portfolio.

Certificate in Localization and Translation with options in Arabic, Chinese, French, German, Korean, Russian, Spanish, and Dual-Language

In this five-course certificate program students study the processes of localization and develop specialized skills in translation for future employment in the language services industry. Localization adapts language, texts, products, software and websites to the locale for which they are intended. By using specialized computer-assisted translation workflow software and simulating a collaborative work environment, students become conversant with the tools and procedures required for twenty-first century localization and translation work. Extensive practice in translating a variety of oral and written documents in the target language provides the skills to work in business, non-profit, and academic situations.

In order to enter the program, students must receive a grade of B in ARAB 2314, CHIN 2314, FREN 2314, GERM 2314, KORE 2314, RUSS 2314, or SPAN 2314/SPAN 2315. Students wishing to pursue the dual language option must receive a grade of B in level 2314/2315 for both the selected languages.

Three required translation and localization courses (ARAB/CHIN/GERM/KORE//RUSS 3310, 3311, FREN 3320, 3321, SPAN 3310, 3321 and ARAB/CHIN/FREN/GERM/KORE/RUSS/SPAN 3345) and two culture courses comprise the certificate. ARAB 3310, CHIN 3310, FREN 3320, GERM 3310, KORE 3310, RUSS 3310, and SPAN 3310 are strongly recommended before taking ARAB 3345, CHIN 3345, FREN 3345, GERM 3345, KORE 3345, RUSS 3345, or SPAN 3345.

- Students in Arabic
 - ARAB 3310, ARAB 3311, and ARAB 3345
 - Two ARAB 3000 or 4000- level courses
- Students in Chinese
 - CHIN 3310, CHIN 3311, and CHIN 3345

- o Two CHIN 3000 or 4000- level courses
- Students in French
 - o FREN 3320, FREN 3321, and FREN 3345
 - o Two FREN 3000 or 4000- level courses
- Students in German
 - o GERM 3310 or GERM 4334, GERM 3311 or GERM 4335, and GERM 3345
 - o Two GERM 3000 or 4000- level courses
- Students in Korean
 - o KORE 3310 or KORE 4334, KORE 3311 or KORE 4335, and KORE 3345
 - o Two KORE 3000 or 4000- level courses
- Students in Russian
 - o RUSS 3310 or RUSS 4334, RUSS 3311 or RUSS 4335, and RUSS 3345
 - o Two RUSS 3000 or 4000- level courses
- Students in Spanish
 - o SPAN 3310, SPAN 3321 and SPAN 3345
 - o Two SPAN 3000 or 4000- level courses

Certificate in Localization and Translation Dual Language Option

Students seeking the certificate in localization and translation with a dual language option must take nine courses according to the following plan:

- One beginning course in **language one**:
 - ARAB 3310
 - CHIN 3310
 - FREN 3320
 - GERM 3310 or GERM 4334
 - KORE 3310 or GERM 4334
 - RUSS 3310 or RUSS 4334
 - SPAN 3310
- One advanced course in **each language**:
 - ARAB 3311
 - CHIN 3311
 - FREN 3321
 - GERM 3311 or GERM 4335
 - KORE 3311 or KORE 4335
 - RUSS 3311 or RUSS 4335
 - SPAN 3321
- One Introduction to Computer-Assisted Translation Course in **language two**:
 - ARAB 3345
 - CHIN 3345
 - FREN 3345
 - GERM 3345
 - KORE 3345
 - RUSS 3345
 - SPAN 3345
- **Four additional courses (two in each language)** are also required. Students may select from:
 - Arabic (two ARAB 3000 or 4000- level courses)
 - Chinese (two CHIN 3000 or 4000- level courses)
 - French (two FREN 3000 or 4000- level courses)
 - German (two GERM 3000 or 4000- level courses)

- Korean (two KORE 3000 or 4000- level courses)
- Russian (two RUSS 3000 or 4000- level courses)
- Spanish (two SPAN 3000 or 4000- level courses)
- A minimum of two years (four semesters) of beginning and intermediate level language study for each selected language is required for the dual-language certificate program.
- For more information on this option, please see the Modern Language Undergraduate Advisor.

Music

Undergraduate Degrees

- Bachelor of Music (Performance, Theory, or Composition) (<http://catalog.uta.edu/liberalarts/music/undergraduate/#bachelorstext/#baperformance>)
- Bachelor of Music (Music/Business, Music/Theatre, or Audio Production) (<http://catalog.uta.edu/liberalarts/music/undergraduate/#bachelorstext/#babusiness>)
- Bachelor of Music (Jazz Studies Option) (<http://catalog.uta.edu/liberalarts/music/undergraduate/#bachelorstext/#bajazz>)
- Bachelor of Music (preparation for Teacher Certification) (<http://catalog.uta.edu/liberalarts/music/undergraduate/#bachelorstext/#bateacher>)
- Bachelor of Arts (Music Industry Studies) (<http://catalog.uta.edu/liberalarts/music/undergraduate/#bachelorstext/#bachelorstext>)
- Minor in Music (p. 932)

Graduate Degrees

- Master of Music (Music Education) (<http://catalog.uta.edu/liberalarts/music/graduate/#masterstext/#masterstext>)
- Master of Music (Music Performance) (<http://catalog.uta.edu/liberalarts/music/graduate/#masterstext/#masterstext>)
- Master of Music (Music Theory) (<http://catalog.uta.edu/liberalarts/music/graduate/#masterstext/#masterstext>)
- Master of Music (Conducting) (<http://catalog.uta.edu/liberalarts/music/graduate/#masterstext/#masterstext>)
- Master of Music (Jazz Studies) (<http://catalog.uta.edu/liberalarts/music/graduate/#masterstext/#masterstext>)
- Master of Music (Jazz Composition) (<http://catalog.uta.edu/liberalarts/music/graduate/#masterstext/#masterstext>)

Certificate

- Performance Certificate (p. 917)

COURSES

MUSI 0010. STUDIO CLASS. 0 Hours.

Departmental performance classes, master classes, guest artist performances and lectures related to performance specializations. Students enroll concurrently with private lesson in specialization.

MUSI 0101. MARCHING BAND. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0102. WIND SYMPHONY. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0103. SYMPHONIC WINDS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0104. A CAPPELLA CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0105. WOMEN'S CHORUS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0106. CHAMBER SINGERS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0108. UNIVERSITY SINGERS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0109. KEYBOARD ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0110. WOODWIND ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0111. BRASS CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0112. JAZZ ORCHESTRA. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0113. ELECTRIC GUITAR ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0114. PERCUSSION ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0115. MUSICAL THEATRE / OPERA LAB. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director. By audition only.

MUSI 0116. JAZZ ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0117. TROMBONE CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0118. MARCHING PERCUSSION. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0119. TRUMPET ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0120. FRENCH HORN ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0121. COLOR GUARD. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0122. JAZZ COMBO. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0123. VOCAL JAZZ. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0124. FLUTE CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0125. SAX CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0126. CHAMBER MUSIC. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0127. TUBA ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0128. ORCHESTRA. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0129. EARLY MUSIC PERFORMANCE PRACTICE. 1 Hour.

Study of early music for individual instruments. Topics will vary by semester. May be repeated for credit. Prerequisite: Permission of instructor.

MUSI 0130. SYMPHONIC BAND. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0131. COMMERCIAL MUSIC ENSEMBLE. 1 Hour.

This course is open to Music Industry Studies students. This ensemble provides practical and artistic experience in ensembles rooted in commercial and popular music styles. Prerequisite: Approval of the ensemble director.

MUSI 0171. ELECTIVE PERFORMANCE. 1 Hour.

For students who desire elective private instruction in strings, woodwinds, brass, keyboard, voice, or percussion. May be repeated eight times for credit.

MUSI 0174. SECONDARY KEYBOARD. 1 Hour.

For music majors whose degree option requires secondary piano, organ, or harpsichord. A jury is required to receive credit. May be repeated for credit. Prerequisite: C or better in MUSI 2181 or faculty approval.

MUSI 0175. SECONDARY VOICE. 1 Hour.

For music majors whose degree option requires secondary voice. A jury is required to receive credit. May be repeated for credit.

MUSI 0271. ELECTIVE PERFORMANCE. 2 Hours.

For students who desire elective private instruction in strings, woodwinds, brass, keyboard, voice, or percussion. May be repeated for credit up to eight times.

MUSI 1101. JAZZ LISTENING. 1 Hour.

Jazz listening from a historical perspective. Students will develop intelligent listening habits with regard to genres and their innovators. Open to all students; required of jazz studies majors. May be repeated for credit as topic changes.

MUSI 1103. HIGH BRASS CLASS. 1 Hour. (TCCN = MUSI 1168)

Open to music majors only. Emphasis on pedagogical techniques for teaching the trumpet and French horn. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1104. WOODWIND CLASS I. 1 Hour. (TCCN = MUSI 1166)

Open to music majors only. Emphasis on pedagogical techniques for teaching the clarinet and flute. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1105. VOICE CLASS. 1 Hour. (TCCN = MUSI 1183)

Open to music majors only. A practical study of the physiology of the voice with emphasis on vocal technique, sound production, the changing voice, and limited repertoire.

MUSI 1106. LOW BRASS CLASS. 1 Hour.

Open to music majors only. Emphasis on pedagogical techniques for teaching the trombone and euphonium/tuba. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1107. WOODWIND CLASS II. 1 Hour.

Open to music majors only. Emphasis on pedagogical techniques for teaching the saxophone, oboe and bassoon. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1140 and THEA 1140; credit will be granted only in one department. Prerequisite: Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 1141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1141 and THEA 1141; credit will be granted only in one department. Prerequisite: C or better in MUSI 1140 or THEA 1140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 1142. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano.

MUSI 1143. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1142.

MUSI 1144. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass.

MUSI 1145. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1144.

MUSI 1146. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass.

MUSI 1147. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1146.

MUSI 1154. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano.

MUSI 1155. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1154.

MUSI 1180. FUNCTIONAL PIANO I. 1 Hour. (TCCN = MUSI 1181)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing.

MUSI 1181. FUNCTIONAL PIANO II. 1 Hour. (TCCN = MUSI 1182)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing. Prerequisite: C or better in MUSI 1180.

MUSI 1185. SIGHTSINGING AND EAR TRAINING I. 1 Hour. (TCCN = MUSI 1116)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing.

MUSI 1186. SIGHTSINGING AND EAR TRAINING II. 1 Hour. (TCCN = MUSI 1117)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing. Prerequisite: C or better in MUSI 1185.

MUSI 1236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar.

MUSI 1237. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 1236.

MUSI 1238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset.

MUSI 1239. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 1238.

MUSI 1240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice.

MUSI 1241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice.

MUSI 1242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano.

MUSI 1243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 1242.

MUSI 1244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings.

MUSI 1245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 1244.

MUSI 1246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds.

MUSI 1247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds.

MUSI 1248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass.

MUSI 1249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 1248.

MUSI 1250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion.

MUSI 1251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 1250.

MUSI 1252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass.

MUSI 1253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 1252.

MUSI 1254. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 1301.

MUSI 1255. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 1254.

MUSI 1257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ.

MUSI 1258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 1257.

MUSI 1267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord.

MUSI 1268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 1267.

MUSI 1300. MUSIC APPRECIATION. 3 Hours. (TCCN = MUSI 1306)

Course designed to develop intelligent listening and enjoyment of music. Provides an opportunity to increase the student's cultural experience and vocabulary. This course satisfies the University of Texas at Arlington's core curriculum requirement in Creative Arts.

MUSI 1301. ELEMENTS OF MUSIC. 3 Hours. (TCCN = MUSI 1303)

Basic musical notation, harmony, and theory for students who are pursuing the BFA in Musical Theatre and the non-music major.

MUSI 1302. JAZZ APPRECIATION. 3 Hours.

The development of American jazz from its African and European roots to the present. This course satisfies the University of Texas at Arlington Core Curriculum requirement in Creative Arts.

MUSI 1303. HISTORY AND APPRECIATION OF HIP HOP AND R&B MUSIC. 3 Hours.

Explores the history and evolution of Hip Hop and modern urban music, emphasizing musical style and social context, from rhythm and blues through the present. Offered as AAST 2303 and MUSI 1303; credit will be granted in only one department.

MUSI 1304. HISTORY OF ROCK MUSIC. 3 Hours.

Open to all students as fine arts elective. Explores the history and evolution of rock music emphasizing musical style and social context, from rhythm and blues through the present. This course satisfies the University of Texas at Arlington core curriculum requirement in creative arts.

MUSI 1324. EXPLORATIONS IN MUSIC THEORY. 3 Hours.

A study of music skills necessary for the Music Industry Studies and Music Theatre majors involving written and analytical perspectives. Prerequisite: C or better in MUSI 1301.

MUSI 1325. THEORY AND HARMONY I. 3 Hours. (TCCN = MUSI 1311)

Scales, intervals, triads, and part writing with primary triads. Prerequisite: For B.A. Music Industry students, C or better in MUSI 1301; For all other degrees, open to music majors or faculty approval.

MUSI 1326. THEORY AND HARMONY II. 3 Hours. (TCCN = MUSI 1312)

Part writing including all diatonic triads, seventh chords, and traditional non-chord tones. Prerequisite: C or better in MUSI 1325.

MUSI 2101. BRASS SURVEY. 1 Hour.

Open to music majors in the All-level Instrumental Option (orchestra emphasis) and All-level Choral Option only. Emphasis on pedagogical techniques for teaching brass instruments. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 2102. WOODWIND SURVEY. 1 Hour.

Open to music majors in the All-level Instrumental Option (orchestra emphasis) and All-level Choral Option only. Emphasis on pedagogical techniques for teaching woodwind instruments. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 2103. STRING CLASS. 1 Hour. (TCCN = MUSI 1190)

Open to music majors only. A practical study of the string instruments of the orchestra with emphasis on bowing techniques, articulation, performance of scales, and limited repertoire.

MUSI 2104. PERCUSSION CLASS. 1 Hour. (TCCN = MUSI 1188)

(MUSI 1188). Open to music majors only. A practical study of the percussion instruments of the band and orchestra with emphasis on rudimental techniques and performance of limited repertoire.

MUSI 2112. INTRODUCTION TO MUSIC EDUCATION. 1 Hour.

Comprehensive survey of instrumental, choral and elementary music through lecture and research pertaining to professional responsibilities and career opportunities.

MUSI 2140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2140 and THEA 2140; credit will be granted only in one department. Prerequisite: C or better in MUSI 1141 or THEA 1141. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 2141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2141 and THEA 2141; credit will be granted only in one department. Prerequisite: C or better in MUSI 2140 or THEA 2140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 2142. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1143.

MUSI 2143. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 2142.

MUSI 2144. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1145.

MUSI 2145. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 2144.

MUSI 2146. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1147.

MUSI 2147. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 2146.

MUSI 2154. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1155.

MUSI 2155. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 2154.

MUSI 2180. FUNCTIONAL PIANO III. 1 Hour. (TCCN = MUSI 2181)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing. Prerequisite: C or better in MUSI 1181.

MUSI 2181. FUNCTIONAL PIANO IV. 1 Hour. (TCCN = MUSI 2182)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing. Prerequisite: C or better in MUSI 2180.

MUSI 2185. SIGHTSINGING AND EAR TRAINING III. 1 Hour. (TCCN = MUSI 2116)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing. Prerequisite: C or better in MUSI 1186.

MUSI 2186. SIGHTSINGING AND EAR TRAINING IV. 1 Hour. (TCCN = MUSI 2117)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing. Prerequisite: C or better in MUSI 2185.

MUSI 2190. BODY AND BREATHING FOR FITNESS. 1 Hour.

Course designed to improve a singers total body engagement in producing a healthy vocal tone. Prerequisite: Requires concurrent enrollment in voice lessons or permission of instructor.

MUSI 2222. DEVELOPMENTAL PRIVATE LESSONS. 2 Hours.

Continued work in technique and repertoire to meet the requirements of the sophomore barrier.

MUSI 2223. PREPARATORY PRIVATE LESSONS. 2 Hours.

Private instruction on technique and repertoire in preparation for the sophomore proficiency exam. May be repeated up to four times for credit.

MUSI 2227. COMPOSITION TECHNIQUES. 2 Hours.

An introduction to contemporary music designed to acquaint students with composition styles and techniques through written assignments. Required for music majors with emphasis in Composition, Theory, and Music/Media. Prerequisite: C or better in MUSI 2325.

MUSI 2236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 1237.

MUSI 2237. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 2236.

MUSI 2238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 1239.

MUSI 2239. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 2238.

MUSI 2240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 1241.

MUSI 2241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 2240.

MUSI 2242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 1243.

MUSI 2243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 2242.

MUSI 2244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 1245.

MUSI 2245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 2244.

MUSI 2246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 1247.

MUSI 2247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 2246.

MUSI 2248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 1249.

MUSI 2249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 2248.

MUSI 2250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 1251.

MUSI 2251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 2250.

MUSI 2252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 1253.

MUSI 2253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 2252.

MUSI 2254. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 1255.

MUSI 2255. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 2254.

MUSI 2257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 1258.

MUSI 2258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 2257.

MUSI 2267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 1268.

MUSI 2268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 2267.

MUSI 2300. INTRODUCTION TO WORLD MUSIC. 3 Hours.

The music of Asia, Africa, and Oceania and the native traditions of the Americas; the role of music in the world's societies and non-Western music systems. This course satisfies the University of Texas at Arlington Core Curriculum Requirement in Creative Arts.

MUSI 2301. APPRECIATION OF MUSIC IN FILM. 3 Hours.

A study of the history, compositional styles and impact of music in films during the 20th century. This course satisfies the University of Texas at Arlington Core Curriculum requirement in Creative Arts.

MUSI 2302. MUSIC LITERATURE. 3 Hours. (TCCN = MUSI 1307)

An introduction to music literature of various style periods with an emphasis on reading orchestral scores.

MUSI 2325. THEORY AND HARMONY III. 3 Hours. (TCCN = MUSI 2311)

Modulation, chromatic part writing, and harmonic analysis. Prerequisite: C or better in MUSI 1326.

MUSI 2326. THEORY AND HARMONY IV. 3 Hours. (TCCN = MUSI 2312)

Harmonic, linear, and formal analysis of 19th- and 20th-century compositional techniques. Prerequisite: C or better in MUSI 2325.

MUSI 3101. ITALIAN AND FRENCH DICTION. 1 Hour.

A guide to correct pronunciation of Italian and French in vocal music.

MUSI 3103. VOCAL PEDAGOGY. 1 Hour.

A basic survey of the science of voice culture and the skills and knowledge needed to teach healthy, effective vocal production in school and/or private studio. Prerequisite: C or better in MUSI 2241.

MUSI 3104. VOCAL COACHING. 1 Hour.

Advanced instruction in diction, interpretation, and style for singers and collaborative instrumentalists. This course is designed as a supplement to applied lessons for advanced students. Permission of instructor required.

MUSI 3125. JAZZ THEORY & KEYBOARD FUNDAMENTALS I. 1 Hour.

Basic-to-intermediate jazz concepts including modes, harmony, chord progressions, and their keyboard applications. Prerequisite: C or better in MUSI 1325 or faculty approval.

MUSI 3126. JAZZ THEORY & KEYBOARD FUNDAMENTALS II. 1 Hour.

Intermediate-to-advanced jazz concepts including modes, harmony, chord progressions, and their keyboard applications. Prerequisite: C or better in MUSI 3125 or faculty approval.

MUSI 3127. COMPUTER COMPOSITION I. 1 Hour.

Course designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 1326 and MUSI 3394.

MUSI 3128. COMPUTER COMPOSITION II. 1 Hour.

Course designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 3127.

MUSI 3140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3140 and THEA 3140; credit will be granted only in one department. Prerequisite: C or better in MUSI 2141 or THEA 2141. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 3141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3141 and THEA 3141; credit will be granted only in one department. Prerequisite: C or better in MUSI 3140 or THEA 3140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 3191. SECONDARY LESSONS IN STRINGS. 1 Hour.

Open only to music majors in the All-Level Instrumental (Orchestra Emphasis) Program. Applied instruction in the fundamentals and techniques specific to string instruments. Taken twice; may not repeat study in any one instrument.

MUSI 3200. MARCHING BAND TECHNIQUES. 2 Hours.

Open to music majors only. A detailed study of the theory and history of marching band presentations.

MUSI 3211. EARLY CHILDHOOD MUSIC. 2 Hours.

Musical characteristics of children, folksong and composed literature, performance activities, song analysis, and techniques for reading and writing music. Open to music majors only. Prerequisite: C or better in MUSI 2112, MUSI 2186, MUSI 2326, and completion of the Music Education Proficiency Exam.

MUSI 3212. JAZZ TECHNIQUES. 2 Hours.

A study of jazz techniques as they apply to solo and ensemble performance.

MUSI 3213. INSTRUMENTAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for beginning and intermediate instrumental ensembles. Prerequisite: C or better in MUSI 2112, MUSI 2186, MUSI 2326, MUSI 4308, and completion of the Music Education Proficiency Exam.

MUSI 3214. CHORAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for beginning and intermediate choral ensembles. Offered every fall odd year. Prerequisite: C or better in MUSI 2112, MUSI 2186, MUSI 2326, and completion of the Music Education Proficiency Exam.

MUSI 3225. JAZZ IMPROVISATION I. 2 Hours.

The melodic and harmonic foundations of contemporary jazz solo performance. May be repeated for credit as topics change. Prerequisite: C or better in MUSI 3125 or approval of instructor.

MUSI 3226. JAZZ IMPROVISATION II. 2 Hours.

A continuation of Jazz Improvisation I. This course explores advanced techniques of contemporary jazz solo performance. Prerequisite: C or better in MUSI 3225 and MUSI 3126 or faculty approval.

MUSI 3236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 2237 and passing grade on the Sophomore Proficiency exam.

MUSI 3237. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 3236.

MUSI 3238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 2239 and passing grade on Sophomore Proficiency exam.

MUSI 3239. APPLIED INSTRUCTION ON A SECONDARY INSTRUMENT. 2 Hours.

Open to music majors only. Applied instruction that covers the fundamentals and techniques specific to a secondary instrument.

MUSI 3240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 2241 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 3240.

MUSI 3242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 2243 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 3242.

MUSI 3244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 2245 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 3244.

MUSI 3246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 2247 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 3246.

MUSI 3248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 2249 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 3248.

MUSI 3250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 2251 and passing grade on Sophomore Proficiency Exam.

MUSI 3251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 3250.

MUSI 3252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 2253 or MUSI 2145 and MUSI 2147, and passing grade on Sophomore Proficiency Exam.

MUSI 3253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 3252.

MUSI 3254. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 2143 and MUSI 2155 and passing grade on Sophomore Proficiency Exam.

MUSI 3255. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 3254.

MUSI 3257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 2258 and passing grade on Sophomore Proficiency Exam.

MUSI 3258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 3257.

MUSI 3259. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 3238.

MUSI 3267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 2268 and passing grade on Sophomore Proficiency Exam.

MUSI 3268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 3267.

MUSI 3294. APPLIED PEDAGOGY. 2 Hours.

A study of teaching techniques as they apply to studio or class instruction in applied music. Specific areas of study will change from semester to semester. May be repeated for credit. Prerequisite: Faculty approval.

MUSI 3295. PIANO PEDAGOGY. 2 Hours.

Open to music majors only. Teaching methods of beginning level private and class instruction. Prerequisite: Faculty approval.

MUSI 3300. MUSIC HISTORY I. 3 Hours.

The music of western civilization from ancient times to 1750. Prerequisite: C or better in MUSI 2326 or faculty approval.

MUSI 3301. MUSIC HISTORY II. 3 Hours.

The music of western civilization from 1750 to the present. Prerequisite: C or better in MUSI 2326 or faculty approval.

MUSI 3302. FORM AND ANALYSIS. 3 Hours.

Structure and analysis of the major forms of music literature. Prerequisite: C or better in MUSI 2326 and a passing grade on the Music Theory Proficiency Exam.

MUSI 3303. COUNTERPOINT. 3 Hours.

Overview of modal counterpoint; detailed study of harmonic counterpoint including canon, invention, and fugue. Prerequisite: C or better in MUSI 2326 and a passing grade on the Music Theory Proficiency Exam.

MUSI 3305. MUSIC FOR CHILDREN. 3 Hours.

A study of musical activities and the role of music in childhood. Includes music fundamentals, folk song literature, and musical characteristics of children. Cannot be counted toward a Bachelor of Music Degree.

MUSI 3308. INSTRUMENTAL CONDUCTING I. 3 Hours.

A practical study of basic instrumental conducting and score reading techniques. Open to music majors only. Prerequisites: C or better in MUSI 2186, MUSI 2326 and successful completion of the second semester lessons or above.

MUSI 3309. CHORAL CONDUCTING I. 3 Hours.

A practical study of the technical and expressive skills required of choral conductors, as well as the development of score study techniques and error detection skills necessary to successfully conduct choral ensembles. Open to music majors only. Prerequisites: C or better in MUSI 2186, MUSI 2326 and successful completion of the Sophomore Proficiency Exam.

MUSI 3316. STRATEGIES AND ASSESSMENT IN MUSIC EDUCATION. 3 Hours.

Open to music education majors only. Current trends in music education will be examined. Topics include effective differentiated instruction, positive classroom management, strategies for working with diverse learners, and examination of major learning theories and principles of cognitive, social, emotional, physical and aesthetic development. This course will also examine a variety of assessment techniques that are used in a music classroom. Assessment tools such as rubrics, rating scales, National Standards, TEKS, STAAR, and TExES will be examined and implemented into lesson planning. Prerequisite: C or better in MUSI 2112.

MUSI 3317. SINGING FOR THE ACTOR. 3 Hours.

An applied study of the vocal apparatus, vocal placement, the voice/body relationship, character, working with text, phrasing, and auditioning as they relate to singing in musical theatre for the Broadway or West End theatre. Emphasis is placed on integrating singing and acting skills. Prerequisites: THEA 1307, THEA 2352 and permission of faculty. Same as offering THEA 3317; may not be repeated and credit will only be granted in one department.

MUSI 3320. MUSIC AND TECHNOLOGY IN GAME AUDIO. 3 Hours.

Explores basics of music and audio for computer games, including composition, workflow, working with animation, and dialog/non-music sound. May be repeated for credit as topics change. Prerequisite: C or better in MUSI 3394 or permission of instructor.

MUSI 3321. KEYBOARD SYNTHESIZER PROGRAMMING AND TECHNIQUES. 3 Hours.

Explores the framework, process, and implementation of electronic music synthesis in composition and performance idioms. Topics covered are electronic sound design, hardware and soft synths.

MUSI 3322. INTRODUCTION TO SONGWRITING. 3 Hours.

Open to music majors only. Addresses strategies, techniques, and the craft of composing popular song. Prerequisite: MUSI 3126 or MUSI 1326.

MUSI 3323. BUSINESS OF MUSIC. 3 Hours.

A study of the structure of the music business and relationships among occupations in the industry. Topics include publishing, copyright licensing, artist management, the record industry, music in film and broadcasting, and career development and planning.

MUSI 3326. POST-TONAL ANALYSIS. 3 Hours.

Study of pitch, harmony, rhythm, & form in music from Debussy to the present. Prerequisite: C or better in MUSI 2186 and MUSI 2326 and passing grade on the Music Theory Proficiency Exam.

MUSI 3350. PRIVATE LESSONS IN VOICE. 3 Hours.

Courses meet the requirements of performance majors in voice. Performance of a junior (half) recital must be completed prior to the end of the 3351 semester. Prerequisite: C or better in MUSI 2241 and passing grade on Sophomore Proficiency exam.

MUSI 3351. PRIVATE LESSONS IN VOICE. 3 Hours.

Courses meet the requirements of performance majors in voice. Performance of a junior (half) recital must be completed prior to the end of the 3351 semester. Prerequisite: C or better in MUSI 3350.

MUSI 3352. PRIVATE LESSONS IN PIANO. 3 Hours.

Courses meet the requirements of performance majors in piano. Performance of a junior (half) recital is the minimum requirement for completion of this course. Prerequisite: C or better in MUSI 2243 and passing grade on Sophomore Proficiency exam.

MUSI 3353. PRIVATE LESSONS IN PIANO. 3 Hours.

Courses meet the requirements of performance majors in piano. Performance of a junior (half) recital must be completed prior to the end of the 3353 semester. Prerequisite: C or better in MUSI 3352.

MUSI 3354. PRIVATE LESSONS IN STRINGS. 3 Hours.

These courses meet the requirements of performance majors in strings. Performance of a junior (half) recital must be completed prior to the end of the 3355 semester. Prerequisite: C or better in MUSI 2245 and passing grade on Sophomore Proficiency exam.

MUSI 3355. PRIVATE LESSONS IN STRINGS. 3 Hours.

These courses meet the requirements of performance majors in strings. Performance of a junior (half) recital is required prior to the end of the 3355 semester. Prerequisite: C or better in MUSI 3354.

MUSI 3356. PRIVATE LESSONS IN WOODWINDS. 3 Hours.

Courses meet the requirements of performance majors in woodwinds. Performance of a junior (half) recital must be completed prior to the end of the 3357 semester. Prerequisite: C or better in MUSI 2247 and passing grade on Sophomore Proficiency Exam.

MUSI 3357. PRIVATE LESSONS IN WOODWINDS. 3 Hours.

Courses meet the requirements of performance majors in woodwinds. Performance of a junior (half) recital must be completed prior to the end of the 3357 semester. Prerequisite: C or better in MUSI 3356.

MUSI 3358. PRIVATE LESSONS IN BRASS. 3 Hours.

Courses meet the requirements of performance majors in brass. Performance of a junior (half) recital must be completed prior to the end of the 3359 semester. Prerequisite: C or better in MUSI 2249 and passing grade on Sophomore Proficiency exam.

MUSI 3359. PRIVATE LESSONS IN BRASS. 3 Hours.

Courses meet the requirements of performance majors in brass. Performance of a junior (half) recital must be completed prior to the end of the 3359 semester. Prerequisite: C or better in MUSI 3358.

MUSI 3360. PRIVATE LESSONS IN PERCUSSION. 3 Hours.

Courses meet the requirements of performance majors in percussion. Performance of a junior (half) recital must be completed prior to the end of the 3361 semester. Prerequisite: C or better in MUSI 2251 and passing grade on Sophomore Proficiency exam.

MUSI 3361. PRIVATE LESSONS IN PERCUSSION. 3 Hours.

Courses meet the requirements of performance majors in percussion. Performance of a junior (half) recital must be completed prior to the end of the 3361 semester. Prerequisite: C or better in MUSI 3360.

MUSI 3367. PRIVATE LESSONS IN ORGAN. 3 Hours.

Courses meet the requirements of performance majors in organ. Performance of a junior (half) recital must be completed prior to the end of the 3368 semester. Prerequisite: C or better in MUSI 2258 and passing grade on Sophomore Proficiency Exam.

MUSI 3368. PRIVATE LESSONS IN ORGAN. 3 Hours.

Courses meet the requirements of performance majors in organ. Performance of a junior (half) recital must be completed prior to the end of the 3368 semester. Prerequisite: C or better in MUSI 3367.

MUSI 3377. PRIVATE LESSONS IN HARPSICHORD. 3 Hours.

Courses meet the requirements of performance majors in harpsichord. Performance of a junior (half) recital must be completed prior to the end of the 3378 semester. Prerequisite: C or better in MUSI 2268.

MUSI 3378. PRIVATE LESSONS IN HARPSICHORD. 3 Hours.

Courses meet the requirements of performance majors in harpsichord. Performance of a junior (half) recital must be completed prior to the end of the 3378 semester. Prerequisite: C or better in MUSI 3377.

MUSI 3390. SCHENKERIAN ANALYSIS. 3 Hours.

An introduction to the methods of Schenkerian analysis and harmonic reduction. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory. Prerequisite: C or better in MUSI 2186, MUSI 2326, and a passing grade on the Music Theory Proficiency Exam.

MUSI 3391. ADVANCED SONATA THEORY. 3 Hours.

An in-depth examination of sonata form drawing on the concepts of Caplin's formal functions and Hepokoski and Darcy's sonata theory, including intensive writing and analysis assignments. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory. Prerequisite: C or better in MUSI 2186 and MUSI 2326 and passing grade on the Music Theory Proficiency Exam.

MUSI 3392. COMPOSITION I. 3 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: B or better in MUSI 2227, MUSI 2325, MUSI 2326, and MUSI 2186 and a passing grade on the Music Theory Proficiency Exam.

MUSI 3393. COMPOSITION II. 3 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 3392.

MUSI 3394. DIGITAL MUSIC TECHNOLOGY. 3 Hours.

An introduction to the computer and to its use in the field of music. Topics include basic computer operation, information-management software, computer-assisted instruction in music, and music notation and sequencing software, MIDI (Musical Instrument Digital Interface).

MUSI 3395. JAZZ COMPOSITION. 3 Hours.

An introduction to jazz composition, focusing on no more than four distinct melodic voices plus rhythm section. Functional and non-functional harmonic and melodic techniques are explored. Prerequisite: C or better in MUSI 3226 or permission of instructor and successful completion of the Jazz Proficiency Exam.

MUSI 3396. RECORD LABEL AND STUDIO MANAGEMENT. 3 Hours.

Practical experience in the business of running a recording studio and recording label. Topics may include, but are not limited to, website management, marketing, physical and digital distribution models, streaming services, equipment maintenance and inventory, facility supervision, and basic arts accounting practices. Prerequisite: Permission of instructor required.

MUSI 4101. GERMAN AND ENGLISH DICTION. 1 Hour.

A guide to correct pronunciation of German and English in vocal music.

MUSI 4102. VOCAL LITERATURE. 1 Hour.

Survey of major solo vocal works from the Classical Era to the present. Prerequisite: C or better in MUSI 2241 or permission of instructor.

MUSI 4111. ORCHESTRAL EXCERPTS. 1 Hour.

Study of orchestral excerpts for individual instruments. Topics will vary by semester. May be repeated for credit. Permission of instructor required.

MUSI 4117. MUSIC EDUCATION FIELD-BASED EXPERIENCE. 1 Hour.

Supervised and directed professional practice in local schools. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. Field-based experience must be taken the semester immediately preceding student teaching residency.

MUSI 4128. ADVANCED AUDIO RECORDING. 1 Hour.

Further study and practical studio work for students who have successfully completed the required recording techniques sequence utilizing Studio 301 in an independent study format. Prerequisite: C or better in MUSI 4326.

MUSI 4129. RECORDING ENSEMBLE. 1 Hour.

This course is open to Music Industry Studies students. This ensemble provides practical and artistic experience in a frequently encountered recording studio setting. Prerequisite: C or better in MUSI 4390 and Approval of the ensemble director.

MUSI 4140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4140 and THEA 4140; credit will be granted only in one department. Prerequisite: C or better in MUSI 3141 or THEA 3141. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 4141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4141 and THEA 4141; credit will be granted only in one department. Prerequisite: C or better in MUSI 4140 or THEA 4140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 4188. ADVANCED CONDUCTING. 1 Hour.

Open to music majors only. An intensive study of conducting that will include score-study techniques, left and right hand independence, video analysis, rehearsal observation, and other topics related to the art of conducting. Can fulfill one of the 3 elective hours for Performance majors. Prerequisite: MUSI 3308 or MUSI 3309, and permission of instructor.

MUSI 4191. CONFERENCE COURSE. 1 Hour.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Consent of the instructor or chair of the department.

MUSI 4205. ADVANCED FUNCTIONAL PIANO. 2 Hours.

Concentrated study of keyboard skills which include: sightreading, transposition, harmonization, and open score reading. Prerequisite: C or better in MUSI 2181 or faculty approval.

MUSI 4211. ELEMENTARY MUSIC. 2 Hours.

Focus on perception as it relates to children's development and participation in music through singing and playing instruments. Prerequisite: C or better in MUSI 3211.

MUSI 4213. INSTRUMENTAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for intermediate and advanced instrumental ensembles. Prerequisite: C or better in MUSI 3213 or faculty approval.

MUSI 4214. CHORAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for intermediate and advanced choral ensembles. Prerequisite: C or better in MUSI 3214 or faculty approval.

MUSI 4225. JAZZ IMPROVISATION III - ADVANCED. 2 Hours.

A continuation of Jazz Improvisation II. This course explores advanced techniques of contemporary jazz solo performance. Prerequisite: C or better in MUSI 3226 and successful completion of the Jazz Proficiency Exam.

MUSI 4236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 3237.

MUSI 4238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 3259.

MUSI 4240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3241.

MUSI 4241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 4240.

MUSI 4242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3243.

MUSI 4243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 4242.

MUSI 4244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3245.

MUSI 4245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 4244.

MUSI 4246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3247.

MUSI 4247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 4246.

MUSI 4248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3249.

MUSI 4249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 4248.

MUSI 4250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3251.

MUSI 4251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 4250.

MUSI 4252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3253.

MUSI 4253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 4252.

MUSI 4254. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 3255.

MUSI 4257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3258.

MUSI 4258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 4257.

MUSI 4267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3268.

MUSI 4268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 4267.

MUSI 4280. SPECIAL TOPICS IN MUSIC. 2 Hours.

Special studies in music. Topics will vary from semester to semester. May be repeated for credit when topics vary.

MUSI 4291. CONFERENCE COURSE. 2 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Consent of the instructor or chair of the department.

MUSI 4300. JAZZ PERSPECTIVES. 3 Hours.

An in-depth study of the history, literature, and styles of the jazz idiom. Open to music majors only. Prerequisite: Successful completion of the Jazz Proficiency Exam.

MUSI 4301. ORCHESTRATION. 3 Hours.

Scoring for strings, woodwinds, brass, percussion, and voice as related to orchestra, band, and choir. Prerequisite: C or better in MUSI 2186, MUSI 2326 and a passing grade on the Music Theory Proficiency Exam.

MUSI 4302. JAZZ ARRANGING. 3 Hours.

Arranging in the jazz and commercial idioms with emphasis on the large jazz ensemble. Prerequisite: C or better in MUSI 3125, MUSI 3225, and MUSI 3395, or consent of the instructor, and successful completion of the Jazz Proficiency Exam.

MUSI 4303. ADVANCED STRING CLASS. 3 Hours.

Open to music majors only. An advanced study of orchestral string instruments with emphasis on advanced technique and pedagogy. Prerequisite: C or better in MUSI 3191.

MUSI 4305. HISTORY OF MUSIC THEORY. 3 Hours.

Theorists and theoretical tracts from the ancient Greeks to the present day. Prerequisite: C or better in MUSI 2186, MUSI 2326, and a passing grade on the Music Theory Proficiency exam.

MUSI 4308. INSTRUMENTAL CONDUCTING II. 3 Hours.

Open to music majors only. A study of advanced conducting techniques, including score reading, rehearsal techniques, ensemble concepts, articulations and musical style. Prerequisite: C or better in MUSI 3308.

MUSI 4309. CHORAL CONDUCTING II. 3 Hours.

Open to music majors only. Application of the technical and expressive aspects of choral conducting, score study techniques, error detection skills, and rehearsal planning and implementation techniques in a laboratory-conducting situation. Offered every spring odd year. Prerequisite: C or better in MUSI 3309.

MUSI 4324. HISTORY OF MUSICAL THEATRE. 3 Hours.

A historical survey of American theatre music from the colonial period to the present. Open to all students as a fine arts elective.

MUSI 4325. RECORDING TECHNIQUES II. 3 Hours.

Students will continue to learn recording engineering through audio analysis, recording practice, and audio theory. Signal processing, analog tape techniques, mastering, and studio business will be discussed. Students will work independently on jazz and pop/rock recording projects in Studio 301. Prerequisite: C or better in MUSI 4390.

MUSI 4326. RECORDING TECHNIQUES III. 3 Hours.

This course builds upon the previous two courses by introducing students to more advanced aspects of audio engineering, such as combining MIDI and audio, syncing audio to video, advanced aural skills, and mixing automation. Students will be able to utilize Studio 301 and Irons Hall in order to pursue their recording work in a more independent fashion. Prerequisite: C or better in MUSI 4325.

MUSI 4327. TECHNIQUES AND TECHNOLOGY IN FILM COMPOSITION. 3 Hours.

Study in the technical and artistic requirements of film composition and the realization of film scores. Prerequisite: C or better in MUSI 3394.

MUSI 4328. ELECTRONIC MUSIC COMPOSITION AND PERFORMANCE. 3 Hours.

An exploration of strategies for composing electronic music that apply to a broad range of contemporary styles and genres. Through a series of guided exercises and projects, the class provides an opportunity for students to explore compositional approaches using electronic instruments and digital audio technologies. Prerequisite: C or better in MUSI 4325.

MUSI 4329. SOUND FOR NEW MEDIA. 3 Hours.

Explores the techniques and application of audio integration within media-centered environments, focusing on live broadcast audio applications over internet and other mediums for broadcast. Prerequisite: C or better in MUSI 4325.

MUSI 4349. FORMAL-FUNCTION THEORY. 3 Hours.

Introduction to William Caplin's Formal-Function Theory, including mastery of formal functions, harmonic progressions, the principal theme types, and full-movement forms. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory. Prerequisites: C or better in MUSI 2186, MUSI 2326, and a passing grade on the Music Theory Proficiency exam.

MUSI 4350. 20TH CENTURY FORM & TECHNIQUE. 3 Hours.

Introduction to twentieth-century form and techniques, as well as relevant analytical methods and compositional strategies. Seminar designed to meet the needs of students desiring to become theorists or teacher of theory. This course formerly MUSI 4490. Prerequisite: C or better in MUSI 2186 and MUSI 2326 and passing grade on the Music Theory Proficiency Exam.

MUSI 4351. MUSIC THEORY CAPSTONE/SEMINAR. 3 Hours.

Seminar designed to meet the needs of students desiring to become theorists or teachers of theory; includes preparation and presentation of a senior research project in music theory in a conference setting. This course formerly MUSI 4491. Prerequisite: Grade of C or better in MUSI 4390 (formerly MUSI 4490).

MUSI 4387. ANALYSIS OF POPULAR MUSIC. 3 Hours.

This course will explore form, melody, harmony, and voice-leading in a variety of popular styles since the early 20th century. Prerequisite: C or better in MUSI 2326 and a passing grade on the Theory Proficiency exam.

MUSI 4390. RECORDING TECHNIQUES I. 3 Hours.

Live performance and studio recording techniques. Topics include microphone selection and placement, equalization techniques, overdubbing, console-mixing, sound synchronization, and related recording techniques. Prerequisite: C or better in MUSI 3394.

MUSI 4391. CONFERENCE COURSE. 3 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Consent of the instructor or chair of the department.

MUSI 4392. JAZZ STUDIES SENIOR RECITAL/PROJECT. 3 Hours.

Senior recital or project for jazz studies majors. Designed in consultation with the Director of Jazz Studies. Prerequisites: completion of performance lesson requirements; consent of instructor or music department chair.

MUSI 4393. CAPSTONE IN MUSIC THEORY. 3 Hours.

Senior project in music theory, culminating in a professional presentation on a selected topic in music theory. Prerequisite: MUSI 4490.

MUSI 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

MUSI 4395. INTERNSHIP. 3 Hours.

The Internship course is designed to give students practical experience in a variety of music media and music business settings. The student must work with a local business for at least ten hours per week (140 hours total).

MUSI 4450. PRIVATE LESSONS IN VOICE. 4 Hours.

These courses meet the requirements of performance majors in voice. Performance of a senior (full) recital must be completed prior to the end of the 4451 semester. Prerequisite: C or better in MUSI 3351.

MUSI 4451. PRIVATE LESSONS IN VOICE. 4 Hours.

These courses meet the requirements of performance majors in voice. Performance of a senior (full) recital must be completed prior to the end of the 4451 semester. Prerequisite: C or better in MUSI 4450.

MUSI 4452. PRIVATE LESSONS IN PIANO. 4 Hours.

These courses meet the requirements of performance majors in piano. Performance of a senior (full) recital must be completed prior to the end of the 4453 semester. Prerequisite: C or better in MUSI 3353.

MUSI 4453. PRIVATE LESSONS IN PIANO. 4 Hours.

These courses meet the requirements of performance majors in piano. Performance of a senior (full) recital must be completed prior to the end of the 4453 semester. Prerequisite: C or better in MUSI 4452.

MUSI 4454. PRIVATE LESSONS IN STRINGS. 4 Hours.

These courses meet the requirements of performance majors in strings. Performance of a senior (full) recital must be completed prior to the end of the 4455 semester. Prerequisite: C or better in MUSI 3355.

MUSI 4455. PRIVATE LESSONS IN STRINGS. 4 Hours.

These courses meet the requirements of performance majors in strings. Performance of a senior (full) recital must be completed prior to the end of the 4455 semester. Prerequisite: C or better in MUSI 4454.

MUSI 4456. PRIVATE LESSONS IN WOODWINDS. 4 Hours.

These courses meet the requirements of performance majors in woodwinds. Performance of a senior (full) recital must be completed prior to the end of the 4457 semester. Prerequisite: C or better in MUSI 3357.

MUSI 4457. PRIVATE LESSONS IN WOODWINDS. 4 Hours.

These courses meet the requirements of performance majors in woodwinds. Performance of a senior (full) recital must be completed prior to the end of the 4457 semester. Prerequisite: C or better in MUSI 4456.

MUSI 4458. PRIVATE LESSONS IN BRASS. 4 Hours.

These courses meet the requirements of performance majors in brass. Performance of a senior (full) recital must be completed prior to the end of the 4459 semester. Prerequisite: C or better in MUSI 3359.

MUSI 4459. PRIVATE LESSONS IN BRASS. 4 Hours.

These courses meet the requirements of performance majors in brass. Performance of a senior (full) recital must be completed prior to the end of the 4459 semester. Prerequisite: C or better in MUSI 4458.

MUSI 4460. PRIVATE LESSONS IN PERCUSSION. 4 Hours.

These courses meet the requirements of performance majors in percussion. Performance of a senior (full) recital must be completed prior to the end of the 4461 semester. Prerequisite: C or better in MUSI 3361.

MUSI 4461. PRIVATE LESSONS IN PERCUSSION. 4 Hours.

These courses meet the requirements of performance majors in percussion. Performance of a senior (full) recital must be completed prior to the end of the 4461 semester. Prerequisite: C or better in MUSI 4460.

MUSI 4467. PRIVATE LESSONS IN ORGAN. 4 Hours.

These courses meet the requirements of performance majors in organ. Performance of a senior (full) recital must be completed prior to the end of the 4468 semester. Prerequisite: C or better in MUSI 3368.

MUSI 4468. PRIVATE LESSONS IN ORGAN. 4 Hours.

These courses meet the requirements of performance majors in organ. Performance of a senior (full) recital must be completed prior to the end of the 4468 semester. Prerequisite: C or better in MUSI 4467.

MUSI 4477. PRIVATE LESSONS IN HARPSICHORD. 4 Hours.

This course meets the requirements of performance majors in harpsichord. Performance of a senior (full) recital must be completed prior to the end of the 4478. Prerequisite: C or better in MUSI 3378.

MUSI 4478. PRIVATE LESSONS IN HARPSICHORD. 4 Hours.

These courses meet the requirements of performance majors in harpsichord. Performance of a senior (full) recital must be completed prior to the end of the 4478 semester. Prerequisite: C or better in MUSI 4477.

MUSI 4492. COMPOSITION III. 4 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 3393.

MUSI 4493. COMPOSITION IV. 4 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 4492.

MUSI 5000. WIND SYMPHONY. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5001. SYMPHONIC WINDS. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5002. A CAPPELLA CHOIR. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5004. UNIVERSITY SINGERS. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5005. MUSICAL THEATRE/OPERA LAB. 0 Hours.

Exploration of opera roles, staging techniques, and repertoire. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5007. JAZZ ORCHESTRA. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5008. JAZZ ENSEMBLE. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5010. STUDIO CLASS. 0 Hours.

Departmental performance classes, master classes, guest artist performances and lectures related to performance specializations. Students enroll concurrently with private lesson in specialization.

MUSI 5011. ORCHESTRA. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5012. CHAMBER MUSIC. 0 Hours.

This course is an in-depth study of the repertoire of standard chamber ensembles such as string quartets and piano trios, woodwind quintets and brass quintets. Weekly coaching with professors culminates in a public performance where students demonstrate skills in music performance. Prerequisite: Approval of Ensemble Director and Graduate Advisor.

MUSI 5022. JAZZ COMBO. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5100. WIND SYMPHONY. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5101. SYMPHONIC WINDS. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5102. A CAPPELLA CHOIR. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5103. CHAMBER SINGERS. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5104. UNIVERSITY SINGERS. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5106. KEYBOARD ENSEMBLE. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5107. JAZZ ORCHESTRA. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5108. JAZZ ENSEMBLE. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5109. VOCAL JAZZ. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5110. JAZZ COMBO. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5111. ORCHESTRA. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5112. CHAMBER MUSIC. 1 Hour.

This course is an in-depth study of the repertoire of standard chamber ensembles such as string quartets and piano trios, woodwind quintets and brass quintets. Weekly coaching with professors culminates in a public performance where students demonstrate skills in music performance. Prerequisite: Approval of Ensemble Director.

MUSI 5113. ORCHESTRAL EXCERPTS. 1 Hour.

Study of orchestral excerpts for individual instruments. Topics will vary by semester. May be repeated for credit. Permission of instructor required.

MUSI 5114. SAX CHOIR. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Permission of Instructor.

MUSI 5115. VOCAL COACHING. 1 Hour.

Advanced instruction in diction, interpretation, and style for singers and collaborative instrumentalists. By permission of instructor.

MUSI 5116. ELECTRIC GUITAR ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5117. MUSIC EDUCATION FIELD-BASED EXPERIENCE. 1 Hour.

Supervised and directed professional practice in local schools. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. This course must be taken the semester immediately preceding clinical student teaching.

MUSI 5120. PRIVATE LESSONS IN VOICE. 1 Hour.

This course provides private instruction in voice. This course may be repeated for credit as often as course content changes.

MUSI 5121. PRIVATE LESSONS IN PIANO. 1 Hour.

This course provides private instruction in piano. This course may be repeated for credit as often as course content changes.

MUSI 5122. PRIVATE LESSONS IN ORGAN. 1 Hour.

This course provides private instruction in organ. This course may be repeated for credit as often as course content changes.

MUSI 5123. PRIVATE LESSONS IN HARPSICHORD. 1 Hour.

This course provides private instruction in harpsichord. This course may be repeated for credit as often as course content changes.

MUSI 5124. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This course provides private instruction in jazz piano. This course may be repeated for credit as often as course content changes.

MUSI 5125. PRIVATE LESSONS IN VIOLIN. 1 Hour.

This course provides private instruction in violin. This course may be repeated for credit as often as course content changes.

MUSI 5126. PRIVATE LESSONS IN VIOLA. 1 Hour.

This course provides private instruction in viola. This course may be repeated for credit as often as course content changes.

MUSI 5127. PRIVATE LESSONS IN CELLO. 1 Hour.

This course provides private instruction in cello. This course may be repeated for credit as often as course content changes.

MUSI 5128. PRIVATE LESSONS IN BASS. 1 Hour.

This course provides private instruction in bass. This course may be repeated for credit as often as course content changes.

MUSI 5129. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This course provides private instruction in jazz bass. This course may be repeated for credit as often as course content changes.

MUSI 5130. PRIVATE LESSONS IN GUITAR. 1 Hour.

This course provides private instruction in guitar. This course may be repeated for credit as often as course content changes.

MUSI 5131. PRIVATE LESSONS IN CLARINET. 1 Hour.

This course provides private instruction in clarinet. This course may be repeated for credit as often as course content changes.

MUSI 5132. PRIVATE LESSONS IN OBOE. 1 Hour.

This course provides private instruction in oboe. This course may be repeated for credit as often as course content changes.

MUSI 5133. PRIVATE LESSONS IN FLUTE. 1 Hour.

This course provides private instruction in flute. This course may be repeated for credit as often as course content changes.

MUSI 5134. PRIVATE LESSONS IN SAXOPHONE. 1 Hour.

This course provides private instruction in saxophone. This course may be repeated for credit as often as course content changes.

MUSI 5135. PRIVATE LESSONS IN BASSOON. 1 Hour.

This course provides private instruction in bassoon. This course may be repeated for credit as often as course content changes.

MUSI 5136. PRIVATE LESSONS IN TRUMPET. 1 Hour.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5137. PRIVATE LESSONS IN FRENCH HORN. 1 Hour.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5138. PRIVATE LESSONS IN TROMBONE. 1 Hour.

This course provides private instruction in trombone. This course may be repeated for credit as often as course content changes.

MUSI 5139. PRIVATE LESSONS IN TUBA. 1 Hour.

This course provides private instruction in tuba. This course may be repeated for credit as often as course content changes.

MUSI 5140. PRIVATE LESSONS IN EUPHONIUM. 1 Hour.

This course provides private instruction in euphonium. This course may be repeated for credit as often as course content changes.

MUSI 5145. PRIVATE LESSONS IN JAZZ DRUMSET. 1 Hour.

This course provides private instruction in jazz drumset. This course may be repeated for credit as often as course content changes.

MUSI 5150. PEDAGOGY IN MUSIC THEORY. 1 Hour.

Survey of materials and methods for teaching music theory at the undergraduate level. Observation of teaching methods and supervision of undergraduate teaching.

MUSI 5160. FLUTE CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5161. WOODWIND ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5171. ELECTIVE PERFORMANCE. 1 Hour.

For students who desire elective private instruction in string, woodwinds, brass, keyboard, voice, or percussion.

MUSI 5188. ADVANCED CONDUCTING. 1 Hour.

Open to music majors only. An intensive study of conducting that will include score-study techniques, left and right hand independence, video analysis, rehearsal observation, and other topics related to the art of conducting. Permission of instructor required. Prerequisite: Permission of instructor.

MUSI 5190. KEYBOARD ACCOMPANIMENT. 1 Hour.

This course entails the student accompanying performances as specified and supervised by the instructor.

MUSI 5191. CONFERENCE COURSE IN MUSIC. 1 Hour.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: permission of instructor and Graduate Advisor.

MUSI 5205. MUSIC THEATRE/OPERA LAB. 2 Hours.

Exploration of opera roles, staging techniques, and repertoire. Prerequisite: Approval of the ensemble director.

MUSI 5211. EARLY CHILDHOOD MUSIC. 2 Hours.

Musical characteristics of children, folksong and composed literature, performance activities, song analysis, and techniques for reading and writing music.

MUSI 5212. ELEMENTARY MUSIC. 2 Hours.

Focus on perception as it relates to children's development and participation in music through singing and playing instruments.

MUSI 5213. CHORAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for beginning and intermediate choral ensembles.

MUSI 5214. CHORAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for intermediate and advanced choral ensembles.

MUSI 5215. INSTRUMENTAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for beginning and intermediate instrumental ensembles.

MUSI 5216. INSTRUMENTAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for intermediate and advanced instrumental ensembles.

MUSI 5220. PRIVATE LESSONS IN VOICE. 2 Hours.

This course provides private instruction in voice. This course may be repeated for credit as often as course content changes.

MUSI 5221. PRIVATE LESSONS IN PIANO. 2 Hours.

This course provides private instruction in piano. This course may be repeated for credit as often as course content changes.

MUSI 5222. PRIVATE LESSONS IN ORGAN. 2 Hours.

This course provides private instruction in organ. This course may be repeated for credit as often as course content changes.

MUSI 5223. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This course provides private instruction in harpsichord. This course may be repeated for credit as often as course content changes.

MUSI 5224. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This course provides private instruction in jazz piano. This course may be repeated for credit as often as course content changes.

MUSI 5225. PRIVATE LESSONS IN VIOLIN. 2 Hours.

This course provides private instruction in violin. This course may be repeated for credit as often as course content changes.

MUSI 5226. PRIVATE LESSONS IN VIOLA. 2 Hours.

This course provides private instruction in viola. This course may be repeated for credit as often as course content changes.

MUSI 5227. PRIVATE LESSONS IN CELLO. 2 Hours.

This course provides private instruction in cello. This course may be repeated for credit as often as course content changes.

MUSI 5228. PRIVATE LESSONS IN BASS. 2 Hours.

This course provides private instruction in bass. This course may be repeated for credit as often as course content changes.

MUSI 5229. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This course provides private instruction in jazz bass. This course may be repeated for credit as often as content changes.

MUSI 5230. PRIVATE LESSONS IN GUITAR. 2 Hours.

This course provides private instruction in guitar. This course may be repeated for credit as often as course content changes.

MUSI 5231. PRIVATE LESSONS IN CLARINET. 2 Hours.

This course provides private instruction in clarinet. This course may be repeated for credit as often as course content changes.

MUSI 5232. PRIVATE LESSONS IN OBOE. 2 Hours.

This course provides private instruction in oboe. This course may be repeated for credit as often as course content changes.

MUSI 5233. PRIVATE LESSONS IN FLUTE. 2 Hours.

This course provides private instruction in flute. This course may be repeated for credit as often as course content changes.

MUSI 5234. PRIVATE LESSONS IN SAXOPHONE. 2 Hours.

This course provides private instruction in saxophone. This course may be repeated for credit as often as course content changes.

MUSI 5235. PRIVATE LESSONS IN BASSOON. 2 Hours.

This course provides private instruction in bassoon. This course may be repeated for credit as often as course content changes.

MUSI 5236. PRIVATE LESSONS IN TRUMPET. 2 Hours.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5237. PRIVATE LESSONS IN FRENCH HORN. 2 Hours.

This course provides private instruction in French Horn. This course may be repeated for credit as often as course content change.

MUSI 5238. PRIVATE LESSONS IN TROMBONE. 2 Hours.

This course provides private instruction in trombone. This course may be repeated for credit as often as course content changes.

MUSI 5239. PRIVATE LESSONS IN TUBA. 2 Hours.

This course provides private instruction in tuba. This course may be repeated for credit as often as course content changes.

MUSI 5240. PRIVATE LESSONS IN EUPHONIUM. 2 Hours.

This course provides private instruction in euphonium. This course may be repeated for credit as often as course content changes.

MUSI 5241. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This course provides private instruction in percussion. This course may be repeated for credit as often as course content changes.

MUSI 5242. PRIVATE LESSONS IN IMPROVISATION. 2 Hours.

This course provides private instruction in improvisation. This course may be repeated for credit as often as course content changes.

MUSI 5245. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This course provides private instruction in jazz drumset. This course may be repeated for credit as often as course content changes.

MUSI 5271. ELECTIVE LESSONS. 2 Hours.

For students who desire elective private instruction in strings, woodwinds, brass, keyboard, voice, or percussion. May be repeated eight times for credit.

MUSI 5291. CONFERENCE COURSE IN MUSIC. 2 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: permission of instructor and Graduate Advisor.

MUSI 5301. FORM AND STYLE ANALYSIS. 3 Hours.

A survey of the forms and styles of Western art music employing relevant analytical techniques.

MUSI 5302. THEORY & COMPOSITION SPECIAL TOPICS. 3 Hours.

This course covers topics which vary from semester to semester, and includes in-depth study of selected topics in music theory. This course may be repeated for credit as often as the content changes. (Formerly MUSI 5330.).

MUSI 5303. ADVANCED COUNTERPOINT. 3 Hours.

Advanced work in specialized areas of counterpoint.

MUSI 5305. HISTORY OF MUSIC THEORY. 3 Hours.

Theorists and theoretical tracts from the ancient Greeks to the present day.

MUSI 5308. MUSIC HISTORY SELECTED TOPICS. 3 Hours.

This course will consist of an in-depth study of a particular genre, composer, or period. It may be repeated as the course content changes.

MUSI 5316. STRATEGIES AND ASSESSMENT IN MUSIC EDUCATION. 3 Hours.

Open to music education majors only. Current trends in music education will be examined. Topics include effective differentiated instruction, positive classroom management, strategies for working with diverse learners, and examination of major learning theories and principles of cognitive, social, emotional, physical and aesthetic development. This course will also examine a variety of assessment techniques that are used in a music classroom. Assessment tools such as rubrics, rating scales, National Standards, TEKS, STAAR, and TExES will be examined and implemented into lesson planning.

MUSI 5320. PRIVATE LESSONS IN VOICE. 3 Hours.

This course provides private instruction in voice. This course may be repeated for credit as often as course content changes.

MUSI 5321. PRIVATE LESSONS IN PIANO. 3 Hours.

This course provides private instruction in piano. This course may be repeated for credit as often as course content changes.

MUSI 5322. PRIVATE LESSONS IN ORGAN. 3 Hours.

This course provides private instruction in organ. This course may be repeated for credit as often as course content changes.

MUSI 5323. PRIVATE LESSONS IN HARPSICHORD. 3 Hours.

This course provides private instruction in harpsichord. This course may be repeated for credit as often as course content changes.

MUSI 5324. PRIVATE LESSONS IN JAZZ PIANO. 3 Hours.

This course provides private instruction in jazz piano. This course may be repeated for credit as often as course content changes.

MUSI 5325. PRIVATE LESSONS IN VIOLIN. 3 Hours.

This course provides private instruction in violin. This course may be repeated for credit as often as course content changes.

MUSI 5326. PRIVATE LESSONS IN VIOLA. 3 Hours.

This course provides private instruction in viola. This course may be repeated for credit as often as course content changes.

MUSI 5327. PRIVATE LESSONS IN CELLO. 3 Hours.

This course provides private instruction in cello. This course may be repeated for credit as often as course content changes.

MUSI 5328. PRIVATE LESSONS IN BASS. 3 Hours.

This course provides private instruction in bass. This course may be repeated for credit as often as course content changes.

MUSI 5329. PRIVATE LESSONS IN JAZZ BASS. 3 Hours.

This course provides private instruction in jazz bass. This course may be repeated for credit as often as course content changes.

MUSI 5332. PRIVATE LESSONS IN OBOE. 3 Hours.

This course provides private instruction in oboe. This course may be repeated for credit as often as course content changes.

MUSI 5333. PRIVATE LESSONS IN FLUTE. 3 Hours.

This course provides private instruction in flute. This course may be repeated for credit as often as course content changes.

MUSI 5334. PRIVATE LESSONS IN SAXOPHONE. 3 Hours.

This course provides private instruction in saxophone. This course may be repeated for credit as often as course content changes.

MUSI 5335. PRIVATE LESSONS IN BASSOON. 3 Hours.

This course provides private instruction in bassoon. This course may be repeated for credit as often as course content changes.

MUSI 5336. PRIVATE LESSONS IN TRUMPET. 3 Hours.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5337. PRIVATE LESSONS IN FRENCH HORN. 3 Hours.

This course provides private instruction in French Horn. This course may be repeated for credit as often as course content changes.

MUSI 5338. PRIVATE LESSONS IN TROMBONE. 3 Hours.

This course provides private instruction in trombone. This course may be repeated for credit as often as course content changes.

MUSI 5339. PRIVATE LESSONS IN TUBA. 3 Hours.

This course provides private instruction in tuba. This course may be repeated for credit as often as course content changes.

MUSI 5340. PRIVATE LESSONS IN EUPHONIUM. 3 Hours.

This course provides private instruction in euphonium. This course may be repeated for credit as often as course content changes.

MUSI 5341. PRIVATE LESSONS IN PERCUSSION. 3 Hours.

This course provides private instruction in percussion. This course may be repeated for credit as often as course content changes.

MUSI 5342. PRIVATE LESSONS IN IMPROVISATION. 3 Hours.

This course provides private instruction in improvisation. This course may be repeated for credit as often as course content changes.

MUSI 5343. PRIVATE LESSONS IN GUITAR. 3 Hours.

This course provides private instruction in guitar. This course may be repeated for credit as often as course content changes.

MUSI 5344. PRIVATE LESSONS IN CLARINET. 3 Hours.

This course provides private instruction in clarinet. This course may be repeated for credit as often as course content changes.

MUSI 5345. PRIVATE LESSONS IN JAZZ DRUMSET. 3 Hours.

This course provides private instruction in jazz drumset. This course may be repeated for credit as often as course content changes.

MUSI 5347. PRIVATE LESSONS IN COMPOSITION. 3 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition.

MUSI 5348. PRIVATE LESSONS IN JAZZ COMPOSITION. 3 Hours.

This course provides private instruction in jazz composition and/or arranging. This course may be repeated for credit as often as course content changes.

MUSI 5349. FORMAL-FUNCTION THEORY. 3 Hours.

Introduction to William Caplin's Formal-Function Theory, including mastery of formal functions, harmonic progressions, the principal theme types, and full-movement forms.

MUSI 5350. SELECTED TOPICS IN MUSIC PEDAGOGY. 3 Hours.

This course covers topics which vary from semester to semester and includes studies of teaching techniques applied to pre-K, elementary grades, the junior high school, the high school, the junior college, and the college or university. This course may be repeated for credit as often as the content changes.

MUSI 5351. PHILOSOPHY, HISTORY, AND CURRICULAR TRENDS IN MUSIC EDUCATION. 3 Hours.

A study of philosophy and history of music education and how curricular trends provide the context for contemporary music education.

MUSI 5352. PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION. 3 Hours.

A study of the psychological foundations of music education. An investigation of topics such as perception of and responses to music, the nature of musical attributes, music learning, and the measurement of musical behavior.

MUSI 5353. PROJECT IN MUSIC EDUCATION. 3 Hours.

For students enrolled in the non-thesis option. Offers the opportunity to complete a professional project in music education relevant to the student's background, interest, and/or needs. The project should include, but not necessarily be limited to, appropriate written documentation. May be repeated for credit, but not more than 3 hours will apply to the Master of Music degree. Enrollment is required each term in which the project is in progress.

MUSI 5354. SELECTED TOPICS IN MUSIC LITERATURE. 3 Hours.

This course covers topics which vary from semester to semester and includes studies in musical literature for the following: 1) Wind Band Literature; 2) Orchestral Literature; 3) Choral Literature; 4) World Music Literature; 5) Jazz Literature. This course may be repeated for credit as often as the content changes.

MUSI 5355. REHEARSAL TECHNIQUES. 3 Hours.

A study of rehearsal techniques, including tone development, phrasing, rehearsal score study, and rehearsal organization. Topics, which may vary by semester, are 1) Choral; 2) Instrumental; 3) Jazz. May be repeated for credit when topics vary. Topics may be taken concurrently.

MUSI 5356. ORCHESTRAL EXCERPTS. 3 Hours.

Study of orchestral excerpts for individual instruments. Topics will vary by semester. May be repeated for credit. Permission of instructor required.

MUSI 5357. CURRENT TRENDS IN MUSIC EDUCATION. 3 Hours.

Current trends, social foundations and issues in music education.

MUSI 5358. TEACHING MUSIC IN HIGHER EDUCATION. 3 Hours.

Components of successful teaching in higher education will be explored. Topics will include developing a syllabus, creating a vitae, and preparing a lecture.

MUSI 5359. ADVANCED DICTION FOR SINGERS. 3 Hours.

A study of performance diction for singers and the pronunciation of the language as it applies to public performance. Topics include English, French, Italian, and German. May be repeated for credit when topics vary.

MUSI 5360. ADVANCED TECHNOLOGY FOR MUSICIANS. 3 Hours.

Intensive and extensive student-centered study topics to be selected from MIDI sequencing, multimedia development, advanced music notation and digital sampling and synthesis.

MUSI 5361. EARLY CHILDHOOD MUSIC. 3 Hours.

Practical application in authentic early childhood experiences.

MUSI 5362. INTRODUCTION TO RESEARCH IN MUSIC. 3 Hours.

An introduction to the methods and materials of research in music, including instruction on appropriate style formats for papers and theses.

MUSI 5363. RESEARCH IN MUSIC EDUCATION. 3 Hours.

An introduction to historical, philosophical, descriptive, and experimental research in music education and present research practices in music education.

MUSI 5364. ASSESSMENT IN MUSIC EDUCATION. 3 Hours.

Assessment techniques that are appropriate to music study will be reviewed and examined. The focus will include interpreting standardized test results and the development of appropriate and effective measurement tools to use in music classrooms.

MUSI 5365. MEANING & REPRESENTATION IN MUSIC. 3 Hours.

This course will explore the basic questions of meaning in music, including the question of whether or not music can truly have meaning at all. Students will explore various philosophical, scientific, and musical (i.e. from composers and performers) viewpoints through readings, discussion, and writing.

MUSI 5366. JAZZ STYLE AND ANALYSIS. 3 Hours.

An in depth examination of the improvisational techniques used by prominent jazz musicians. Topics will include transcription and theoretical analysis over different periods and styles in jazz.

MUSI 5387. ANALYSIS OF POPULAR MUSIC. 3 Hours.

This course will explore form, melody, harmony, and voice-leading in a variety of popular styles since the early 20th century.

MUSI 5388. 20TH CENTURY FORM & TECHNIQUE. 3 Hours.

Introduction to twentieth-century form and techniques, as well as relevant analytical methods and compositional strategies.

MUSI 5389. POST-TONAL ANALYSIS. 3 Hours.

Study of pitch, harmony, rhythm, & form in music from Debussy to the present.

MUSI 5390. SCHENKERIAN ANALYSIS. 3 Hours.

An introduction to the methods of Schenkerian analysis and harmonic reduction. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory.

MUSI 5391. CONFERENCE COURSE IN MUSIC. 3 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Permission of instructor and Graduate Advisor.

MUSI 5392. ADVANCED SONATA THEORY. 3 Hours.

An in-depth examination of sonata form drawing on the concepts of Caplin's formal functions and Hepokoski and Darcy's sonata theory, including intensive writing and analysis assignments.

MUSI 5393. CONDUCTING. 3 Hours.

Applied lessons in conducting. This course is an in-depth study of conducting technique as applied to choral or instrumental ensembles. It may be repeated for credit as the content changes.

MUSI 5398. THESIS. 3 Hours.

The graduate student must be registered for MUSI 5398 when in consultation over the thesis with the advisor or supervisory committee. Prerequisite: MUSI 5363.

MUSI 5698. THESIS. 6 Hours.

The graduate student must be registered for MUSI 5698 in the semester or term in which the Master of Music degree will be conferred. Prerequisite: MUSI 5363.

Music - Graduate Programs

Graduate Programs in Music

The University of Texas at Arlington Department of Music features intensive programs in Music Education, Music Performance, Conducting, Jazz Studies, Jazz Composition, and Music Theory as well as a Performance Certificate in all instruments, conducting, and voice types. Located in the heart of a culturally vibrant metropolitan area, UT Arlington is perfectly situated to help students realize their educational and career goals. Large enough to offer a broad range of opportunities, but small enough to value you as an individual, we're sure you'll find UT Arlington the right place to study your craft.

Fellowships

Fellowships, when available, will be awarded on a competitive basis. The Graduate Advisor should be notified of your interest in these fellowships at the time of your application. Nominees for the Graduate School Master's Fellowship in Music will be selected based on the following criteria:

- Candidates must be new students entering in the fall semester, with a minimum of 9 hours of enrollment in both long semesters to retain their fellowships.
- The minimum undergraduate GPA requirement is 3.00, as calculated by the Graduate School, plus a GPA of 3.0 for any graduate credit hours.
- Transcript of a completed bachelor's degree in music from an accredited institution (or its demonstrated equivalent).
- Three letters of recommendation

Master of Music in Music Education

Admission Requirements

The Department of Music has the following requirements for entry into the Master of Music in Music Education Degree.

Unconditional Admission

Requirements for unconditional admission into the program are:

1. Three letters of recommendation speaking to the student's potential for success from references familiar with the student's academic background.
2. Philosophy of Music Education (no more than 2 pages-typed).
3. A minimum 3.0 GPA in the last 60 hours of undergraduate work as calculated by Graduate Admissions.
4. Bachelor's degree in music or its demonstrated equivalent.
5. Submitted application to the Department of Music (see the departmental website (<https://www.uta.edu/music/>) for more information).

Probationary Status

A student showing a deficiency in any of the above criteria and showing promise for successful graduate study may still be admitted on a probationary basis upon the recommendation of the Graduate Studies Committee. The conditions of the probation will be outlined in the letter of admission. (The Music Department does not have the authority to lower University TOEFL score requirements for any student.)

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Denied Admission

An applicant can be denied admission based on the recommendation of the Graduate Studies Committee. Applicants may reapply for admission if the deficiencies in credentials that led to denial are remedied.

Deferred Admission

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate.

TOEFL Requirement

Applicants whose native language is not English must demonstrate proficiency in English by earning a score of at least 550 on the paper-based Test of English as a Foreign Language (TOEFL) or a score of at least 213 on the computer-based test, or a minimum score of 40 on the Test of Spoken English (TSE). The Internet-based TOEFL examination (TOEFL iBT) will be accepted as an alternative to the paper and computer-based TOEFL for admission purposes. Students taking TOEFL iBT must attain a minimum total test score of 79.

Those who do not meet the English proficiency requirement must satisfactorily complete courses in the ESOL area, as approved by the program and the Graduate Admissions.

Degree Requirements

The program is designed for the student who has a Bachelor's degree in music. A minimum of 30 semester hours is required if the student chooses to write a thesis. If the student chooses not to write a thesis, a minimum of 36 semester hours is required. Advisory examinations in music history and written theory may be administered to all students prior to enrollment or during their first semester as a degree-seeking student.

Non-Thesis Option

Coursework for the program includes:

Required Courses

MUSI 5301	FORM AND STYLE ANALYSIS	3
MUSI 5308	MUSIC HISTORY SELECTED TOPICS	3
MUSI 5351	PHILOSOPHY, HISTORY, AND CURRICULUAR TRENDS IN MUSIC EDUCATION	3
MUSI 5352	PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION	3
MUSI 5363	RESEARCH IN MUSIC EDUCATION	3
MUSI 5353	PROJECT IN MUSIC EDUCATION	3
MUSI 5364	ASSESSMENT IN MUSIC EDUCATION	3
MUSI 53XX	CURRENT TRENDS IN MUSIC EDUCATION	3
Three (3) hours of Music Education electives should be chosen from the following:		3
MUSI 5350	SELECTED TOPICS IN MUSIC PEDAGOGY	
MUSI 5354	SELECTED TOPICS IN MUSIC LITERATURE	
MUSI 5355	REHEARSAL TECHNIQUES	
MUSI 5359	ADVANCED DICTION FOR SINGERS	
MUSI 5360	ADVANCED TECHNOLOGY FOR MUSICIANS	
MUSI 5361	EARLY CHILDHOOD MUSIC	
MUSI 5365	MEANING & REPRESENTATION IN MUSIC	

Nine (9) hours of free choice electives may be selected from ensembles, private instruction, music history, music theory, jazz studies and repeated special topics courses. Up to six (6) hours of graduate credit from other disciplines may be considered if relevant to the degree, subject to approval by the Graduate Studies Committee. No more than two (2) semester hours of music ensembles may be counted toward the degree.

Total Hours 36

Thesis Option

Coursework for the program includes:

Required Courses

MUSI 5301	FORM AND STYLE ANALYSIS	3
MUSI 5308	MUSIC HISTORY SELECTED TOPICS	3
MUSI 5351	PHILOSOPHY, HISTORY, AND CURRICULUAR TRENDS IN MUSIC EDUCATION	3
MUSI 5352	PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION	3
MUSI 5363	RESEARCH IN MUSIC EDUCATION	3
MUSI 5398	THESIS (*)	
MUSI 5698	THESIS	6
Three (3) hours of Music Education electives should be chosen from the following:		3
MUSI 5350	SELECTED TOPICS IN MUSIC PEDAGOGY	
MUSI 5354	SELECTED TOPICS IN MUSIC LITERATURE	
MUSI 5355	REHEARSAL TECHNIQUES	
MUSI 5359	ADVANCED DICTION FOR SINGERS	
MUSI 5360	ADVANCED TECHNOLOGY FOR MUSICIANS	
MUSI 5361	EARLY CHILDHOOD MUSIC	
MUSI 5364	ASSESSMENT IN MUSIC EDUCATION	
MUSI 5365	MEANING & REPRESENTATION IN MUSIC	
53XX	CURRENT TRENDS IN MUSIC EDUCATION	

Six (6) hours of free choice electives may be selected from ensembles, private instruction, music history, music theory, jazz studies and repeated special topics courses. Up to six (6) hours of graduate credit from other disciplines may be considered if relevant to the degree, subject to approval by the Graduate Studies Committee. No more than two (2) semester hours of music ensembles may be counted toward the degree.

6

Total Hours

30

*Students who write a thesis will work closely with one or more members of the graduate faculty from the Department of Music on a research project in a specialized area of interest within the music education field. The student must register for MUSI 5398 when in consultation over the thesis with the advisor or supervisory committee. Students will receive a grade of R (Research in Progress), F (Fail), or W (Withdrawn). These hours do not count towards the degree hours.

Master of Music

Admission Requirements

Unconditional Admission

1. Bachelor's degree in music or its demonstrated equivalent (such as a music conservatory degree).
2. Three letters of recommendation are required, speaking to the student's potential for success from references familiar with the student's academic background.
3. A minimum 3.0 GPA in the last 60 hours of undergraduate work as calculated by the Graduate Admissions.
4. Submitted application to the Department of Music (see the departmental website for more information).

All admission criteria will be considered equally. Students meeting all the criteria, plus any track-specific requirements, will be granted unconditional admission.

Probationary Status

A student showing a deficiency in any of the above criteria and showing promise for successful graduate study may still be admitted on a probationary basis upon the recommendation of the Graduate Studies Committee. The conditions of the probation will be outlined in the letter of admission. (The Music Department does not have the authority to lower University TOEFL score requirements for any student.)

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Denied Admission

An applicant can be denied admission based on the recommendation of the Graduate Studies Committee. Applicants may reapply for admission if the deficiencies in credentials that led to denial are remedied.

Deferred Admission

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate.

Tracks are offered in Music Performance, Jazz Studies, Jazz Composition, Music Theory, and Conducting. The program is designed for the student who has a Bachelor's degree in music.

TOEFL Requirement

Applicants whose native language is not English must demonstrate proficiency in English by earning a score of at least 550 on the paper-based Test of English as a Foreign Language (TOEFL) or a score of at least 213 on the computer-based test, or a minimum score of 40 on the Test of Spoken English (TSE). The Internet-based TOEFL examination (TOEFL iBT) will be accepted as an alternative to the paper and computer-based TOEFL for admission purposes. Students taking TOEFL iBT must attain a minimum total test score of 79.

Those who do not meet the English proficiency requirement must satisfactorily complete courses in the ESOL area, as approved by the program and Graduate Admissions.

Advisory examinations in music history and written theory may be administered to all students prior to enrollment or during their first semester as a degree-seeking student.

Music Performance Track (Instrumental and Vocal)

In addition to the general admission requirements, applicants for the Music Performance Track must perform the following:

1. Applicants must audition (in person or by submitting a tape or video link) with repertoire of at least college senior recital level. A repertoire list must be submitted for evaluation at the time of the audition. For further information, contact the Graduate Advisor.

Coursework for the program includes:

Required Courses

MUSI 5301	FORM AND STYLE ANALYSIS	3
MUSI 5308	MUSIC HISTORY SELECTED TOPICS	3
MUSI 5354	SELECTED TOPICS IN MUSIC LITERATURE	3
4 semesters of Applied Study (MUSI 53XX) with the last semester including a full length public performance/recital, which may serve as a thesis.		12
4 semesters of a Major Ensemble (MUSI 51XX) (For Keyboard Players only-4 semesters of either Major Ensemble 51XX OR Keyboard Accompaniment MUSI 5190)		4

Electives

Select 9 credit hours from the following depending on your major: 9

Instrumental

Prescribed Electives (choose 9 credit hours)

MUSI 3394	DIGITAL MUSIC TECHNOLOGY
MUSI 5112	CHAMBER MUSIC (maximum of 3 repeats)
MUSI 5308	MUSIC HISTORY SELECTED TOPICS (may be counted once as an elective if core requirement is met and the course is taken with a different emphasis)
MUSI 5350	SELECTED TOPICS IN MUSIC PEDAGOGY
MUSI 5351	PHILOSOPHY, HISTORY, AND CURRICULAR TRENDS IN MUSIC EDUCATION
MUSI 5352	PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION
MUSI 5355	REHEARSAL TECHNIQUES
MUSI 5365	MEANING & REPRESENTATION IN MUSIC
MUSI 5388	20TH CENTURY FORM & TECHNIQUE
MUSI 5305	HISTORY OF MUSIC THEORY
MUSI 5349	FORMAL-FUNCTION THEORY
MUSI 5389	POST-TONAL ANALYSIS
MUSI 5390	SCHENKERIAN ANALYSIS
MUSI 5392	ADVANCED SONATA THEORY

Voice

Prescribed Electives (choose 9 credit hours)

MUSI 5115	VOCAL COACHING
MUSI 5359	ADVANCED DICTION FOR SINGERS
MUSI 5205	MUSIC THEATRE/OPERA LAB
MUSI 3394	DIGITAL MUSIC TECHNOLOGY
MUSI 5305	HISTORY OF MUSIC THEORY
MUSI 5308	MUSIC HISTORY SELECTED TOPICS (may be counted once as an elective if core requirement is met and the course is taken with a different emphasis)
MUSI 5350	SELECTED TOPICS IN MUSIC PEDAGOGY
MUSI 5351	PHILOSOPHY, HISTORY, AND CURRICULAR TRENDS IN MUSIC EDUCATION
MUSI 5352	PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION
MUSI 5355	REHEARSAL TECHNIQUES
MUSI 5365	MEANING & REPRESENTATION IN MUSIC
MUSI 5349	FORMAL-FUNCTION THEORY
MUSI 5389	POST-TONAL ANALYSIS
MUSI 5392	ADVANCED SONATA THEORY
MUSI 5388	20TH CENTURY FORM & TECHNIQUE
MUSI 5390	SCHENKERIAN ANALYSIS

Total Hours

34

Jazz Studies Track

In addition to the general admission requirements, applicants for the Jazz Studies Track must perform the following:

1. Applicants must audition (in person or by submitting a tape or video link) with repertoire of at least college senior recital level. A repertoire list must be submitted for evaluation at the time of the audition. For further information, contact the Graduate Advisor.

Coursework for the program includes:

Required Courses

MUSI 5301	FORM AND STYLE ANALYSIS	3
MUSI 5308	MUSIC HISTORY SELECTED TOPICS	3
MUSI 5354	SELECTED TOPICS IN MUSIC LITERATURE	3
4 semesters of Applied Study (MUSI 53XX) with the last semester including a full length public performance/recital, which may serve as a thesis.		12
4 semesters of a Major Ensemble (MUSI 51XX) (For Keyboard Players only-4 semesters of either Major Ensemble 51XX OR Keyboard Accompaniment MUSI 5190)		4

Electives

Select 9 credit hours from the following:		9
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	
MUSI 5110	JAZZ COMBO	
MUSI 5112	CHAMBER MUSIC (maximum of 3 repeats)	
MUSI 5305	HISTORY OF MUSIC THEORY	
MUSI 5308	MUSIC HISTORY SELECTED TOPICS (may be counted once as an elective if core requirement is met and the course is taken with a different emphasis)	
MUSI 5349	FORMAL-FUNCTION THEORY	
MUSI 5350	SELECTED TOPICS IN MUSIC PEDAGOGY	
MUSI 5351	PHILOSOPHY, HISTORY, AND CURRICULAR TRENDS IN MUSIC EDUCATION	
MUSI 5352	PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION	
MUSI 5355	REHEARSAL TECHNIQUES	
MUSI 5360	ADVANCED TECHNOLOGY FOR MUSICIANS	
MUSI 5365	MEANING & REPRESENTATION IN MUSIC	
MUSI 5366	JAZZ STYLE AND ANALYSIS	
MUSI 5388	20TH CENTURY FORM & TECHNIQUE	
MUSI 5389	POST-TONAL ANALYSIS	
MUSI 5390	SCHENKERIAN ANALYSIS	
MUSI 5392	ADVANCED SONATA THEORY	

Total Hours	34
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Conducting Track (Orchestral, Vocal, Wind)

In addition to the general admission requirements, applicants for the Conducting Track must perform the following:

1. Applicants must audition (in person or by submitting a tape or video link). For further information, contact the Graduate Advisor.

Coursework for the program includes:

Required Courses

MUSI 5301	FORM AND STYLE ANALYSIS	3
MUSI 5308	MUSIC HISTORY SELECTED TOPICS	3
MUSI 5354	SELECTED TOPICS IN MUSIC LITERATURE	3
4 semesters of Applied Study (MUSI 53XX) with the last semester including a full length public performance/recital, which may serve as a thesis.		12
4 semesters of a Major Ensemble (MUSI 51XX)		4

Electives

Select 9 credit hours from the following:		9
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	
MUSI 5112	CHAMBER MUSIC (maximum of 3 repeats)	
MUSI 5308	MUSIC HISTORY SELECTED TOPICS (may be counted once as an elective if core requirement is met and the course is taken with a different emphasis)	
MUSI 5349	FORMAL-FUNCTION THEORY	
MUSI 5350	SELECTED TOPICS IN MUSIC PEDAGOGY	

MUSI 5351	PHILOSOPHY, HISTORY, AND CURRICULUAR TRENDS IN MUSIC EDUCATION
MUSI 5352	PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION
MUSI 5355	REHEARSAL TECHNIQUES
MUSI 5359	ADVANCED DICTION FOR SINGERS
MUSI 5365	MEANING & REPRESENTATION IN MUSIC
MUSI 5305	HISTORY OF MUSIC THEORY
MUSI 5388	20TH CENTURY FORM & TECHNIQUE
MUSI 5389	POST-TONAL ANALYSIS
MUSI 5390	SCHENKERIAN ANALYSIS
MUSI 5392	ADVANCED SONATA THEORY

Total Hours

34

Jazz Composition Track

In addition, to the general admission requirements, applicants for the Jazz Composition Track must submit the following:

1. A portfolio of works, to include at least two (2) but not more than four (4) scores and recordings representing the applicant's best work. At least two of these should be in the jazz genre. Live recordings are preferred; MIDI recordings are discouraged but will be accepted as a last resort. At least one of the works should be scored for a large jazz ensemble (ten or more performers). Links to both scores and audio files housed online for the included pieces (via SoundCloud, DropBox, etc.) should be sent in an email to the graduate advisor. Please do not attach the files in the email.
2. A performance audition is also required on your primary jazz instrument. Applicants should prepare two jazz pieces in contrasting styles and tempos, with at least one jazz standard included. A pianist will be available to accompany you, or you may arrange for your own accompaniment (such as a play-along recording). Stereo equipment may be provided but only upon advance notice by the applicant.

Coursework for the program includes:

Required Courses

MUSI 5308	MUSIC HISTORY SELECTED TOPICS	3
MUSI 5366	JAZZ STYLE AND ANALYSIS	3
MUSI 5362	INTRODUCTION TO RESEARCH IN MUSIC	3
MUSI 5355	REHEARSAL TECHNIQUES	3
4 semesters of Applied Study (MUSI 5348) with the last semester including a full length public performance/recital, which may serve as a thesis.		12

Electives

Select 6 credit hours from the following: 6

MUSI 3394	DIGITAL MUSIC TECHNOLOGY
MUSI 4327	TECHNIQUES AND TECHNOLOGY IN FILM COMPOSITION
MUSI 5112	CHAMBER MUSIC (maximum of 3 repeats)
MUSI 5308	MUSIC HISTORY SELECTED TOPICS (may be counted once as an elective if core requirement is met and the course is taken with a different emphasis)
MUSI 5350	SELECTED TOPICS IN MUSIC PEDAGOGY
MUSI 5360	ADVANCED TECHNOLOGY FOR MUSICIANS (MUSI 53XX (Applied lessons on a Jazz Instrument))
MUSI 5365	MEANING & REPRESENTATION IN MUSIC
MUSI 5388	20TH CENTURY FORM & TECHNIQUE
MUSI 53XX (Applied lessons on a Jazz Instrument)	

Choose 3 credit hours from the following (may be repeated): 3

MUSI 5107	JAZZ ORCHESTRA
MUSI 5108	JAZZ ENSEMBLE
MUSI 5110	JAZZ COMBO

Total Hours

33

Music Theory Track

In addition, to the general admission requirements, applicants for the Music Theory Track must submit the following:

1. Samples of writing (minimum 2; at least 1 should have substantial analytical content).
2. Statement of purpose (max. 250 words).

3. Applicants must take Theory and History Proficiency exams upon admission. Students needing remedial work will be required to enroll in MUSI 5301 FORM AND STYLE ANALYSIS and/or MUSI 5354 SELECTED TOPICS IN MUSIC LITERATURE, as appropriate.*

* Piano Proficiency exam will be administered before, and as a condition of, graduation from the Masters program. Students are encouraged to enroll in Keyboard lessons as appropriate to prepare for these.

Coursework for the program includes:

Required Courses

MUSI 5150	PEDAGOGY IN MUSIC THEORY	1
MUSI 5308	MUSIC HISTORY SELECTED TOPICS	3
MUSI 5362	INTRODUCTION TO RESEARCH IN MUSIC	3
MUSI 5390	SCHENKERIAN ANALYSIS	3
MUSI 5698	THESIS	6

Electives

Select 6 credit hours from the following: 6

MUSI 5305	HISTORY OF MUSIC THEORY	
MUSI 5308	MUSIC HISTORY SELECTED TOPICS (may be counted once as an elective if core requirement is met and the course is taken with a different emphasis)	
MUSI 5347	PRIVATE LESSONS IN COMPOSITION	
MUSI 5360	ADVANCED TECHNOLOGY FOR MUSICIANS (MUSI 53XX (Applied lessons on a Jazz Instrument))	
MUSI 5365	MEANING & REPRESENTATION IN MUSIC	

Choose 9 credit hours from the following: 9

MUSI 5302	THEORY & COMPOSITION SPECIAL TOPICS	
MUSI 5303	ADVANCED COUNTERPOINT	
MUSI 5349	FORMAL-FUNCTION THEORY	
MUSI 5388	20TH CENTURY FORM & TECHNIQUE	
MUSI 5389	POST-TONAL ANALYSIS	
MUSI 5392	ADVANCED SONATA THEORY	

Choose 3 credit hours from the following (may be repeated): 3

MUSI 51XX or 52XX (Applied Lessons)		
MUSI 51XX (Major Ensemble)		
MUSI 5112	CHAMBER MUSIC	

Total Hours 34

Final Master's Examination

A final program examination is required of all Master of Music degree candidates. A final Master's examination may result in:

1. An unconditional pass with a recommendation to the Graduate Dean that the candidate be certified to receive the degree.
2. A conditional pass with the requirement that additional conditions be met, which may include further work on the thesis or thesis substitute, additional coursework with a minimum specified grade point average or both (in all cases the final master's examination must be repeated within a specified period).
3. Failure, with permission to be re-examined within a specified period; or
4. Failure, with recommendation to the Dean of Graduate Studies that the candidate be dismissed from the program. The Music Department limits to 2 the number of times the examination can be taken.

Admission Requirements

Certificate Admission Requirements

Students wishing to enroll only in the certificate program but not a graduate degree program may apply for admission to UT Arlington as a special student (non-degree seeking). Admission requires an undergraduate degree in music or its demonstrated equivalent and would be contingent upon an audition for a minimum of two faculty members. Students in this certificate program who later seek graduate degrees at UT Arlington may apply 12 hours of certificate coursework within six years of completion and award of the certificate, if they meet the admission requirements for the graduate degree and receive approval from the appropriate Graduate Studies Committee and the Dean of Graduate Studies. Admission as a special student in no way guarantees subsequent unconditional admission into a graduate program or into the Graduate School.

TOEFL Requirement

Applicants whose native language is not English must demonstrate proficiency in English by earning a score of at least 550 on the paper-based Test of English as a Foreign Language (TOEFL) or a score of at least 213 on the computer-based test, or a minimum score of 40 on the Test of Spoken English (TSE). The Internet-based TOEFL examination (TOEFL iBT) will be accepted as an alternative to the paper and computer-based TOEFL for admission purposes. Students taking TOEFL iBT must attain a minimum total test score of 79.

Certificate in Performance

The Certificate in Performance requires 15 hours of coursework, including 4 semesters of lessons with the last semester including a full-length recital, and three semesters of a Major Ensemble or a combination of a Major Ensemble or Keyboard Accompaniment (for Keyboard Players only). It is currently available for all instruments and voice types:

Applied Study:

4 semesters of Applied Study (MUSI 53XX) with the last semester including a full length recital	12
AND	
3 semesters of a Major Ensemble (MUSI 51XX) (For Keyboard Players only-3 semesters of either a Major Ensemble 51XX OR Keyboard Accompaniment MUSI 5190)	3
Total Hours	15

Music - Undergraduate Programs

Overview

The University of Texas at Arlington is a member of the National Association of Schools of Music.

The Department of Music offers the Bachelor of Music degree (1) in preparation for E.C -12 teacher certification; (2) in Performance (woodwind, brass, percussion, keyboard, strings, or voice); (3) in Theory; (4) in Composition; (5) in Jazz Studies; (6) in Music/Business; and (7) in Audio Production and a Bachelor of Arts degree in Music Industry Studies. Music students must meet all the requirements of one of these specializations to receive the Bachelor of Music degree. All degree plans leading to a Bachelor of Music degree include offerings which provide a solid foundation in music theory, history, and literature and require a concentration in a specific instrument/voice. The music department also offers a Bachelor of Arts in Music Industry Studies that requires the student to meet all of the requirements for that specialization.

The mission of the UT Arlington Department of Music is to create an environment in which individuals are inspired to become innovative and creative musical leaders by offering integrated curricular content, skill development, and exceptional programming relevant to a culturally diverse urban community.

The Music Department's goals and objectives for academic and artistic enrichment of the university and the extended community include: (1) offering curricula leading to a baccalaureate degree and graduate programs that provide students with the opportunity to realize their inherent musical potential, (2) offering degree options that recognize and nurture students' abilities and talents to make contributions of excellence in the fields of music, and (3) preparing students for further graduate study and/or professional careers in music by meeting curricula criteria, performance standards, and academic expectations.

All prospective music majors must audition for proper placement in their respective performance areas and take a music theory placement test. Information concerning auditions and placement tests is available in the Music Office.

All Bachelor of Music majors are required to pass the sophomore proficiency exam on their major instrument. For transfer students who transfer in at least four semesters of lessons, the audition serves as the proficiency exam. Students can only attempt the proficiency exam two times. If they fail the sophomore proficiency exam the first time, they will be required to enroll in MUSI 2222 the following semester. At the end of MUSI 2222, students will be required to attempt the proficiency exam for a last time. If students do not successfully pass the proficiency exam, they will not be allowed to remain a Bachelor of Music major.

All students wishing to pursue the Bachelor of Music Degree with the Jazz Studies Option must pass the jazz performance proficiency exam upon completion of MUSI 3226. Students can attempt the proficiency exam two times. Students failing to pass the jazz proficiency exam on the second attempt will not be permitted to continue in the Jazz Studies Option. Successful completion of the jazz proficiency exam is a prerequisite for enrollment in:

MUSI 3395	JAZZ COMPOSITION	3
MUSI 4300	JAZZ PERSPECTIVES	3
MUSI 4302	JAZZ ARRANGING	3
MUSI 4225	JAZZ IMPROVISATION III - ADVANCED	2

All students wishing to pursue the Bachelor of Music Degree in Preparation for Teacher Certification must pass the music education proficiency exam before enrolling in:

MUSI 3211	EARLY CHILDHOOD MUSIC	2
MUSI 3213	INSTRUMENTAL MATERIALS AND TECHNIQUES I	2
MUSI 3214	CHORAL MATERIALS AND TECHNIQUES I	2

An audition or permission of the instructor is required for all large ensembles. All University students, regardless of major, are permitted to audition for and participate in all music department ensembles: concert bands, marching band, jazz ensembles, choirs, and orchestra.

All Bachelor of Music students are required to pass the Theory Proficiency exam.

All Bachelor of Music students are required to enroll in a large ensemble each semester in residence. Any student not enrolled in a large ensemble by the end of Late Registration will be given a warning and advised to do so, and students that are still not registered in a large ensemble after Census date may be removed from the music program and required to re-audition in a subsequent semester in order to be re-admitted. Ensembles that meet this requirement, as well as any minimum requirements for number(s) of semester in specific ensembles, are determined by each degree plan. Residence is defined as any semester that a student is enrolled in any private lesson section or enrolled in 6 or more semester hours at the university, except during student teaching or music industry studies internship.

All Bachelor of Arts students pursuing the classical track are required to participate in a classical large ensemble (band, choir, or orchestra) while they are enrolled in their degree-required private lessons. All Bachelor of Arts students on the jazz track are required to participate in a jazz large ensemble while they are enrolled in their degree-required private lessons.

All students are strongly urged to refer to the sections on Academic Regulations and Degree Programs in the current UT Arlington Undergraduate Catalog. Students seeking teacher certification should read the College of Education section of this catalog concerning admission to teacher education programs and state requirements for certification.

In addition to fulfilling University and the College of Liberal Arts requirements for admission to a degree program, students planning to be music majors must also fulfill the listed Music Department requirements.

Students must receive a C or better in all music courses in order to graduate. If a student does not earn a C or better, it may not count as a prerequisite for any other course.

Students should expect, in addition to attending weekly private lessons, a minimum preparation (individual practice) of five hours per week in courses granting two hours credit, 10 hours per week in courses granting three hours credit, and 12 hours per week in courses granting four hours credit.

All private instruction, except MUSI 0171, requires a jury.

Music majors must complete a minimum of 36 hours at the 3000/4000 level, at least 24 of which must be in music.

Those music courses available to non-music majors are indicated in the course description. Individual instruction courses are open in limited numbers to all University students.

Requirements for a Bachelor of Music Degree (Performance Option, Theory Option, or Composition Option)

Options

Voice Performance Option

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)		42
Professional Courses/Music Requirements		
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3308	INSTRUMENTAL CONDUCTING I	3
or MUSI 3309	CHORAL CONDUCTING I	
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I	1
MUSI 1181	FUNCTIONAL PIANO II	1
MUSI 2180	FUNCTIONAL PIANO III	1
MUSI 2181	FUNCTIONAL PIANO IV	1
Performance concentration		8
MUSI 3104	VOCAL COACHING	1
MUSI 3104	VOCAL COACHING	1
MUSI 3104	VOCAL COACHING	1
MUSI 3101	ITALIAN AND FRENCH DICTION	1
MUSI 3302	FORM AND ANALYSIS	3
MUSI 3303	COUNTERPOINT	3
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	3
MUSI 4101	GERMAN AND ENGLISH DICTION	1

A cappella choir/university singers/women's chorus	7
Musical theatre/opera laboratory	3
Performance major (additional hours)	14
MUSI 0174 SECONDARY KEYBOARD	1
MUSI 0174 SECONDARY KEYBOARD	1
MUSI 0174 SECONDARY KEYBOARD	1
MUSI 3103 VOCAL PEDAGOGY	1
MUSI 4102 VOCAL LITERATURE	1
MUSI 4301 ORCHESTRATION	3
Junior and Senior Recital	
Total Hours	125

Keyboard Performance Option

UNIV-LA 1000 FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)	42
Professional Courses/Music Requirements	
MUSI 1185 SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186 SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325 THEORY AND HARMONY I	3
MUSI 1326 THEORY AND HARMONY II	3
MUSI 2185 SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186 SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325 THEORY AND HARMONY III	3
MUSI 2326 THEORY AND HARMONY IV	3
MUSI 3308 INSTRUMENTAL CONDUCTING I	3
or MUSI 3309 CHORAL CONDUCTING I	
MUSI 3300 MUSIC HISTORY I	3
MUSI 3301 MUSIC HISTORY II	3
Performance concentration	8
MUSI 0109 KEYBOARD ENSEMBLE	1
MUSI 0109 KEYBOARD ENSEMBLE	1
MUSI 0109 KEYBOARD ENSEMBLE	1
MUSI 0109 KEYBOARD ENSEMBLE	1
MUSI 0109 KEYBOARD ENSEMBLE	1
MUSI 0109 KEYBOARD ENSEMBLE	1
MUSI 0109 KEYBOARD ENSEMBLE	1
MUSI 3294 APPLIED PEDAGOGY	2
MUSI 3295 PIANO PEDAGOGY	2
MUSI 3302 FORM AND ANALYSIS	3
MUSI 3303 COUNTERPOINT	3
MUSI 3394 DIGITAL MUSIC TECHNOLOGY	3
MUSI 4301 ORCHESTRATION	3
MUSI 4291 CONFERENCE COURSE (Keyboard Literature I)	2
MUSI 4291 CONFERENCE COURSE (Keyboard Literature II)	2
Accompanying	1
Ensemble (any)	1
Performance major (additional hours)	14
MUSI 0174 SECONDARY KEYBOARD	1
MUSI 0174 SECONDARY KEYBOARD	1
MUSI 0174 SECONDARY KEYBOARD	1
MUSI 0174 SECONDARY KEYBOARD	1
Music elective	3

Junior and Senior Recital

Total Hours	125
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Keyboard Performance/Pedagogy Option

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
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General Core Requirements (p. 50)	42
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Professional Courses/Music Requirements

MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
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MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
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MUSI 1325	THEORY AND HARMONY I	3
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MUSI 1326	THEORY AND HARMONY II	3
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MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
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MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
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MUSI 2325	THEORY AND HARMONY III	3
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MUSI 2326	THEORY AND HARMONY IV	3
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MUSI 3308	INSTRUMENTAL CONDUCTING I	3
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or MUSI 3309	CHORAL CONDUCTING I	
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MUSI 3300	MUSIC HISTORY I	3
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MUSI 3301	MUSIC HISTORY II	3
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Performance concentration	8
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MUSI 0109	KEYBOARD ENSEMBLE	1
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MUSI 0109	KEYBOARD ENSEMBLE	1
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MUSI 0109	KEYBOARD ENSEMBLE	1
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MUSI 0109	KEYBOARD ENSEMBLE	1
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MUSI 3294	APPLIED PEDAGOGY	2
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MUSI 3295	PIANO PEDAGOGY	2
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MUSI 3303	COUNTERPOINT	3
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MUSI 3302	FORM AND ANALYSIS	3
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MUSI 3394	DIGITAL MUSIC TECHNOLOGY	3
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MUSI 4301	ORCHESTRATION	3
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MUSI 4291	CONFERENCE COURSE (Keyboard Literature I)	2
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MUSI 4291	CONFERENCE COURSE (Keyboard Literature II)	2
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MUSI 1257	PRIVATE LESSONS IN ORGAN	2
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MUSI 1258	PRIVATE LESSONS IN ORGAN	2
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MUSI 2257	PRIVATE LESSONS IN ORGAN	2
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MUSI 2258	PRIVATE LESSONS IN ORGAN	2
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MUSI 3211	EARLY CHILDHOOD MUSIC	2
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MUSI 4291	CONFERENCE COURSE (Group Piano Methods)	2
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Ensemble (1 hour accompanying and 1 hour chora/instrumental ensemble)	2
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Performance Major (additional hours)	8
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Senior Recital	
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Total Hours	121
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Wind, String, or Percussion Performance Option

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
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General Core Requirements (p. 50)	42
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Professional Courses/Music Requirements

MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
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MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
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MUSI 1325	THEORY AND HARMONY I	3
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MUSI 1326	THEORY AND HARMONY II	3
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MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3308	INSTRUMENTAL CONDUCTING I	3
or MUSI 3309	CHORAL CONDUCTING I	
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I	1
MUSI 1181	FUNCTIONAL PIANO II	1
MUSI 2180	FUNCTIONAL PIANO III	1
MUSI 2181	FUNCTIONAL PIANO IV	1
Select 3 hours from the following:		3
MUSI 4111	ORCHESTRAL EXCERPTS	
MUSI 0126	CHAMBER MUSIC	
MUSI 3239	APPLIED INSTRUCTION ON A SECONDARY INSTRUMENT	
MUSI 3294	APPLIED PEDAGOGY	
MUSI 4280	SPECIAL TOPICS IN MUSIC	
MUSI 3323	BUSINESS OF MUSIC	3
MUSI 0129	EARLY MUSIC PERFORMANCE PRACTICE	
Performance concentration (in one instrument)		8
MUSI 3302	FORM AND ANALYSIS	3
MUSI 3303	COUNTERPOINT	3
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	3
MUSI 4301	ORCHESTRATION	3
MUSI 4191	CONFERENCE COURSE (wind or string instrument pedagogy)	1
MUSI 4191	CONFERENCE COURSE (wind or string instrument literature)	1
Performance Major (additional hours in one instrument)		14
Ensemble ¹		12
Music elective		3
Junior and Senior Recital		
Total Hours		128

- ¹ Orchestra emphasis students take eight hours orchestra, three hours chamber music, and one hour any ensemble.
Band emphasis students take eight hours wind symphony, symphonic winds or symphonic band, two hours chamber music or any small ensemble, and two hours any large ensemble.

Theory Option

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)		42
UNIV 1131	STUDENT SUCCESS	1
Professional Courses/Music Requirements		
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I	1

MUSI 1181	FUNCTIONAL PIANO II	1
MUSI 2180	FUNCTIONAL PIANO III	1
MUSI 2181	FUNCTIONAL PIANO IV	1
Performance concentration (in one instrument or voice)		8
MUSI 2227	COMPOSITION TECHNIQUES	2
MUSI 2302	MUSIC LITERATURE	3
MUSI 3302	FORM AND ANALYSIS	3
MUSI 3303	COUNTERPOINT	3
MUSI 3326	POST-TONAL ANALYSIS	3
MUSI 3390	SCHENKERIAN ANALYSIS	3
MUSI 3391	ADVANCED SONATA THEORY	3
MUSI 4205	ADVANCED FUNCTIONAL PIANO	2
MUSI 4350	20TH CENTURY FORM & TECHNIQUE	3
or MUSI 4349	FORMAL-FUNCTION THEORY	
MUSI 4351	MUSIC THEORY CAPSTONE/SEMINAR	3
MUSI 4301	ORCHESTRATION	3
MUSI 0174	SECONDARY KEYBOARD	1
MUSI 0174	SECONDARY KEYBOARD ¹	1
Performance concentration (additional hours in one instrument or voice)		4
Ensemble (any) ²		6
Senior research project ³		
Total Hours		120

¹ Keyboard concentrates must substitute MUSI 4242.

² At least three hours must be large ensemble.

³ Prepare and present project in music theory in a conference setting.

Composition Option

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)		42

Professional Courses/Music Requirements

MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3308	INSTRUMENTAL CONDUCTING I	3
or MUSI 3309	CHORAL CONDUCTING I	
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I	1
MUSI 1181	FUNCTIONAL PIANO II	1
MUSI 2180	FUNCTIONAL PIANO III	1
MUSI 2181	FUNCTIONAL PIANO IV	1
Performance concentration (in one instrument or voice)		8
MUSI 2227	COMPOSITION TECHNIQUES	2
MUSI 3302	FORM AND ANALYSIS	3
MUSI 3303	COUNTERPOINT	3
MUSI 3392	COMPOSITION I	3

MUSI 3393	COMPOSITION II	3
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	3
MUSI 4301	ORCHESTRATION	3
MUSI 4492	COMPOSITION III	4
MUSI 4493	COMPOSITION IV	4
MUSI 3127 & MUSI 3128	COMPUTER COMPOSITION I and COMPUTER COMPOSITION II	2
Select two hours from the following:		2
MUSI 1103	HIGH BRASS CLASS	
MUSI 1104	WOODWIND CLASS I	
MUSI 1105	VOICE CLASS	
MUSI 2103	STRING CLASS	
MUSI 2104	PERCUSSION CLASS	
Performance concentration (additional hours in one instrument or voice)		2
MUSI 0174	SECONDARY KEYBOARD	1
MUSI 0174	SECONDARY KEYBOARD ¹	1
Ensemble (any) ²		6
Program of original works ³		
Total Hours		121

¹ Keyboard concentrates must substitute MUSI 3243.

² At least three hours must be large ensemble.

³ Prepare and present original works.

Requirements for a Bachelor of Music Degree (Music/Business Option or Audio Production Option)

Options

Music/Business Option

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)		42
Professional Courses/Music Requirements		
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3308	INSTRUMENTAL CONDUCTING I	3
or MUSI 3309	CHORAL CONDUCTING I	
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I ¹	1
MUSI 1181	FUNCTIONAL PIANO II	1
MUSI 3323	BUSINESS OF MUSIC	3
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	3
MUSI 4390	RECORDING TECHNIQUES I	3
Performance concentration (in one instrument or voice)		8
MUSI 3396	RECORD LABEL AND STUDIO MANAGEMENT	3
MUSI 3396	RECORD LABEL AND STUDIO MANAGEMENT	3

Ensemble (any) ²	6
Performance concentration (additional hours in one instrument or voice)	2
MUSI 4395 INTERNSHIP	3
Select 13 hours from the following: ³	13
MUSI 1302 JAZZ APPRECIATION	
MUSI 2227 COMPOSITION TECHNIQUES	
MUSI 2301 APPRECIATION OF MUSIC IN FILM	
MUSI 3125 JAZZ THEORY & KEYBOARD FUNDAMENTALS I	
MUSI 3212 JAZZ TECHNIQUES	
MUSI 3302 FORM AND ANALYSIS	
MUSI 3303 COUNTERPOINT	
MUSI 3321 KEYBOARD SYNTHESIZER PROGRAMMING AND TECHNIQUES	
MUSI 3390 SCHENKERIAN ANALYSIS	
MUSI 3391 ADVANCED SONATA THEORY	
MUSI 3392 COMPOSITION I	
MUSI 3320 MUSIC AND TECHNOLOGY IN GAME AUDIO	
MUSI 4300 JAZZ PERSPECTIVES	
MUSI 4301 ORCHESTRATION	
MUSI 4302 JAZZ ARRANGING	
MUSI 4325 RECORDING TECHNIQUES II	
MUSI 4326 RECORDING TECHNIQUES III	
MUSI 4327 TECHNIQUES AND TECHNOLOGY IN FILM COMPOSITION	
Select 9 hours at the 3000/400 level from the following: ³	9
Business courses	
Communication courses	
Total Hours	125

¹ Keyboard concentrates substitute one hour keyboard ensemble.

² At least three must be large ensemble.

³ Pending approval by the Music Industry Area Coordinator.

Audio Production Option

UNIV-LA 1000 FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)	42
Professional Courses/Music Requirements	
MUSI 1185 SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186 SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325 THEORY AND HARMONY I	3
MUSI 1326 THEORY AND HARMONY II	3
MUSI 2185 SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186 SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325 THEORY AND HARMONY III	3
MUSI 2326 THEORY AND HARMONY IV	3
MUSI 3308 INSTRUMENTAL CONDUCTING I	3
or MUSI 3309 CHORAL CONDUCTING I	
MUSI 3300 MUSIC HISTORY I	3
MUSI 3301 MUSIC HISTORY II	3
MUSI 3394 DIGITAL MUSIC TECHNOLOGY	3
MUSI 4390 RECORDING TECHNIQUES I	3
MUSI 1180 FUNCTIONAL PIANO I ¹	1
MUSI 1181 FUNCTIONAL PIANO II ¹	1
MUSI 2180 FUNCTIONAL PIANO III ¹	1

MUSI 2181	FUNCTIONAL PIANO IV ¹	1
Performance concentration (in one instrument or voice)		8
MUSI 2227	COMPOSITION TECHNIQUES	2
MUSI 4395	INTERNSHIP	3
MUSI 3125	JAZZ THEORY & KEYBOARD FUNDAMENTALS I	1
MUSI 3323	BUSINESS OF MUSIC	3
MUSI 4325	RECORDING TECHNIQUES II	3
PHYS 1300	INTRODUCTION TO MUSICAL ACOUSTICS (Can also fulfill the Life & Physical Sciences requirement)	3
Ensemble (any) ²		5
Choose one of the following:		3
MUSI 4326	RECORDING TECHNIQUES III	
ART 4397	ADVANCED CINEMA PRODUCTION (ACP): SPECIAL STUDIES	
THEA 3316	LIGHTING AND SOUND TECHNOLOGY	
Select three of the following:		9
MUSI 3396	RECORD LABEL AND STUDIO MANAGEMENT	
MUSI 3320	MUSIC AND TECHNOLOGY IN GAME AUDIO	
MUSI 3321	KEYBOARD SYNTHESIZER PROGRAMMING AND TECHNIQUES	
MUSI 4327	TECHNIQUES AND TECHNOLOGY IN FILM COMPOSITION	
MUSI 3322	INTRODUCTION TO SONGWRITING	
Art, Business, Communication, and/or Electrical Engineering courses ³		3
Total Hours		120

¹ Keyboard concentrates substitute two hours of MUSI 0109 or MUSI 4205.

² At least three hours must be large ensemble.

³ Must be at 3000/4000 level. All courses must be approved by the Music Industry Area Coordinator.

Requirements for a Bachelor of Music Degree (Jazz Studies Option)

General Core Requirements (p. 50)		42
UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
Professional Courses/Music Requirements		
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 0122	JAZZ COMBO	1
MUSI 0122	JAZZ COMBO	1
MUSI 0122	JAZZ COMBO	1
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 1101	JAZZ LISTENING	1
MUSI 3125	JAZZ THEORY & KEYBOARD FUNDAMENTALS I	1
MUSI 3126	JAZZ THEORY & KEYBOARD FUNDAMENTALS II	1
MUSI 3308	INSTRUMENTAL CONDUCTING I	3
or MUSI 3309	CHORAL CONDUCTING I	
MUSI 3225	JAZZ IMPROVISATION I	2
MUSI 3226	JAZZ IMPROVISATION II	2
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	3
MUSI 3395	JAZZ COMPOSITION	3

MUSI 4225	JAZZ IMPROVISATION III - ADVANCED	2
MUSI 4300	JAZZ PERSPECTIVES	3
MUSI 4302	JAZZ ARRANGING	3
MUSI 3323	BUSINESS OF MUSIC	3
MUSI 4390	RECORDING TECHNIQUES I	3
MUSI 4392	JAZZ STUDIES SENIOR RECITAL/PROJECT	3
Performance concentration (1000/2000 level in one instrument or voice) ^{2,3}		8
Performance concentration (additional hours at 3000/4000 level in one instrument or voice) ^{2,3}		6
MUSI 1180	FUNCTIONAL PIANO I ¹	1
MUSI 1181	FUNCTIONAL PIANO II ¹	1
MUSI 2180	FUNCTIONAL PIANO III ¹	1
MUSI 2181	FUNCTIONAL PIANO IV ¹	1
Large jazz ensemble		7
Small jazz ensemble		2
Music Elective		3
Total Hours		130

¹ Keyboard concentrates substitute two hours keyboard ensemble and two hours small jazz ensemble.

² Keyboard concentrates elect both classical and jazz private lessons through the barrier exam level. Junior and Senior level private lessons in jazz piano only.

³ Bass concentrates elect both double bass and electric bass private lessons through the barrier exam level. Junior and Senior level private lessons in jazz bass only.

Requirements for a Bachelor of Music Degree (in preparation for Teacher Certification - EC-12 Instrumental Option and EC-12 Choral Option)

The Bachelor of Music Degree (in preparation for Teacher Certification) is a 5-year degree.

Options

EC-12 Instrumental Option (Band Emphasis)

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)		42
Professional Courses/Music Requirements		
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3308	INSTRUMENTAL CONDUCTING I	3
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I	1
MUSI 1181	FUNCTIONAL PIANO II	1
MUSI 2180	FUNCTIONAL PIANO III	1
MUSI 2181	FUNCTIONAL PIANO IV	1
Performance concentration (in one instrument)		8
MUSI 1103	HIGH BRASS CLASS	1
MUSI 1104	WOODWIND CLASS I	1
MUSI 1105	VOICE CLASS (or one semester any choir)	1
MUSI 1106	LOW BRASS CLASS	1

MUSI 1107	WOODWIND CLASS II	1
MUSI 2103	STRING CLASS	1
MUSI 2104	PERCUSSION CLASS	1
MUSI 2112	INTRODUCTION TO MUSIC EDUCATION	1
MUSI 3211	EARLY CHILDHOOD MUSIC	2
MUSI 3213	INSTRUMENTAL MATERIALS AND TECHNIQUES I	2
MUSI 4308	INSTRUMENTAL CONDUCTING II	3
MUSI 4211	ELEMENTARY MUSIC	2
MUSI 4213	INSTRUMENTAL MATERIALS AND TECHNIQUES II	2
MUSI 3316	STRATEGIES AND ASSESSMENT IN MUSIC EDUCATION	3
MUSI 4117	MUSIC EDUCATION FIELD-BASED EXPERIENCE	1
MUSI 3200	MARCHING BAND TECHNIQUES	2
MUSI 3212	JAZZ TECHNIQUES	2
MUSI 4301	ORCHESTRATION	3
Education Requirements		12
LIST 4343	CONTENT AREA READING AND WRITING	
EDUC 3301	TEACHING DIVERSE LEARNERS	
EDUC 4647	CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	
Keyboard concentrates take four hours MUSI 0109 (see Major)		
Ensembles (3 hours marching band; four hours wind symphony, symphonic winds, or symphonic band)		7
Performance concentration (additional hours in one instrument)		6
Senior half recital		
Total Hours		134

EC-12 Instrumental Option (Orchestra Emphasis)

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)		42
Professional Courses/Music Requirements		
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3308	INSTRUMENTAL CONDUCTING I	3
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I	1
MUSI 1181	FUNCTIONAL PIANO II	1
MUSI 2180	FUNCTIONAL PIANO III	1
MUSI 2181	FUNCTIONAL PIANO IV	1
Performance Concentration (in one instrument)		8
MUSI 2101	BRASS SURVEY	1
MUSI 1105	VOICE CLASS (or one semester any choir)	1
MUSI 2102	WOODWIND SURVEY	1
MUSI 2104	PERCUSSION CLASS	1
MUSI 2112	INTRODUCTION TO MUSIC EDUCATION	1
MUSI 3211	EARLY CHILDHOOD MUSIC	2
MUSI 3213	INSTRUMENTAL MATERIALS AND TECHNIQUES I	2
MUSI 4308	INSTRUMENTAL CONDUCTING II	3

MUSI 4301	ORCHESTRATION	3
MUSI 4211	ELEMENTARY MUSIC	2
MUSI 4213	INSTRUMENTAL MATERIALS AND TECHNIQUES II	2
MUSI 3316	STRATEGIES AND ASSESSMENT IN MUSIC EDUCATION	3
MUSI 4117	MUSIC EDUCATION FIELD-BASED EXPERIENCE	1
MUSI 3294	APPLIED PEDAGOGY	2
MUSI 4303	ADVANCED STRING CLASS	3
MUSI 3191	SECONDARY LESSONS IN STRINGS (On a different string instrument other than principal instrument)	1
MUSI 3191	SECONDARY LESSONS IN STRINGS (On a different string instrument other than principal instrument)	1
Education Requirements		12
LIST 4343	CONTENT AREA READING AND WRITING	
EDUC 3301	TEACHING DIVERSE LEARNERS	
EDUC 4647	CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	
Keyboard concentrates take four hours MUSI 0109 (see Major)		
Ensembles (7 hours orchestra)		7
Performance concentration (additional hours in one instrument)		6
Senior half recital		
Total Hours		134

EC-12 Choral Option

UNIV-LA 1000	FIRST YEAR EXPERIENCE	0
General Core Requirements (p. 50)		42
Professional Courses/Music Requirements		
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1186	SIGHTSINGING AND EAR TRAINING II	1
MUSI 1325	THEORY AND HARMONY I	3
MUSI 1326	THEORY AND HARMONY II	3
MUSI 2185	SIGHTSINGING AND EAR TRAINING III	1
MUSI 2186	SIGHTSINGING AND EAR TRAINING IV	1
MUSI 2325	THEORY AND HARMONY III	3
MUSI 2326	THEORY AND HARMONY IV	3
MUSI 3309	CHORAL CONDUCTING I	3
MUSI 3300	MUSIC HISTORY I	3
MUSI 3301	MUSIC HISTORY II	3
MUSI 1180	FUNCTIONAL PIANO I ¹	1
MUSI 1181	FUNCTIONAL PIANO II ¹	1
MUSI 2180	FUNCTIONAL PIANO III ¹	1
MUSI 2181	FUNCTIONAL PIANO IV ¹	1
MUSI 4205	ADVANCED FUNCTIONAL PIANO	2
Performance Concentration (in voice)		8
MUSI 2101	BRASS SURVEY	1
MUSI 2102	WOODWIND SURVEY	1
MUSI 3103	VOCAL PEDAGOGY	1
MUSI 2103	STRING CLASS	1
MUSI 2104	PERCUSSION CLASS	1
MUSI 2112	INTRODUCTION TO MUSIC EDUCATION	1
MUSI 3101	ITALIAN AND FRENCH DICTION	1
MUSI 3211	EARLY CHILDHOOD MUSIC	2
MUSI 3214	CHORAL MATERIALS AND TECHNIQUES I	2
MUSI 4101	GERMAN AND ENGLISH DICTION	1
MUSI 4309	CHORAL CONDUCTING II	3
MUSI 4301	ORCHESTRATION	3

MUSI 4211	ELEMENTARY MUSIC	2
MUSI 4214	CHORAL MATERIALS AND TECHNIQUES II	2
MUSI 3316	STRATEGIES AND ASSESSMENT IN MUSIC EDUCATION	3
MUSI 4117	MUSIC EDUCATION FIELD-BASED EXPERIENCE	1
Education Requirements		12
LIST 4343	CONTENT AREA READING AND WRITING	
EDUC 3301	TEACHING DIVERSE LEARNERS	
EDUC 4647	CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS	
Voice Concentration and Keyboard Concentration ^{1,2}		2
A capella choir/university singers/women's chorus		6
Musical theatre/opera laboratory		1
Performance concentration (additional hours)		6
Senior half recital		
Total Hours		134

¹ Keyboard Concentrates substitute 2 hours of MUSI 0109 and 4 hours MUSI 0175

² Voice Concentration take 2 hours of MUSI 0174

Teacher Certification

Students interested in Texas Teacher Certification should consult the College of Education section of this catalog for the most recent changes in requirements regarding admission to Teacher Education, completion of University programs in preparation for certificate, and eligibility for certification after graduation.

Requirements for a Bachelor of Arts Degree (Music Industry Studies)

UNIV-LA 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Music Requirements		
MUSI 1301	ELEMENTS OF MUSIC ()	3
MUSI 1324	EXPLORATIONS IN MUSIC THEORY (Explorations in Music Theory)	3
MUSI 3125	JAZZ THEORY & KEYBOARD FUNDAMENTALS I	1
MUSI 3126	JAZZ THEORY & KEYBOARD FUNDAMENTALS II	1
MUSI 3394	DIGITAL MUSIC TECHNOLOGY	3
Choose two of the following:		6
MUSI 3300	MUSIC HISTORY I	
MUSI 1303	HISTORY AND APPRECIATION OF HIP HOP AND R&B MUSIC	
MUSI 2301	APPRECIATION OF MUSIC IN FILM	
MUSI 1302	JAZZ APPRECIATION	
MUSI 1304	HISTORY OF ROCK MUSIC	
MUSI 3396	RECORD LABEL AND STUDIO MANAGEMENT	3
MUSI 4390	RECORDING TECHNIQUES I	3
MUSI 4325	RECORDING TECHNIQUES II	3
MUSI 3323	BUSINESS OF MUSIC	3
MUSI 4395	INTERNSHIP	3
MUSI 4328	ELECTRONIC MUSIC COMPOSITION AND PERFORMANCE (Electronic Music Comp)	3
Choose 2 from the following		6
MUSI 3320	MUSIC AND TECHNOLOGY IN GAME AUDIO	
MUSI 3321	KEYBOARD SYNTHESIZER PROGRAMMING AND TECHNIQUES	
MUSI 4326	RECORDING TECHNIQUES III	
MUSI 4327	TECHNIQUES AND TECHNOLOGY IN FILM COMPOSITION	
MUSI 4329	SOUND FOR NEW MEDIA	
Performance concentration (in one instrument or voice)		8
Ensemble ^{only one ensemble per semester may count}		2

MUSI 0131	COMMERCIAL MUSIC ENSEMBLE	
MUSI 4129	RECORDING ENSEMBLE	
Business Requirements		9
ACCT 2301	PRINCIPLES OF ACCOUNTING I	
ECON 2305	PRINCIPLES OF MACROECONOMICS	
BLAW 3311	LAW I	
General Electives ¹		18
Total Hours		121

¹ Minimum 3 hours must be 3000 level or higher

Oral Communication and Computer Use Competence Requirements

Students majoring in music are required to demonstrate computer use and oral communication competencies.

Computer use proficiency can be demonstrated by:

1. successful completion of MUSI 3394; or
2. successful completion of CSE 1301 or INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING; or
3. passing the University computer use competency exam.

Oral communication proficiency can be demonstrated by:

1. successful completion of MUSI 3308 or MUSI 3309; or
2. successful completion of one of the following:

COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	3
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	3
COMS 3315	COMMUNICATION FOR EDUCATORS	3

Students should discuss these options with their undergraduate advisor who may also provide a list of other courses approved by the University of meet these requirements.

Requirements for a Minor in Music

Eighteen hours of music, six hours of which must be 3000/4000 level.

Philosophy, Classics, and Humanities

Undergraduate Degrees

- Bachelor of Arts in Philosophy (Pre-Professional Track) (<http://catalog.uta.edu/liberalarts/philosophy/undergraduate/#bachelorstext/#bapreprofessional>)
- Bachelor of Arts in Philosophy (General Track) (<http://catalog.uta.edu/liberalarts/philosophy/undergraduate/#bachelorstext/#bageneral>)
- Bachelor of Arts in Philosophy (Pre-Law Option) (<http://catalog.uta.edu/liberalarts/philosophy/undergraduate/#bachelorstext/#baprelaw>)
- Bachelor of Arts in Philosophy (Mind, Language, and Cognition Option) (<http://catalog.uta.edu/liberalarts/philosophy/undergraduate/#bachelorstext/#bamind>)
- Bachelor of Arts in Philosophy (Philosophy and Classics Option) (<http://catalog.uta.edu/liberalarts/philosophy/undergraduate/#bachelorstext/#baphilosophy>)
- Minor in Philosophy (p. 941), Minor in Classical Studies (p. 723), or Minor in Medical Humanities and Bioethics (p. 843)

COURSES

PHIL 1301. FUNDAMENTALS OF REASONING. 3 Hours.

The analysis of arguments and rhetorical forms. Deals with common forms of valid and fallacious reasoning and includes exercises and drill in practical reasoning.

PHIL 1304. CONTEMPORARY MORAL PROBLEMS. 3 Hours. (TCCN = PHIL 2306)

Examination of ethical problems and theories which have a bearing on contemporary life. Texts may include both classical and contemporary ethical writings and deal with problems such as the conditions under which life may be taken (abortion, capital punishment, medical ethics), business ethics, social justice, and individual rights.

PHIL 2300. INTRODUCTION TO PHILOSOPHY. 3 Hours. (TCCN = PHIL 1301)

An examination of one or more basic problems of lasting interest to philosophers. Typical problems may include human nature and limits of knowledge. Formerly listed as PHIL 1300. Credit cannot be received for both PHIL 1300 and PHIL 2300.

PHIL 2311. LOGIC. 3 Hours. (TCCN = PHIL 2303)

The development of formal and symbolic systems (categorical, propositional, and predicate) for the analysis of arguments.

PHIL 2312. ETHICS. 3 Hours.

Ethics is the philosophical study of morality. This course is an introduction to the main normative ethical theories, such as theological voluntarism, utilitarianism, and Kantianism. A normative ethical theory provides an answer to the question, "What is it that makes right acts right?"

PHIL 2313. PHILOSOPHY OF THE ARTS. 3 Hours.

Problems in the philosophy of art and art criticism; the history of aesthetic theory.

PHIL 2314. PERSPECTIVES ON SCIENCE AND MATHEMATICS. 3 Hours.

Topics and episodes in the history of science and mathematics from a philosophical point of view. Students are brought to understand that science has a fascinating history, is underpinned by deep philosophical presuppositions, and depends upon special social and cultural factors for its continued growth and revision.

PHIL 2315. TOPICS IN PHILOSOPHY. 3 Hours.

In-depth treatment of philosophical topics or movements, such as Existentialism, Philosophy of Science Fiction, Brain and Mind, Asian Philosophy. May be repeated for credit as content changes.

PHIL 2316. COMPUTATION, MIND, AND PARADOX. 3 Hours.

A philosophical and historical introduction to the foundations of logic and mathematics, the psychology of reasoning, and the computational theory of mind. Topics may include: logic, set theory, axiom systems; number and infinity; fallacies of deductive and probabilistic reasoning; Bayesian epistemology; algorithms; artificial intelligence, computational theories of mind and brain.

PHIL 3301. HISTORY OF PHILOSOPHY: ANCIENT PHILOSOPHY. 3 Hours.

The beginning and the early developments of the western philosophic tradition. Ancient Greek philosophy, basically the Pre-Socratics, Socrates, Plato and Aristotle.

PHIL 3302. HISTORY OF PHILOSOPHY: ROMAN AND MEDIEVAL PHILOSOPHY. 3 Hours.

Post-Aristotelians (e.g., the later Stoics, the Epicureans, Neo-Platonists); philosophy of the early Church Fathers through Aquinas and later Scholastics.

PHIL 3303. HISTORY OF PHILOSOPHY: RENAISSANCE AND EARLY MODERN EUROPEAN PHILOSOPHY. 3 Hours.

The philosophical views of Galileo, Newton, Bacon, and Hobbes, the Continental Rationalists and British Empiricists, and a brief introduction to the philosophy of Immanuel Kant.

PHIL 3304. HISTORY OF PHILOSOPHY: NINETEENTH AND EARLY TWENTIETH CENTURY PHILOSOPHY. 3 Hours.

Major philosophers from Kant to the early 20th century.

PHIL 3307. SEMINAR IN RESEARCH METHODS AND PHILOSOPHICAL WRITING. 3 Hours.

Examination of philosophical methodology; philosophical analysis, philosophical writing, discipline-specific bibliographic tools, etc. Students write a series of short papers on topics of interest. Prerequisite: PHIL 2311 and one other PHIL course.

PHIL 3315. EXISTENTIALISM. 3 Hours.

Readings in existentialist philosophy and literature with a special emphasis on such themes as alienation, anxiety, the self, absurdity, value, freedom, and responsibility. Texts may include writings from Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, de Beauvoir, Jaspers, and others.

PHIL 3316. PHILOSOPHY OF RELIGION. 3 Hours.

Problems that engage philosophy of religion (e.g., the existence of God, theodicy, religious language) and the way these problems have been treated by some outstanding Western thinkers.

PHIL 3317. PHILOSOPHICAL LOGIC. 3 Hours.

Begins with predicate calculus and includes such topics as definite descriptions, identity, modal logic, second-order logic, set theory, philosophy of logic and mathematics, and philosophical applications of logic. Prerequisite: PHIL 2311 or consent of the instructor.

PHIL 3318. THE PHILOSOPHY OF SCIENCE AND TECHNOLOGY. 3 Hours.

The method and goals of scientific scholars and inquiry. The distinction between formal and empirical sciences, laws and theories, measurement, the role of observation and experiment, and probability. Formerly listed as PHIL 4315. Credit cannot be received for both PHIL 4315 and PHIL 3318.

PHIL 3319. BIOMEDICAL ETHICS. 3 Hours.

Major ethical problems which arise in modern medicine and in medical/biological research (euthanasia, abortion, patient-physician relations, allocations of medical resources, genetic research, etc.).

PHIL 3320. PHILOSOPHY OF LAW. 3 Hours.

Examination of the institution of law, legal concepts, legal reasoning, and the legal process. Topics may include the nature of law; the moral limits of the criminal law; legal rights; liberty, justice, and equality; punishment; responsibility; the private law (property, contract, and tort); constitutional law; and feminist jurisprudence.

PHIL 3321. PHILOSOPHY OF LANGUAGE. 3 Hours.

Topics to be investigated include the nature of language and communication; the distinction between natural and artificial language; the traditional division of the field into syntax, semantics, and pragmatics; and such specialized subtopics as meaning, reference, truth, and speech acts. Completion of PHIL 2311 is recommended, but not required.

PHIL 3324. BUSINESS ETHICS. 3 Hours.

Selected ethical issues in business, such as the nature and moral status of capitalism; corporate moral agency and responsibility; issues and challenges in the workplace (e.g., civil liberties, personnel policies, unionization, privacy, and safety); moral choices facing employees (e.g., loyalty, insider trading, and whistleblowing); job discrimination (e.g., affirmative action, comparable worth, and sexual harassment); consumer protection; environmental protection; and globalization.

PHIL 3330. SOCIAL AND POLITICAL PHILOSOPHY. 3 Hours.

Investigation of the basis (if any) of political obligation. Analysis of social and political concepts, such as equality, liberty, rights, and justice. Discussion of social and political theories, such as anarchism, contractarianism, Marxism, and conservatism.

PHIL 3340. TOPICS IN APPLIED ETHICS. 3 Hours.

Investigation of a single moral issue or a cluster of issues that arise in the context of a particular profession. Examples of the former are abortion, punishment, freedom of speech, the environment, and the moral status of animals. Examples of the latter are business ethics, legal ethics, engineering ethics, nursing ethics, and computer ethics. May be repeated for credit as content changes.

PHIL 3341. TOPICS IN BIOETHICS. 3 Hours.

Investigation of a single moral issue or a cluster of issues that arise in the context of the medical profession. Examples of possible topics are resource allocation, surrogate decision-making, the philosophy of mental illness, research ethics, reproductive ethics, and end of life care. May be repeated for credit as content changes. Prior completion of PHIL 3319 (Biomedical Ethics) is strongly recommended, but not required.

PHIL 3350. TOPICS IN ANCIENT GREEK PHILOSOPHY. 3 Hours.

An in-depth examination of a particular figure or topic in the field of ancient Greek philosophy. Works studied may include those of the Pre-Socratics, Plato, Aristotle, Hellenistic, and Neoplatonic philosophers.

PHIL 3390. HONORS COLLOQUIUM. 3 Hours.

An interdisciplinary course designed to meet the needs of advanced undergraduates in the Honors College.

PHIL 4191. UNDERGRADUATE CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering research of individual students or study in designated areas. May be repeated for credit.

PHIL 4192. CONFERENCE COURSE IN BIOETHICS. 1 Hour.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in bioethics. Requires permission of the department chair and the instructor.

PHIL 4291. UNDERGRADUATE CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering research of individual students or study in designated areas. May be repeated for credit.

PHIL 4292. CONFERENCE COURSE IN BIOETHICS. 2 Hours.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in bioethics. Requires permission of the department chair and the instructor.

PHIL 4318. PHILOSOPHY AND LITERATURE. 3 Hours.

The role of ideas in literature and an analysis of the actual contacts between philosophy and the dominant world views of the great writers of literature.

PHIL 4380. PHENOMENOLOGY. 3 Hours.

Phenomenology is a major philosophical movement based on the methodically controlled description of conscious experience, as uncovered at first introspectively. This course focuses on (1) the origin of the movement in common epistemological problems arising in philosophy, psychology, mathematics, and the natural sciences, (2) the development of the movement's method, and (3) a close study of some influential phenomenologists, including Husserl, Sartre, and Merleau-Ponty. Contemporary connections to the neuroscientific study of consciousness are also explored.

PHIL 4381. THEORIES OF INTERPRETATION. 3 Hours.

Philosophical hermeneutics-the theory or study of interpretation-dates back at least to Aristotle and grew in the 20th century from a focus on texts to an analysis of the interpretation of every human act and idea. This course traces the history of the problems of interpretation from Aristotle to the present.

PHIL 4383. PHILOSOPHY OF MIND. 3 Hours.

This course is a non-exhaustive survey of topics central to contemporary analytic philosophy of mind: the mind/body problem, functionalism, consciousness, intentionality, mental causation, and perception. Readings include work by figures such as Smart, Armstrong, Putnam, Block, Kripke, Chalmers, and Siegel. Evaluation will likely involve some subset of: a midterm examination, short papers, a more substantial research project, and a final examination, on each of which students will be assessed for conceptual clarity, communicative economy, and critical reasoning.

PHIL 4385. THEORY OF KNOWLEDGE. 3 Hours.

Problems which arise from attempts to give an account of human knowledge. Skepticism, perception, induction, or the nature of truth. Note: Although there are no prerequisites for this course, students who have had no previous philosophy courses may find the material difficult.

PHIL 4386. METAPHYSICS. 3 Hours.

Problems which arise from attempts to give an account of reality and its manifestations. Possibility and necessity, causality, the nature of events, mind-body, and universals. Note: Although there are no prerequisites for this course, students who have had no previous philosophy courses may find the material difficult.

PHIL 4387. TOPICS IN VALUE THEORY. 3 Hours.

In-depth treatment of an issue or topic within value theory, which is broadly construed to include moral philosophy (and its subfields, such as moral epistemology and moral psychology), social philosophy, political philosophy, philosophy of law, aesthetics, philosophy of religion, and feminist philosophy. May be repeated for credit with permission of the department.

PHIL 4388. TOPICS IN THE HISTORY OF PHILOSOPHY. 3 Hours.

In-depth treatment of a single important philosophical writer, a related group of writers, or an extended tradition. May be repeated for credit with permission of the department.

PHIL 4389. TOPICS IN PHILOSOPHY AND THE SOCIAL SCIENCES. 3 Hours.

In-depth treatment of one or more of the social sciences from a philosophical perspective: may include the philosophy of history, social philosophy, political philosophy, philosophy of the social sciences, or any specific subject therein. Credit may not be granted for PHIL 4311 or PHIL 4317 (no longer offered) and PHIL 4389. May be repeated for credit with permission of the department.

PHIL 4391. UNDERGRADUATE CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering research of individual students or study in designated areas. May be repeated for credit.

PHIL 4392. CONFERENCE COURSE IN BIOETHICS. 3 Hours.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in bioethics. Requires permission of the department chair and the instructor.

PHIL 4394. SENIOR THESIS. 3 Hours.

During the senior year, the student completes a thesis under the direction of a faculty member in the major department. Required of all pre-professional track philosophy majors and of all philosophy majors who are members of the University Honors College.

PHIL 5391. CONFERENCE COURSE IN PHILOSOPHY. 3 Hours.

May be taken only with the permission of the instructor and Graduate Advisor.

PHIL 5392. TOPICS IN THE HISTORY OF PHILOSOPHY. 3 Hours.

Consideration in depth of the work of a single philosopher or a related philosophical school against the background of the development of philosophy. May be repeated for credit as the topic changes.

PHIL 5393. PHILOSOPHICAL PERSPECTIVES ON THE HUMANITIES. 3 Hours.

A philosophical inquiry into problems and issues of relevance in humanistic disciplines. May be repeated for credit as the topic changes.

PHIL 6389. SEMINAR IN PHILOSOPHICAL ANALYSIS. 3 Hours.

Seminar-style treatment of some major problem in contemporary philosophy. May be repeated for credit as the topic changes.

PHIL 6394. TOPICS IN SYSTEMATIC PHILOSOPHY. 3 Hours.

In-depth treatment of an issue or issues in metaphysics, epistemology, ethics, aesthetics or related subdisciplinary areas. May be repeated for credit as the topic changes.

Philosophy - Graduate Program

The Philosophy Doctoral Program at the University of North Texas

Students in the Ph.D. program in philosophy at the University of North Texas may, but are no longer required to, take up to 15 graduate semester credit hours in the Department of Philosophy at UT Arlington. Visit the web page of UNT's Department of Philosophy and Religion Studies (<http://philosophy.unt.edu/graduate-program> (<http://philosophy.unt.edu/graduate-program/>)). For more information, contact Dr. Dale Wilkerson (dale.wilkerson@unt.edu) at the University of North Texas.

Philosophy, Classics, and Humanities - Undergraduate and Certificate Programs

Overview

A major in philosophy is built on the central texts in the history of Western thought. Philosophy focuses on the perennial problems raised by the encounter of human beings with their history, culture, and the world. It emphasizes methods of analysis and clarity of argumentation. Students who major in philosophy have the broadest possible preparation in the liberal arts.

Students who complete a major in philosophy are prepared to enter either graduate programs or the world of work. In addition to providing vocational skills and a solid foundation for graduate work in the discipline, a major in philosophy constitutes appropriate and strong preparation for graduate work in other academic disciplines as well as in professional programs in a broad variety of fields. The Department of Philosophy and Humanities is prepared to work with students who are interested in postgraduate professional education to assure that their preparation meets disciplinary and/or professional criteria and expectations in areas including law, business administration, and theology. The faculty of the Department of Philosophy and Humanities also work with advisors in the Health Professions Advising Office of the College of Science to ensure that philosophy majors pursuing a pre-medical curriculum are kept abreast of required and recommended courses outside the major.

Requirements for Admission to a Major in Philosophy

Students should have completed 30 hours of core with 30 hours at UT Arlington, or 40 hours of core with 12 hours at UT Arlington with an overall GPA greater than 2.0. Before being accepted into the major in philosophy, students must also have passed a course in symbolic logic (PHIL 2311 LOGIC or the equivalent). Students may be accepted as pre-philosophy majors if the above standards are not met.

Requirements for a Minor in Philosophy

A minor in philosophy requires 18 semester hours, at least six of which must be 3000/4000 level.

Requirements for a Minor in Classical Studies

A minor in classical studies requires at least 18 semester hours, at least six of which must be 3000/4000 level, in approved classical studies courses. There are four options for the classical studies minor: Greek Language, Latin Language, Classical Civilization, and Ancient Studies.

Requirements for a Minor in Medical Humanities and Bioethics

A minor in medical humanities and bioethics requires 18 hours. There are three required courses: HUMA 3300, PHIL 3319, and the student's choice from a list of Disability Studies courses.

Requirements for the Certificate in Ethics

The certificate in ethics requires at least 15 semester hours in approved ethics courses.

Requirements for the Certificate in Medical Humanities

The certificate in medical humanities requires at least 12 semester hours in approved courses.

Undergraduate Advising

All philosophy majors are directed in their program by a designated undergraduate advisor. In addition, the following special advisors are available:

Graduate Work in Philosophy: Majors who are interested in graduate work in philosophy should consult the departmental graduate advisor during their junior year.

Pre-Law: Majors who intend to apply to law school will find courses in logic, philosophy of law, political philosophy, and ethics particularly useful. Interested students should consult the Philosophy/Pre-law faculty advisor for assistance in course selection and application procedures.

Philosophy/Business Administration Minor: It is possible to combine the philosophy major with a business administration minor in preparation for admission to the UT Arlington MBA program. (See Liberal Arts Major/Business Administration Minor section in the introduction of the College of Liberal Arts.) The Philosophy/Business Administration faculty advisor will assist students in coordinating their program and meeting admissions requirements either at UT Arlington or other schools.

Pre-Theological: Majors who plan to enter a school of theology should consider a minor in classics and foreign language preparation in Greek and/or Latin. Electives in ethics and philosophy of religion are particularly recommended. Interested students should consult the Philosophy/Pre-ministerial faculty advisor for additional assistance.

Pre-Medical: A departmental faculty advisor is available to assist majors who intend to apply to medical school. The major program will be coordinated with the Health Professions Advising Office of the College of Science.

Oral Communication Competency

Students majoring in philosophy may demonstrate competency in oral communication by

1. successful completion of a specific course approved by the Department of Philosophy and Humanities for this purpose, or
2. successful completion of any course from among those approved by the Undergraduate Assembly.

Computer Use Competency

Students majoring in philosophy may demonstrate competency in computer use by

1. successful completion of PHIL 3307 SEMINAR IN RESEARCH METHODS AND PHILOSOPHICAL WRITING, or
2. successful completion of any course from among those approved by the Undergraduate Assembly for this purpose, or
3. passing the University proficiency examination in computer use.

Requirements for a Bachelor of Arts Degree in Philosophy (Pre-Professional Track)

Pre-Professional Courses		
General Core Requirements (p. 50)		42
Core Courses Required for this Major		
UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Program Requirements		
Modern and Classical Languages: 1441, 1442, 2313, 2314		14
Electives sufficient to complete the 120 credit hours required for the degree.		
Professional Courses		
PHIL 2300	INTRODUCTION TO PHILOSOPHY	3
PHIL 2311	LOGIC	3
PHIL 3301	HISTORY OF PHILOSOPHY: ANCIENT PHILOSOPHY	3
PHIL 3303	HISTORY OF PHILOSOPHY: RENAISSANCE AND EARLY MODERN EUROPEAN PHILOSOPHY	3
PHIL 3307	SEMINAR IN RESEARCH METHODS AND PHILOSOPHICAL WRITING	3
Select at least one course from the "metaphysics and epistemology" group:		3
PHIL 3318	THE PHILOSOPHY OF SCIENCE AND TECHNOLOGY	
PHIL 3321	PHILOSOPHY OF LANGUAGE	
PHIL 4383	PHILOSOPHY OF MIND	
PHIL 4385	THEORY OF KNOWLEDGE	
PHIL 4386	METAPHYSICS	
PHIL 4388	TOPICS IN THE HISTORY OF PHILOSOPHY	
PHIL 4389	TOPICS IN PHILOSOPHY AND THE SOCIAL SCIENCES	
Select at least one course from the "value theory" group:		3
PHIL 2312	ETHICS	
PHIL 2313	PHILOSOPHY OF THE ARTS	
PHIL 3316	PHILOSOPHY OF RELIGION	
PHIL 3319	BIOMEDICAL ETHICS	
PHIL 3320	PHILOSOPHY OF LAW	
PHIL 3330	SOCIAL AND POLITICAL PHILOSOPHY	
PHIL 3340	TOPICS IN APPLIED ETHICS	
PHIL 3341	TOPICS IN BIOETHICS	
PHIL 4387	TOPICS IN VALUE THEORY	
Advanced hours-with a total of at least six hours at the 4000 level ¹		6
PHIL 4394	SENIOR THESIS (complete a senior thesis sometime during their final year)	3
Total Hours		93

¹ Including any 4000-level "metaphysics and epistemology" or "value theory" courses, but not including PHIL 4394.

Requirements for a Bachelor of Arts Degree in Philosophy (General Track)

Pre-Professional Courses		
General Core Requirements (p. 50)		42
Core Courses Required for this Major		
UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Program Requirements		
Modern and Classical Languages: 1441, 1442, 2313, 2314		14
Electives sufficient to complete the 120 credit hours required for the degree.		
Professional Courses		
Major		
PHIL 2300	INTRODUCTION TO PHILOSOPHY	3
PHIL 2311	LOGIC	3
PHIL 3307	SEMINAR IN RESEARCH METHODS AND PHILOSOPHICAL WRITING	3
Additional hours (12 advanced hours, with at least six hours at the 4000 level) ¹		18
Total Hours		90

¹ In consultation with the undergraduate philosophy advisor and in light of individual aims and interests, students in the general track are to select electives concentrated primarily in one or two areas of *secondary emphasis*—for example, business, classical studies, cognitive science, computer science engineering, history, humanities/liberal arts, mathematics, or political science.

Requirements for a Bachelor of Arts Degree in Philosophy (Pre-Law Option)

Students interested in the Pre-Law Option must complete the requirements for the Pre-Professional Track degree in philosophy, while selecting their elective course work in consultation with the Philosophy/Pre-Law faculty advisor. Recommended philosophy courses for the Pre-Law Option include

PHIL 1301	FUNDAMENTALS OF REASONING	3
PHIL 1304	CONTEMPORARY MORAL PROBLEMS	3
PHIL 2312	ETHICS	3
PHIL 3317	PHILOSOPHICAL LOGIC	3
PHIL 3318	THE PHILOSOPHY OF SCIENCE AND TECHNOLOGY	3
PHIL 3319	BIOMEDICAL ETHICS	3
PHIL 3320	PHILOSOPHY OF LAW	3
PHIL 3321	PHILOSOPHY OF LANGUAGE	3
PHIL 3324	BUSINESS ETHICS	3
PHIL 3330	SOCIAL AND POLITICAL PHILOSOPHY	3
PHIL 3340	TOPICS IN APPLIED ETHICS	3
PHIL 4381	THEORIES OF INTERPRETATION	3
PHIL 4385	THEORY OF KNOWLEDGE	3
PHIL 4387	TOPICS IN VALUE THEORY	3

Requirements for a Bachelor of Arts Degree in Philosophy (Mind, Language, and Cognition Option)

Students interested in the Mind, Language, and Cognition (MLC) Option must complete the requirements for the General Track degree in philosophy, with a minor in linguistics, and psychology as their area of secondary emphasis for elective course work. Although specific major, minor, and elective courses should be selected in consultation with the MLC advisor in philosophy, typical courses include

LING 2301	INTRODUCTION TO THE STUDY OF HUMAN LANGUAGE	3
LING 3311	PRINCIPLES OF LINGUISTIC ANALYSIS	3
LING 3330	PHONETICS AND PHONOLOGY	3

LING 3340	SYNTAX I	3
LING 3345	CRITICAL REASONING IN LINGUISTICS	3
LING 4303	SYNTAX II	3
LING 4317	SOCIOLINGUISTICS	3
LING 4335	LANGUAGE UNIVERSALS & LINGUISTIC TYPOLOGY	3
LING 4345	FORMAL SEMANTICS	3
LING 4347	PRAGMATICS	3
LING 4370	HISTORY OF LINGUISTICS	3
PHIL 2300	INTRODUCTION TO PHILOSOPHY	3
PHIL 2311	LOGIC	3
PHIL 3317	PHILOSOPHICAL LOGIC	3
PHIL 3318	THE PHILOSOPHY OF SCIENCE AND TECHNOLOGY	3
PHIL 3321	PHILOSOPHY OF LANGUAGE	3
PHIL 4381	THEORIES OF INTERPRETATION	3
PHIL 4383	PHILOSOPHY OF MIND	3
PHIL 4385	THEORY OF KNOWLEDGE	3
PHIL 4389	TOPICS IN PHILOSOPHY AND THE SOCIAL SCIENCES (Mind)	3
PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
PSYC 4332	THEORIES OF HUMAN LEARNING AND MEMORY	3
PSYC 4338	COGNITIVE NEUROSCIENCE	3
PSYC 4355	THE HISTORY OF PSYCHOLOGY	3

(Students who intend to apply to graduate school may elect to complete the requirements for the Pre-Professional Track degree in philosophy, with the minor in linguistics and elective course work in psychology.)

Requirements for a Bachelor of Arts Degree in Philosophy (Philosophy and Classics Option)

Students interested in the Philosophy and Classics Option typically complete the requirements for the General Track degree in Philosophy, with a minor in Classical Studies, and are required to fulfill their language requirement with Greek; with advisors' approval, students may choose to substitute Latin, French or German. Specific major, minor and elective courses should be selected in consultation with the philosophy undergraduate advisor and the director of Classical Studies. (Students who intend to apply to graduate school may elect to complete the requirements for the Pre-Professional Track degree in Philosophy, with the minor in Classical Studies, and the language hours in Greek.)

Minor in Philosophy

18 hours, at least six of which must be 3000/4000 level.

Minor in Classical Studies

The Minor in Classical Studies (p. 723) requires 18 hours, at least six of which must be 3000/4000 level. There are four options for the classical studies minor: Greek Language, Latin Language, Classical Civilization, and Ancient Studies. Interested students must consult with the advisor to determine which courses are required for each option.

Minor in Medical Humanities and Bioethics

The Minor in Medical Humanities and Bioethics (p. 843) requires 18 hours. There are three required courses: HUMA 3300, PHIL 3319, and the student's choice from the listed Disability Studies courses.

Certificate in Ethics

To receive the certificate, a student must complete five courses from the following list:

PHIL 1304	CONTEMPORARY MORAL PROBLEMS	3
or PHIL 2312	ETHICS	
or PHIL 3319	BIOMEDICAL ETHICS	
or PHIL 3320	PHILOSOPHY OF LAW	
or PHIL 3324	BUSINESS ETHICS	
or PHIL 3330	SOCIAL AND POLITICAL PHILOSOPHY	
or PHIL 3340	TOPICS IN APPLIED ETHICS	

or PHIL 4387	TOPICS IN VALUE THEORY	
With the permission of the departmental adviser, one of the five required courses may be replaced by a course from the following list:		
BDEC 3311	BUSINESS DECISION MAKING - PLANNING, ETHICS, SUSTAINABILITY, & AGILITY	3
or COMM 3310	COMMUNICATION LAW & ETHICS	
or EDUC 4346	SECONDARY SCHOOL CULTURE AND THE TEACHING PROFESSION	
or JOUR 2346	REPORTING	
or LSHP 4312	LEADER ETHICS	
or MANA 4340	BUSINESS AND SOCIETY	
or MILS 2251	INDIVIDUAL/TEAM DEVELOPMENT	
or PSYC 3304	ANALYSIS & MANAGEMENT OF BEHAVIOR	

Certificate in Medical Humanities

To receive the certificate, a student must complete HUMA 3300 and three courses from an approved list (p. 844). Students can count toward the certificate no more than two courses from a single department. At least three courses must be from the College of Liberal Arts.

Political Science

Undergraduate Degrees

- Bachelor of Arts in Political Science (p. 956)
- Minor in Political Science (p. 958)
- Fast Track Program (p. 958)

Graduate Degree

- Political Science, M.A. (p. 951)

COURSES

POLS 2311. GOVERNMENT OF THE UNITED STATES. 3 Hours. (TCCN = GOVT 2305)

(GOVT 2305). The constitution and government of the United States. The organization, procedures, and duties of the branches of the government, together with their accomplishments and defects.

POLS 2312. STATE AND LOCAL GOVERNMENT. 3 Hours. (TCCN = GOVT 2306)

(GOVT 2306). The principles and organization of American state, county, and municipal government, together with current problems and the constitution and government of Texas.

POLS 3301. INTRODUCTION TO GLOBAL ISSUES. 3 Hours.

Comparative perspectives on a broad range of cultural, linguistic, economic, political, and social issues confronting a globalized world today. Designed to draw attention to the multifaceted connections among nation-states, nongovernmental organizations, diverse ethnic, cultural, and religious groups, and populations around the world. Course taught as POLS 3301 and GLOBAL 2301. Credit will be granted in only one department.

POLS 3302. INTRODUCTION TO INTERNATIONAL RELATIONS. 3 Hours.

Introduction to the interplay between states, international organizations, multinational corporations, and popular or militant movements within the international system and to their continued search for wealth, power, and security.

POLS 3303. INTRODUCTION TO PUBLIC ADMINISTRATION. 3 Hours.

The scope and development of public administrative organizations; both the traditional and behavioral approaches to the treatment of administrative principles, decision making, and organizational environment.

POLS 3304. INTRODUCTION TO COMPARATIVE POLITICS. 3 Hours.

Cross-national and cross-cultural comparisons of political systems. Institutional structure, political process, dynamics of change, and ideology.

POLS 3305. GOVERNMENT IN URBAN AMERICA. 3 Hours.

Problems associated with the growth, diversity, and complexity of urban areas and governmental solutions. Urban regimes, neighborhood governments, electoral politics, and intergovernmental relations. Useful for students interested in urban management.

POLS 3306. LEGISLATIVE ORGANIZATION AND PROCEDURE. 3 Hours.

Internal and external influences on the U.S. Congress: rules, norms, committees, seniority, political parties, presidents, media, constituents and interest groups.

POLS 3307. COMPARATIVE STATE AND LOCAL POLITICS. 3 Hours.

Comparison of state and local political institutions and policy choices in the United States. Useful for students interested in state and local government policy innovations.

POLS 3308. POLITICS OF A TEXAS CITY: ARLINGTON CITY POLITICS. 3 Hours.

Describes the political processes over a period of fifty years from the immediate post-World War II years to the present. The outlines of Arlington city government, its structure, the changes, and personalities that have shaped it and held power. This course does not satisfy area distribution requirements.

POLS 3309. HEALTH POLITICS, POLICY, AND ADVOCACY. 3 Hours.

Explores health politics, policy, and advocacy in modern American politics in areas such as health care costs, the opioid epidemic, natural disasters, smoking and vaping, vaccines, and scooters. Considers how stakeholders such as patients, advocacy groups, hospitals, medical professionals, and insurance companies influence policy-making, and how health care policies shape patient care.

POLS 3310. RESEARCH METHODS AND POLITICAL ANALYSIS. 3 Hours.

How to study politics scientifically, through proper research design, quantitative and qualitative methods. Students are familiarized with a statistical package to analyze political data, which will fulfill the computer competency requirement. Prerequisites: POLS 2311, POLS 2312, Math 1301 or Math 1302, and Math 1308. Exceptions as approved by the Department.

POLS 3311. PUBLIC OPINION. 3 Hours.

Measurement of attitudes, public opinion and ideology, the learning and influencing of public opinion, and expression of public opinion in elections and mass political movements. The logic and practice of survey research.

POLS 3312. INTRODUCTION TO PUBLIC POLICY ANALYSIS. 3 Hours.

The American policymaking process from issue creation to program administration and evaluation. Policy models and methods of policy analysis. Oriented toward providing students with skills as a professional policy analyst.

POLS 3313. MODERN CRITICS OF SOCIETY AND POLITICS. 3 Hours.

Designed for both political science and other majors. Focus on writers like Banfield, Galbraith, Marcuse, Reich, Revel, Skinner, and Toffler.

POLS 3315. VIOLENCE & REPRESSION IN THE AMERICAS. 3 Hours.

Examination of extra-legal behavior in the Americas (particularly Latin America). Topics include human rights violations, repression, insurrection, terrorism, and revolution. Analysis of different causes and outcomes of such political participation. Prerequisite: POLS 2311 and POLS 2312.

POLS 3317. MEXICAN POLITICS AND U.S.-MEXICO RELATIONS. 3 Hours.

Current economic and political systems of Mexico and relevant issues in U.S.-Mexico relations. Trade, immigration, economic dependency, energy, contraband, and other topics. Offered as MAS 3317 and POLS 3317; credit will be given in only one department.

POLS 3319. CAUSES OF WAR. 3 Hours.

Introduces students to the causes of war including rationalist explanations, genetic and evolutionary impulses, psychological motivations, and group and structural incentives.

POLS 3327. AMERICAN POLITICAL PARTIES. 3 Hours.

The development and characteristics of the American political party system, including systematic goals, formal organizations, membership recruitment, ideological and issue orientations, electoral and participatory functions, and linkages in the political system.

POLS 3328. INTRODUCTION TO MIDDLE EAST POLITICS. 3 Hours.

The historical developments that have led to the current political, social, economic, and security order of the Middle East, as well as the contemporary challenges facing the region and its inhabitants. Prerequisites: POLS 2311 and POLS 2312.

POLS 3330. JUDICIAL BEHAVIOR AND THE JUDICIAL PROCESS. 3 Hours.

Decision making, role perception, recruitment and socialization of judges, and the relationship between attitudes and values of justices and their decisions. The judicial process and how courts relate to the larger political system and society. Especially recommended for pre-law majors.

POLS 3331. CONTEMPORARY ISSUES IN CIVIL LIBERTIES. 3 Hours.

The status and function of civil liberties in modern America emphasizing problem areas of Equal Employment Opportunity, invasion of privacy by government, obscenity and pornography, and corporate and industrial assaults on civil liberties.

POLS 3333. JURISPRUDENCE. 3 Hours.

An empirical and normative examination of the nature of law, legal reasoning, and modern legal systems, particularly in the U.S. Other topics: the origins of American legal concepts as they have evolved from earlier legal systems in the Western world and a comparative treatment of legal systems in the world today. Especially recommended for pre-law majors.

POLS 3336. STATE COURTS. 3 Hours.

An examination of state judicial institutions emphasizing the role of processes in determining judicial behavior and the composition of state courts. Examines the role of law and courts, judicial system structures, and judicial policy-making in state government. Prerequisite: POLS 2311 and POLS 2312.

POLS 3390. HONORS COLLOQUIUM. 3 Hours.

An interdisciplinary course designed to meet the needs of advanced undergraduates in the honors program.

POLS 4101. MOOT COURT. 1 Hour.

An understanding of legal debate from the perspective of student competitions, discussions of legal doctrines, and legal research methods. Statewide competitions required. This course does not satisfy area distribution requirements. May be repeated for total of 3 hours credit.

POLS 4102. POLITICAL SCIENCE SERVICE LEARNING. 1 Hour.

Students will engage in service learning placements to supplement political science course work with the goal of civic education and community involvement. Placements will be coordinated with the Center for Community Service Learning and students will be required to fulfill not only placement hours, but also additional reflection in writing in consultation with the faculty advisor. This course does not satisfy area distribution requirements.

POLS 4300. POLITICS IN POPULAR CULTURE. 3 Hours.

Use of film and video film, video television, novels, music, or other social media in the presentation of political ideas, opinions, and facts. Techniques, subject matter, and alternative forms of presentation. This course does not satisfy area distribution requirements.

POLS 4303. PUBLIC ADMINISTRATION AND THE POLITICAL PROCESS. 3 Hours.

The relationships of public administration at all levels with democratic institutions, including its interactions in the formulation and execution of public policies with the chief executive, the legislative and judicial branches, political parties, clientele groups, and the public at large.

POLS 4310. RESEARCH IN POLITICAL SCIENCE. 3 Hours.

Provides a hands-on research experience in political science suitable for students who are pursuing research-related careers or who aspire to attend graduate school. Students will gain exposure to best practices in data collection and political analysis. Prerequisite: previous or concurrent enrollment in POLS 3310 and permission of instructor.

POLS 4311. INTERNATIONAL RELATIONS AND POLITICAL PSYCHOLOGY. 3 Hours.

Examines psychological approaches to international politics. Topics may include personality and leadership traits, cognitive and emotional approaches, genetic characteristics and evolution, group decision-making, elite attitudes, public opinion, and social identity.

POLS 4312. INTERNATIONAL ORGANIZATIONS. 3 Hours.

This course introduces students to the institutions, decision-making, and activities of the world's leading multilateral organizations. Examples include the United Nations, NATO, the African Union, and the European Union. Students will focus on how organizations respond to contemporary global challenges such as civil wars, terrorism, human rights abuses, and economic crises. The course also teaches students how to apply theories of international relations to real-world policy problems.

POLS 4316. WOMEN IN THE POLITICAL PROCESS. 3 Hours.

This course introduces students to the unique experiences of women in the political process, the impact of these experiences on the political system, and theories of gender and politics. Offered as POLS 4316 and WOMS 4316; credit will be granted only once.

POLS 4317. ETHNIC GROUP POLITICS IN THE UNITED STATES. 3 Hours.

The influence of selected major ethnic groups with special attention given to organizational development, participation in political parties, leadership, ideology, immigration policy, current issues, and relations with the dominant culture and other ethnic groups. Offered as AAST 4317 and POLS 4317; credit will be granted in only one department.

POLS 4318. POLITICS OF AFRICAN AMERICANS. 3 Hours.

The influence of African-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Civil Rights movement, current issues, and relations with other ethnic groups. Offered as AAST 4318 and POLS 4318; credit will be granted in only one department.

POLS 4319. POLITICS OF MEXICAN AMERICANS. 3 Hours.

The influence of Mexican-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Chicano Movement, current issues, and relations with other ethnic groups. Offered as MAS 4319 and POLS 4319; credit will be given in only one department.

POLS 4320. CIVIC ENGAGEMENT, CIVIL SOCIETY, AND COMMUNITY. 3 Hours.

The study of civic engagement, leadership, and political participation. The relationship of community to public policy, political elites and disenfranchised groups. May employ service learning.

POLS 4321. INTEREST GROUPS AND POLITICAL ADVOCACY. 3 Hours.

Examines the role and importance of organized interests in American politics and evaluates group influence and lobbying.

POLS 4322. ISSUES IN POLITICAL THEORY. 3 Hours.

Each time this course is offered it will focus on one particular issue central to the study of political theory for example, authority, justice, citizenship, methodology of the social sciences. May be repeated for credit when content varies.

POLS 4323. FEMINIST POLITICAL THOUGHT. 3 Hours.

Issues raised by the feminist critique of political theory; the exclusion of women from the political sphere until the 20th century; Marxist, liberal, and radical feminist political thought; alternative feminist conceptions of the political. Offered as POLS 4323 and WOMS 4323; credit will be granted only once.

POLS 4324. ELECTORAL BEHAVIOR. 3 Hours.

Major theories of candidate strategy and voter choice, including rational behavior and empirical democratic theory. Introduction to voting behavior analysis in contemporary elections.

POLS 4326. ELECTION STRATEGY AND CAMPAIGN MANAGEMENT. 3 Hours.

Strategies relating to elections and various aspects of managing campaigns, including the techniques of demographic survey, voting behavior analysis, opinion survey, issue research, and candidate research.

POLS 4327. POLITICAL IDEAS OF THE ANCIENT WORLD. 3 Hours.

Principal theorists and schools of political thought prior to 1500, with emphasis upon those making significant contributions to the political heritage of Western Europe.

POLS 4328. MODERN POLITICAL IDEAS. 3 Hours.

The development of political thought from Machiavelli to Marx. Emphasis on the Renaissance, Classical Liberalism, French Radicalism and Marxism.

POLS 4329. CONTEMPORARY CONTROVERSIES IN POLITICAL THEORY. 3 Hours.

Examination of twentieth-century approaches to political thought and central controversies in the field. Topics may include: liberal, conservative, and socialist theories; critical theory; communitarianism; postmodernism; feminism; and identity politics.

POLS 4330. THE U.S. PRESIDENCY. 3 Hours.

The U.S. Presidency, including sources of power, changes in the office over time, and the relationship between the individual and the institution.

POLS 4331. U.S. CONSTITUTIONAL LAW: GOVERNMENT POWER. 3 Hours.

U.S. Supreme Court decisions regarding the structure of government in the United States. Focus on Congress, the President, Federalism, and the relation of the judicial process to these topics. Recommended for pre-law majors.

POLS 4332. U.S. CONSTITUTIONAL LAW: FUNDAMENTAL RIGHTS. 3 Hours.

U.S. Supreme Court decision making involving the Bill of Rights and other fundamental rights. Especially recommended for pre-law majors.

POLS 4333. PRESIDENTIAL LEADERSHIP IN DOMESTIC POLICY MAKING. 3 Hours.

Explores the policy process from the perspective of the U.S. president, examining the president's influence through the policy stages. Prerequisite: POLS 2311 and POLS 2312.

POLS 4336. CONTEMPORARY UNITED STATES FOREIGN POLICY. 3 Hours.

Theories and analytical structure for understanding United States foreign policy. Policy examined from theoretical, structural, regional, and topical perspectives.

POLS 4340. FEDERAL SOCIAL POLICY. 3 Hours.

This course examines public policies, including Social Security, Medicare, Medicaid, and various public assistance programs that emerged from the federal government's attempts to create a "safety net" for American citizens beginning in the 1930s, and from attempts to confront poverty during the 1960s. This course also considers the importance of federal "tax expenditures" in prompting private actors to provide services, such as employer-sponsored health insurance. The course also examines attempts to alter, roll back, or expand the federal role in social policy over recent decades.

POLS 4350. HEALTH POLITICS AND POLICY. 3 Hours.

Debates over the role of government in providing access to health care have been a prominent feature of American politics for the past century. This course examines the politics of health care debates in America as well as major features of federal health policy. Prerequisite: POLS 2311 and POLS 2312.

POLS 4360. THEORIES OF INTERNATIONAL RELATIONS. 3 Hours.

Evaluates major theories, methodologies, and approaches to international relations in order to understand contemporary world affairs.

POLS 4361. THE POLITICAL ENVIRONMENT OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The domestic political systems of Russia and the other former Soviet republics. The communist state in retrospect. Development of political actors, institutions, and parties. Offered as POLS 4361 and RUSS 4361; credit will be given in only one department. Taught in English; for Russian language credit, research will be done in Russian.

POLS 4362. RUSSIA AND THE SUCCESSOR STATES TODAY. 3 Hours.

The metamorphosis of the Communist Party and the current political philosophies of the post-Soviet states. Examination of attitudes and self-perceptions of citizens of these states in the post-period. Emphasis is on area studies and culture. The course will be taught in English, but for Russian language credit; research will be done in the Russian language. May be repeated for credit as topics change. Offered as POLS 4362 & RUSS 4362. Credit will be granted in only one department.

POLS 4365. FOREIGN POLICIES OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The foreign policies of Russia and other former Soviet republics. Development of their policymaking structures and the major issues confronting them. Emphasis on Russia and the superpower relationship, European security and cooperation, relations with developing states, and the interactions of the former Soviet republics. Also listed as RUSS 4365; credit will be given in only one department.

POLS 4369. THE ARAB-ISRAELI CONFLICT. 3 Hours.

Explores the origins, development, and continuation of the Arab-Israeli and Israeli-Palestinian conflicts through personal stories, national narratives, public images, and popular discourses.

POLS 4370. INTERNATIONAL RELATIONS OF THE MIDDLE EAST. 3 Hours.

This course will focus on the international interactions among actors in the Middle East. Topics to be covered include: theoretical and conceptual approaches to understanding regional politics; main conflicts in the region; contemporary challenges and issues; and a survey examination of the foreign policies of select countries.

POLS 4371. THE POLITICS AND FOREIGN POLICY OF ISRAEL. 3 Hours.

This course will examine the domestic politics and foreign policies of Israel. The course will be divided into two sections. The first section will focus on the domestic institutions and politics of Israel, while the second section will focus on Israel's foreign policies and the impact of domestic politics on them. Topics to be covered include: the rise of Zionism; the pre-state period in Palestine; efforts at state-building and institutional development; domestic politics (including institutions, parties, electoral system); divisions in Israeli society; and determinants and examples of foreign policy. Prerequisite: POLS 2311 and POLS 2312.

POLS 4372. HUMAN SECURITY, VIOLENCE, AND SCARCITY. 3 Hours.

This course explores patterns of violence, scarcity, and norms in world politics, particularly as they pertain to the emerging paradigm of human security. This approach calls into question conventional notions of national and international security by focusing on the security of people rather than states. It explores challenges to basic human needs and desires which undermine the ability to be safe, free, and secure -- such as infectious disease, genocide, environmental degradation, migration, and transnational crime. It also examines international responses to such problems.

POLS 4373. POLITICS OF INTERNATIONAL LAW. 3 Hours.

Examines the role of law in the international system including international treaties and agreements, states' compliance with international law, non-governmental actors, international courts. Topics include force, human rights, crimes against humanity, protection of the environment, and terrorism.

POLS 4389. THE POLITICS OF NATIONAL MEMORY. 3 Hours.

An examination of power in Washington, focusing on what lies outside the Executive and Legislative branches. Students visit and study significant institutions and monuments in the city as windows into complex political and social issues. Enrollment is restricted to designated Archer Fellows.

POLS 4390. POLICYMAKING IN WASHINGTON. 3 Hours.

An analysis of the central role of Congress in shaping public policy. Emphasis on real-world policymaking. Students play the role of legislative assistants to members of Congress and produce analyses of the public policy issues. Enrollment is restricted to designated Archer Fellows. Prerequisite: POLS 2311 and POLS 2312.

POLS 4392. SPECIAL TOPICS IN POLITICAL SCIENCE. 3 Hours.

May be repeated for credit as topics change.

POLS 4393. PREPARING FOR CAREERS IN POLITICAL SCIENCE. 3 Hours.

Supervised employment in a government or government-related organization with the student performing duties related to the academic curricula of political science. Students are required to submit a term paper, case study, or an approved academic project related to the work performed. Work is generally graded pass/fail. A maximum of six semester hours of credit in Political Science Internship may be used to satisfy a political science elective requirement for graduation. Students must be classified as juniors or seniors, be political science majors or minors, and have a minimum 3.0 GPA in their major and overall. Majors must have completed 21 hours of political science; minors must have completed 12 hours of political science. Contact the Department for a complete description of requirements. Departmental consent required before enrollment.

POLS 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

POLS 4395. CONFERENCE COURSE READINGS IN POLITICAL SCIENCE. 3 Hours.

Designed for the advanced undergraduate student who is capable of independent study. An in-depth examination of one area of political science not necessarily covered in regular course work. May be repeated for credit when the subject matter varies, but only with permission of the department. Only two such courses will be counted on a student's degree plan. Prerequisites: permission of the undergraduate advisor; appropriate previous coursework; written consent of the instructor. Students must be Political Science majors or minors, have a minimum of 60 credit hours/junior status, have a 3.0 grade point average, and have completed at least 9 hours of Political Science.

POLS 4691. ARCHER PROGRAM INTERNSHIP. 6 Hours.

One-semester work experience in Washington, DC carried out during the student's tenure of an Archer Fellowship. The internship is custom-designed with the assistance of the director of the Archer Program based on the student's academic and professional goals. Enrollment is restricted to designated Archer Fellows. Prerequisite: POLS 2311 and POLS 2312.

POLS 5197. MASTER'S COMPREHENSIVE EXAMINATION. 1 Hour.

Required of all non-thesis Master of Arts students in the semester of their graduation. Graded P/F/R.

POLS 5300. AMERICAN GOVERNMENT AND POLITICS. 3 Hours.

A survey of the major theories and subfields in the study of American politics. Readings comprise a representation of scholarship illustrating a variety of substantive and methodological approaches.

POLS 5301. JUDICIAL POLITICS AND THE U.S. SUPREME COURT. 3 Hours.

This course focuses on judicial decision-making and behavior. While the entire American court system will be considered, primary attention will be given to the U.S. Supreme Court and constitutional issues.

POLS 5302. BUREAUCRATIC LEADERSHIP: TRENDS IN PUBLIC ADMINISTRATION AND POLICY MANAGEMENT. 3 Hours.

Recent literature in organizational theory, government restructuring, and policy management problems.

POLS 5303. COMPARATIVE POLITICAL SYSTEMS. 3 Hours.

Theories, concepts, and methods that dominate modern comparative political analysis. The state of the discipline and controversies in the comparative method are evaluated.

POLS 5305. TOPICS IN POLITICAL THEORY. 3 Hours.

This course will cover both historical and contemporary topics central to the discipline of political theory. It will consider the major figures in the field as well as themes such as citizenship, democracy, freedom, and authority. May be repeated for credit as the topic changes.

POLS 5310. ANALYZING POLITICS: RESEARCH DESIGN AND METHODS. 3 Hours.

This course introduces students to the practice of analyzing politics. It begins with a foundation in research design, covering topics such as how to develop testable hypotheses, measure concepts, and identify causal relationships. The course then takes a hands-on review of a range of tools used by political scientists—from basic data analysis and statistics, to experiments, elite interviews, content analysis, surveys, and the study of networks.

POLS 5311. CAMPAIGNS AND ELECTIONS. 3 Hours.

Describes important trends in modern campaigns and elections practices, focusing on contemporary American elections, including campaign finance, voter turnout, campaign advertising, and voter choices. Class presentations, a short research paper, and journal article readings.

POLS 5312. AGENDAS, INFORMATION, AND DECISION-MAKING IN PUBLIC POLICY. 3 Hours.

This course examines the role of organized interests in American politics and policymaking. It explores topics such as group formation and organization, strategies of political advocacy, access to decision-makers, and influence in the policy process.

POLS 5315. PUBLIC OPINION. 3 Hours.

Describes the development of survey research and commonly-encountered problems in surveys. Focuses most heavily on the contemporary practice of public opinion research, particularly in the American setting. Class presentations, a short research paper, and journal article readings.

POLS 5316. PUBLIC LEADERSHIP: RACE, ETHNICITY, & GENDER. 3 Hours.

Study of leadership theories, skills and traits, with focus on the intersections of race, ethnicity, and gender on public leadership in the public arena.

POLS 5317. RACE AND ETHNICITY IN AMERICAN POLITICS. 3 Hours.

Explores the political behavior of racial and ethnic groups in the U.S. as well as the contemporary influence of race and ethnicity on American political institutions and public policy debates.

POLS 5318. WOMEN IN THE POLITICAL PROCESS. 3 Hours.

This course examines women and gender in the political process, exploring various theoretical and methodological approaches helpful in studying gender and politics.

POLS 5319. CONGRESSIONAL BEHAVIOR. 3 Hours.

This course addresses several major questions regarding the nature of Congress as an institution, the behaviors of its members, and the role Congress plays in shaping public policy and the general nature of a representative democracy. Students are expected to have the ability to comprehend readings that are heavily quantitative. Course requirements will include weekly writings, a research paper and exams.

POLS 5320. THE AMERICAN PRESIDENCY. 3 Hours.

An overview course on the U.S. Presidency, exploring the institution as well as its relationship to other branches and political actors.

POLS 5321. THE PRESIDENCY AND DOMESTIC POLICY. 3 Hours.

This course examines presidential and domestic policy making, exploring how the president makes policy, focusing on theories of presidential leadership, White House organization and presidential-congressional interactions.

POLS 5322. SEPARATION OF POWERS IN AMERICAN POLITICAL DEVELOPMENT. 3 Hours.

Theories behind institutional design and the historical development of the executive, legislative, and judicial branches in the United States. Emphasis is placed on interactions of these institutions of government and current separation of powers controversies.

POLS 5323. STATE COURT SYSTEMS. 3 Hours.

Examination of the major theories of judicial politics and public law applied to the state court level. Topics include attention to the institutional, strategic, and attitudinal perspectives of judicial behavior.

POLS 5324. PUBLIC POLICY: ISSUES AND ANALYSIS. 3 Hours.

This course examines the important role of analysis in the policy process. It provides an understanding of the major actors and institutions involved in policymaking, explores major theories of policy change, and equips students with the skills necessary to conduct effective public policy analysis.

POLS 5325. STATE POLITICS. 3 Hours.

This course surveys the substantial literature and research programs in the study of state politics and policy.

POLS 5326. STATE/LOCAL GOVERNMENT POLICYMAKING. 3 Hours.

Focus on policy problems. Emphasis is on trends in state policy, interstate policy innovation and diffusion, and the effects of federal programs on state policy choices.

POLS 5327. URBAN POLICYMAKING AND ADMINISTRATION. 3 Hours.

Focus on the influence of economic, political, institutional, and organizational factors on urban policymaking and administration. A variety of regime and power structure models facilitate the analysis of urban policymaking.

POLS 5328. PUBLIC POLICY AND MEXICAN AMERICAN COMMUNITIES. 3 Hours.

Focus on the public policy process and the limited role Mexican Americans have had in national and state (TX) policymaking. Select topic areas are utilized to focus on state actors, issues, allocation of resources, and the power structure for analytical purposes.

POLS 5329. PUBLIC BUDGETING. 3 Hours.

The concepts, processes, and policy impacts of taxation and public budgeting. Introduction to current research techniques, budgetary issues, and the relevant political economy literature.

POLS 5330. ENERGY AND THE ENVIRONMENT. 3 Hours.

Analysis of the politics, economics, and administration of energy and environmental policies in the United States.

POLS 5331. POLITICAL SYSTEMS OF EAST ASIA. 3 Hours.

Comparative analysis of the political institutions and processes of China and Japan, with emphasis on the aspects of political development.

POLS 5332. PARADIGMS AND PROBLEMS IN INTERNATIONAL RELATIONS. 3 Hours.

This course surveys the major theoretical approaches in the field of International Relations. Students will learn to apply these paradigms to contemporary global issues such as conflict, trade, nuclear proliferation, terrorism, and protection of human rights.

POLS 5333. IDENTITY AND POLITICS IN THE MIDDLE EAST. 3 Hours.

Deeper examination of processes of state building and political development; state-society relations; Arabism; authoritarianism and democratization; oil and economic issues; Islamist politics; the role of transnational ideas.

POLS 5334. VIOLENCE AND DEPRIVATION IN WORLD POLITICS. 3 Hours.

Focuses on theoretical frameworks, empirical analysis, and policy relevance of myriad threats to individuals and communal groups. Examples include: human rights, failed states, violence, health issues, slavery and migration, environmental security.

POLS 5335. LATIN AMERICAN POLITICS. 3 Hours.

Designed to give students knowledge of the political development of Latin America by first examining general topics and then analyzing events in specific countries. Utilizes themes and concepts that are universal to all Latin American nations, but also stresses the different paths to political development that have been taken in each of these countries.

POLS 5336. REPRESSION AND REVOLUTION IN LATIN AMERICAN. 3 Hours.

Examines issues of political repression and revolutionary participation in Latin America. Topics range from human rights violations to coups and revolutions.

POLS 5337. THE POLITICAL SYSTEM OF THE RUSSIAN FEDERATION. 3 Hours.

This course emphasizes the analytical means by which researchers approach the Russian Federation in the post-Soviet period. Russia is considered from institutional, cultural, rationalist, and economic perspectives to develop a comprehensive orientation about the nature and scope of Russian politics.

POLS 5338. AMERICAN FOREIGN POLICY. 3 Hours.

Evaluation of some of the primary theories and models used in explaining American Foreign Policy. The course attempts to bridge the gaps that exist between theory and reality through approaches such as realism, neo-realism, deterrence, and others.

POLS 5339. ISRAELI IDENTITY AND THE ARAB-ISRAELI CONFLICT. 3 Hours.

This course will explore the deeper threads of Israeli identity, and how these impact Israeli policy toward the Arab-Israeli conflict. Topics to be covered include: diverse and clashing identities (e.g., Jewish, democratic, Middle Eastern, Israeli); how identity clashes have played out in politics; outlines of Israeli foreign policy; specific policies toward the Palestinians.

POLS 5341. COGNITION, EMOTION, AND EVOLUTION IN INTERNATIONAL RELATIONS. 3 Hours.

This course focuses on psychological approaches to international relations and examines how these perspectives advance the study of world politics. Approaches to be studied include: behavioral traits, trust, risk, values, personality, leadership, group decision-making, emotions, and evolutionary dynamics. These will be applied to different policy areas, including U.S. foreign policy, the use of force, and international cooperation.

POLS 5342. INTERNATIONAL ORGANIZATIONS. 3 Hours.

This course describes the institutions, decision-making and activities of the world's leading international organizations to establish an understanding of the role of international organizations in managing contemporary global problems.

POLS 5368. Health Politics and Policy. 3 Hours.

Course will survey the political history of the health care debate in the United States as well as major features of federal health policy.

POLS 5369. SOCIAL POLICY. 3 Hours.

This course examines the role of the federal government relating to social policy as a central theme of contemporary American politics. Issues surrounding the federal government's attempt to create a social safety net and issues such as poverty will be confronted, as well as the central role of tax expenditures and attempts to roll back social policies.

POLS 5380. TOPICS IN U.S. POLITICS. 3 Hours.

This course will focus on the specific aspects of U.S. governing institutions, processes, and behavior. A single aspect of U.S. politics will be examined in a given semester. (May be repeated for credit when topics vary.).

POLS 5381. TOPICS IN COMPARATIVE POLITICS. 3 Hours.

This course will focus on the specific aspects of comparative politics. (May be repeated for credit when topics vary.).

POLS 5382. TOPICS IN PUBLIC LAW AND JURISPRUDENCE. 3 Hours.

The role of U.S. national and state courts in policy making, constitutional law, and the examination of the evolution and nature of law in the United States. (May be repeated for credit when topics vary.).

POLS 5383. TOPICS IN PUBLIC ADMINISTRATION AND POLICY MAKING. 3 Hours.

U.S. national policy making and program management, state and urban policy making and administration. (May be repeated for credit when topics vary.).

POLS 5384. TOPICS IN INTERNATIONAL RELATIONS. 3 Hours.

This course will focus on a specific issue-area of international relations and world politics. (May be repeated for credit when topics vary.).

POLS 5391. CONFERENCE COURSE IN POLITICAL SCIENCE. 3 Hours.

Research and reading in a specialized field under the direction of a member of the graduate faculty. Graded P/F/W.

POLS 5392. INSIDE WASHINGTON: POLICYMAKING FROM THE GROUND UP. 3 Hours.

This course provides students with an overview of the U.S. federal policymaking process and the various public/private stakeholders and institutions that participate in this process. Specifically, the course focuses on three key elements of federal policymaking: separation of powers and original constitutional intent, influencing federal policy, and creating effective advocacy strategies. Students will examine a sampling of the extensive literature on political theory/philosophy, political institutions, political behavior, public policy and public administration. Students will also meet regularly with practitioners, such as officials from Congress, the White House, executive branch agencies, think tanks, organized interest groups, media/communications, and lobbying firms.

POLS 5393. ARCHER CENTER WASHINGTON INTERNSHIP. 3 Hours.

This course consists of an internship in a governmental or non-governmental organization in Washington, D.C. The student is expected to work full-time (40 hours a week) at the internship, which may be paid or unpaid. Students are responsible for seeking and selecting their internships. The Archer Center does not guarantee any internship placements, but Archer Center faculty and staff will provide students with information about internship opportunities and advice about placements. The Archer Center faculty meet regularly with students to debrief and to integrate this practical training with other lessons in professional development.

POLS 5394. ARCHER CENTER INDEPENDENT STUDY AND RESEARCH. 3 Hours.

This course is tailored to each student's graduate program of study. An Archer Center faculty member will work independently with each student to develop a research project that is designed to advance the student's academic and research goals. The project will align with the requirements of the student's graduate degree.

POLS 5398. THESIS. 3 Hours.

Original research designed to augment existing studies of problems or topics related to one of the major fields of study.

POLS 5698. THESIS. 6 Hours.

Original research designed to augment existing studies of problems or topics related to one of the major fields of study. POLS 5398 graded R/F only; POLS 5698 graded P/F/R.

Political Science - Graduate Programs

Overview

The program leading to a Master of Arts degree in Political Science emphasizes a variety of skills in preparation for many different types of employment. Students develop the ability to conduct research and critically analyze complex information, understand decision-making processes, present their findings and conclusions in a succinct and easily-understood manner, think creatively to resolve problems and concerns, and communicate information clearly. These skills are considered valuable in a wide range of jobs and careers, including in: the private sector, non-profit and non-governmental organizations, education, government, research and policy analysis, media, and international affairs. In addition, the Political Science MA is often used as a stepping stone for enrollment in business and law degrees. Finally, the Department of Political Science also endeavors to equip students with the research techniques and substantive background for coursework undertaken beyond the master's level.

Admissions

The program is committed to a holistic admissions approach. As a result, decisions on whether to admit or deny an application include: grade point averages, letters of recommendation, personal statements, advanced degrees, graduate courses taken as a degreed student or in another program, and professional work experience. The major purpose of the admissions criteria is to promote access to our program, but maintain standards that will enable the department to determine if the applicant demonstrates the requisite skill level to master the requirements of the program.

Admission to the MA program in political science is based upon the completion of the general admission requirements of the Graduate School. Applicants are required to submit all official transcripts, a personal statement, and three (3) letters of recommendation. The department will review the application package in its entirety. The package is evaluated to determine if a student has achieved a 3.00 grade point average (GPA) in the last 60 hours of their undergraduate work as calculated by the Graduate School, and meets other admission requirements. If a student has already earned an advanced degree, the department will evaluate the student's academic performance in obtaining that degree equally with the undergraduate performance. International students must meet or exceed the minimum university standard on the TOEFL (550 for paper examination, 213 for computer examination), TOEFL iBT (total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section), TSE (40), or the IELTS (6.5).

Several factors matter for a decision to accept or deny an applicant. To this end the department has three categories of acceptance: unconditional admission, probationary admission, and provisional admission.

Application Requirements

All applications must include the following four components. All four will be considered, without specific weights, in the decision to accept or deny.

1. A bachelor's degree from an accredited general or specific program. A bachelor's degree in political science, however, is not required.
2. A copy of all university and college transcripts.
3. A written personal statement (200 words) explaining the applicant's interest and motivation in studying for a graduate degree in political science.
4. Three letters of recommendation (including at least two from university/college faculty) that favorably assess the applicant's potential success in a graduate program and in the field of political science. Letters must be mailed directly from the recommenders to the Graduate Adviser of political science.

Unconditional Admission

An applicant may be accepted for unconditional admission if all of the above components of the application package are properly submitted, and all three of the following criteria are met and all three give strong indication of likely success in the program.

1. An undergraduate GPA of 3.00 or greater (as calculated by the Graduate School) in the last 60 credit hours of completing an undergraduate B.A. or B.S. degree from an accredited institution (verified by the Graduate School from official transcripts from each college or university previously attended).
2. Adequate preparation and satisfactory performance in political science courses or courses in related disciplines.
3. Three letters of recommendation (including at least two from university/college faculty) that indicate satisfaction with the applicant's work and demonstrate a strong likelihood for success in the program and in the field of political science.

Probationary Admission

Students who do not qualify for unconditional admission may be considered for probationary admission if they satisfy any two of the three requirements for unconditional admission listed above as well as demonstrate potential for success in line with the necessary application materials. Students with a reported grade point average below 2.70, however, will not be eligible for probationary admission. Being admitted on probationary status means that the student will be able to take graduate level classes, but the student must earn a B or better in the first 12 hours of graduate coursework at UT Arlington. This regulation will be strictly enforced.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline, but otherwise appears to meet admission requirements, may be granted provisional admission. Provisionally admitted students must adequately satisfy any incomplete documentation by the end of the semester in which they are admitted. If the applicant fails to do so, the department may then reclassify the applicant's admission status as probationary or ask the student to leave the program.

Deferral

A deferred decision may be granted when a file is incomplete or when a denial decision is not appropriate.

Denial

An application will be denied if it does not meet the criteria listed above, does not demonstrate potential for success, or the applicant's grade point average is below 2.70.

Fast Track Program

The Fast Track program allows outstanding senior undergraduate Political Science (POLS) students to take two or three graduate courses (5000-level courses) to replace six or nine credit hours of advanced POLS undergraduate courses (3000- or 4000-level courses). The credit hours earned in these graduate courses can then be applied to both the Bachelor of Arts (BA) and to the Master of Arts (MA) in Political Science. Those who successfully complete the program will be automatically admitted to the Graduate School. They will not be required to take any qualifying test, complete an application for admission to the Graduate School, arrange for letters of reference, or pay an application fee. This enables students to complete their MA degree in a shorter time period.

Applying to the POLS Fast Track Program

Undergraduate students apply to the Department of Political Science by completing a Fast Track application form available from the POLS academic adviser. Students will be notified by the Department of their acceptance into the Fast Track program.

Unconditional Admission

1. The student must be within 30 hours of completing a BA in Political Science at UTA.
2. The student must have completed 30 hours of coursework at UTA.
3. The student must have an overall GPA of at least 3.3 in all coursework at all schools and an overall GPA of at least 3.3 in all coursework completed at UTA.
4. The student must have an overall GPA of at least 3.5 in all POLS courses completed at UTA.
5. The student must have completed 12 credit hours of the following specific undergraduate POLS courses, with a GPA of at least 3.5 in these courses. (Courses from other universities or colleges that cover the same or similar material cannot replace any of these specific UTA courses.)
 - POLS 2312 State and Local Government or its equivalent from another institution
 - POLS 3310 Analyzing Politics
 - POLS 3302 Introduction to International Relations, POLS 3303 Introduction to Public Administration, POLS 3304 Introduction to Comparative Politics, POLS 3305 Government in Urban America, POLS 3307 Comparative State and Local Politics, POLS 3311 Public Opinion, POLS 3312 Introduction to Public Policy Analysis, OR POLS 3333 Jurisprudence
 - One substantive 4000-level POLS course from any of the area concentrations (excluding internships and conference or directed readings courses).

Provisional Admission

A student may gain provisional admission if, by the semester in which application is made, he or she has already completed 3 out of the 4 required POLS courses (listed above) with a GPA of at least 3.5 in them, with the 4th course to be completed in the semester of application. All other requirements above must be met. Provisional admission will be changed to unconditional admission upon satisfactory completion of remaining requirements. Students failing to meet all requirements at the end of their semester of application will be removed from the Fast Track program. Any credits earned prior to removal from the program will be applied to the undergraduate degree only. None of the other benefits of the Fast Track program will apply. Provisionally admitted students who have been removed from the program may subsequently apply to graduate programs via the normal application process, paying all fees and meeting all relevant admission criteria. Admission will not be automatic as it will be subject to the normal admission practices of the Department of Political Science and of the Office of Graduate Studies.

Denial

Students who do not meet the requirements set out shall be denied admission to the Fast Track program. They may still apply to the graduate program through the regular application process. Admission will not be automatic as it will be subject to the normal admission practices of the Department of Political Science and of the Office of Graduate Studies.

Good Standing

In order to remain in the Fast Track program, students must meet the following requirements:

1. Students must maintain an overall GPA of at least 3.0 and must earn grades of B or better in all Fast Track-approved graduate courses that will be used to satisfy undergraduate and graduate degree requirements of the Fast Track program.
2. Students must enroll in at least 2 graduate courses prior to receiving their bachelor's degree, and receive at least a B in each course.

Students who, at any time, do not meet these requirements will be obliged to leave the Fast Track program. Any graduate credits earned will be applied only to the undergraduate degree, and none of the other benefits of participation in the Fast Track program will apply. They may apply to the MA program as a regular student after receiving their BA.

Fellowships

Fellowships, when available, will be awarded on a competitive basis. Fellowships are selected on the basis of the following criteria. Please see the Graduate Adviser for more information.

- Candidates must be enrolled full time in the department of political science (at least 9 hours of courses per semester).
- A minimum undergraduate GPA of 3.00 in the last 60 undergraduate hours, as calculated by the Graduate School, and unconditional admission status, or a minimum GPA of 3.25 in political science graduate hours completed.
- Transcript of a completed bachelor's degree in political science (or appropriate related field) from an accredited institution.
- Three letters of recommendation. These letters may be the same submitted for admission.
- A written statement explaining the applicant's reasons for graduate study in political science.

Master's Degree Requirements

The non-thesis degree plan requires 36 hours of coursework, including three hours of POLS 5310 ANALYZING POLITICS: RESEARCH DESIGN AND METHODS, and a minimum of two courses in each of the first two area concentrations: American Politics and Policymaking, and International Studies.

The thesis degree plan requires 24 hours of coursework, including three hours of POLS 5310 ANALYZING POLITICS: RESEARCH DESIGN AND METHODS. Of the remaining 21 hours, a minimum of one course must be taken in each of the first two area concentrations: American Politics and Policymaking, and International Studies.

American Politics and Policymaking

POLS 5300	AMERICAN GOVERNMENT AND POLITICS	3
POLS 5301	JUDICIAL POLITICS AND THE U.S. SUPREME COURT	3
POLS 5302	BUREAUCRATIC LEADERSHIP: TRENDS IN PUBLIC ADMINISTRATION AND POLICY MANAGEMENT	3
POLS 5311	CAMPAIGNS AND ELECTIONS	3
POLS 5312	AGENDAS, INFORMATION, AND DECISION-MAKING IN PUBLIC POLICY	3
POLS 5315	PUBLIC OPINION	3
POLS 5316	PUBLIC LEADERSHIP: RACE, ETHNICITY, & GENDER	3
POLS 5317	RACE AND ETHNICITY IN AMERICAN POLITICS	3
POLS 5318	WOMEN IN THE POLITICAL PROCESS	3
POLS 5319	CONGRESSIONAL BEHAVIOR	3
POLS 5320	THE AMERICAN PRESIDENCY	3
POLS 5321	THE PRESIDENCY AND DOMESTIC POLICY	3
POLS 5322	SEPARATION OF POWERS IN AMERICAN POLITICAL DEVELOPMENT	3
POLS 5323	STATE COURT SYSTEMS	3
POLS 5324	PUBLIC POLICY: ISSUES AND ANALYSIS	3
POLS 5325	STATE POLITICS	3
POLS 5326	STATE/LOCAL GOVERNMENT POLICYMAKING	3
POLS 5327	URBAN POLICYMAKING AND ADMINISTRATION	3
POLS 5328	PUBLIC POLICY AND MEXICAN AMERICAN COMMUNITIES	3
POLS 5329	PUBLIC BUDGETING	3

POLS 5330	ENERGY AND THE ENVIRONMENT	3
POLS 5368	Health Politics and Policy	3
POLS 5369	SOCIAL POLICY	3
POLS 5380	TOPICS IN U.S. POLITICS	3
POLS 5382	TOPICS IN PUBLIC LAW AND JURISPRUDENCE	3
POLS 5383	TOPICS IN PUBLIC ADMINISTRATION AND POLICY MAKING	3
International Studies		
POLS 5303	COMPARATIVE POLITICAL SYSTEMS	3
POLS 5331	POLITICAL SYSTEMS OF EAST ASIA	3
POLS 5332	PARADIGMS AND PROBLEMS IN INTERNATIONAL RELATIONS	3
POLS 5333	IDENTITY AND POLITICS IN THE MIDDLE EAST	3
POLS 5334	VIOLENCE AND DEPRIVATION IN WORLD POLITICS	3
POLS 5335	LATIN AMERICAN POLITICS	3
POLS 5336	REPRESSION AND REVOLUTION IN LATIN AMERICAN	3
POLS 5337	THE POLITICAL SYSTEM OF THE RUSSIAN FEDERATION	3
POLS 5338	AMERICAN FOREIGN POLICY	3
POLS 5339	ISRAELI IDENTITY AND THE ARAB-ISRAELI CONFLICT	3
POLS 5341	COGNITION, EMOTION, AND EVOLUTION IN INTERNATIONAL RELATIONS	3
POLS 5342	INTERNATIONAL ORGANIZATIONS	3
POLS 5381	TOPICS IN COMPARATIVE POLITICS	3
POLS 5384	TOPICS IN INTERNATIONAL RELATIONS	3
Data Analysis		
POLS 5305	TOPICS IN POLITICAL THEORY	3
POLS 5310	ANALYZING POLITICS: RESEARCH DESIGN AND METHODS	3

Students should consult the Political Science Graduate Student Handbook for regulations on transfer courses, undergraduate courses, conferences, internships, and special courses. It is recommended that students complete at least one general field seminar (POLS 5300, POLS 5301, POLS 5302, POLS 5303, POLS 5332) prior to taking the topics courses. See the Graduate Advisor for more detail.

All candidates for the degree of Master of Arts with a major in political science must pass a final examination, written, oral, or both written and oral. See the Department of Political Science Graduate Student Handbook or the Graduate Adviser for more details. In the event of failure of the final examination, the student may petition the Committee on Graduate Studies to retake the examination on a date no sooner than 60 days after the first examination. Students will not be permitted more than one reexamination after failure of the initial examination.

International Studies Option

The International Studies option of the Master of Arts program in political science emphasizes the study of comparative politics and international relations within the framework of political science. This option requires 12 hours of coursework in International Studies. Upon satisfying the requirements for this option, students will receive a letter of completion. Completion will not be reflected on student transcripts.

U.S. Political Institutions and Processes Option

The U.S. Political Institutions and Processes option of the Master of Arts program in political science emphasizes political behavior and processes and public law and jurisprudence within the framework of political science. This option requires 12 hours of coursework focused on American politics and/or public law and jurisprudence. Upon satisfying the requirements for this option, students will receive a letter of completion. Completion will not be reflected on student transcripts.

Dual Degree Program

Students in political science may participate in a dual degree program whereby they can earn a Master of Arts in political science and a Master of Arts in another program, such as criminal justice or sociology. By participating in a dual degree program, students can apply a number of semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately. The number of hours which may be jointly applied ranges from nine to 18 hours, subject to the approval of Graduate Advisers from both programs. To participate in the dual degree program, students must make separate application to each program and must submit a separate program of work for each degree. Those interested in a dual degree program should consult the appropriate Graduate Adviser(s) for further information on course requirements. See also the statement on "Dual Degree Programs" in the general information section of this catalog.

Political Science - Undergraduate Programs

Overview

The goal of the political science undergraduate curriculum is to maximize students' capacities to analyze and interpret political events and governmental processes. In addition to acquiring general knowledge about government and political behavior, students also learn the analytical skills relevant to particular political systems (their own and others'), and to problems of most immediate consequence and concern to them.

The four major objectives of the department's curriculum are to:

- Identify and describe political structures, rules, behaviors and environments which shape political action.
- Explain and employ statistical and methodological techniques to analyze information.
- Identify, comprehend, and apply comparative, theoretical, or conceptual approaches to actors and their policies.
- Develop the ability to analyze, synthesize, and evaluate political phenomena.

The major courses are designed to present a coherent portrait of the discipline. Students begin with a general introduction to national, state, and local politics followed by required courses in political methodology and political theory. Finally, students are exposed to at least four major areas of the discipline. The department also offers options for students who desire a concentration in pre-law, public policy/administration, or international studies. Students may choose any 18 hours (6 advanced) for a minor. Those who want a specialization may concentrate courses in areas of public law; policy and administration; comparative and international politics; American national government; political parties, group politics, and elections; or political theory.

The political science student is exposed to a multifaceted and highly regarded faculty, many of whom have received regional and national honors for teaching, service, and research. Upon graduation, UT Arlington political science majors are prepared to compete for a wide variety of jobs in both the private and public sectors.

Admission to Department of Political Science Degree Programs

Students should have completed 30 hours of core with 30 hours at UT Arlington, or 40 hours of core with 12 hours at UT Arlington with an overall GPA greater than 2.0. Students may be accepted as pre-political science majors if the above standards are not met.

Teacher Certification

Students interested in Texas Teacher Certification should consult the College of Education section of this catalog for the most recent changes in requirements regarding admission to Teacher Education, completion of University programs in preparation for certification, and eligibility for certification after graduation.

Oral Communication and Computer Use Competencies

Students majoring in political science are required to demonstrate computer use and oral communication competencies. Computer use proficiency can be demonstrated by one of the following:

1. successful completion of POLS 3310 RESEARCH METHODS AND POLITICAL ANALYSIS; or
2. successful completion of CSE 1301 COMPUTER LITERACY or INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING; or
3. successful completion of other courses approved by the Undergraduate Assembly; or
4. passing the University computer use competency exam.

Oral communication proficiency can be demonstrated by one of the following:

COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	3
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	3
COMS 3315	COMMUNICATION FOR EDUCATORS	3

1. successful completion of specific political science courses approved by the department; or
2. successful completion of one of the following:
3. successful completion of other courses approved by the Undergraduate Assembly.

Students should discuss these options with their undergraduate advisor who may also provide a list of other courses approved by the University to meet these requirements.

Requirements for a Bachelor of Arts Degree in Political Science

All students who wish to earn a Bachelor of Arts degree in Political Science must complete the following coursework. In completing this coursework, they will satisfy the University's core curriculum requirements.

Pre-Professional Courses		
General Core Requirements (p. 50)		42
UNIV 1131	STUDENT SUCCESS (or UNIV 1101)	1
Recommended Core Requirements		
ENGL 1301	RHETORIC AND COMPOSITION I (or suitable substitute)	3
ENGL 1302	RHETORIC AND COMPOSITION II (or suitable substitute)	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
MATH 1302	COLLEGE ALGEBRA	3
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
POLS 2311	GOVERNMENT OF THE UNITED STATES ¹	3
POLS 2312	STATE AND LOCAL GOVERNMENT ¹	3
Social or cultural anthropology; archaeology; social/political/cultural geography; economics; criminal justice; psychology; sociology; women's studies courses cross-listed with these departments and/or Introduction to Women's Studies (WOMS 2310). This fulfills the Social/Cultural studies requirement		
Program Requirements Six hours of English literature as ENGL 2303, ENGL 2309, or ENGL 2319 or by approval 6		
Modern and Classical Languages: 1441, 1442		8
Sufficient electives to give the total number of hours required for the degree		
Professional Courses		
Major		
POLS 2311	GOVERNMENT OF THE UNITED STATES ¹	3
POLS 2312	STATE AND LOCAL GOVERNMENT ¹	3
POLS 3310	RESEARCH METHODS AND POLITICAL ANALYSIS (or equivalent)	3
Select one of the following in political thought:		
POLS 3313	MODERN CRITICS OF SOCIETY AND POLITICS	
POLS 4322	ISSUES IN POLITICAL THEORY	
POLS 4323	FEMINIST POLITICAL THOUGHT	
POLS 4327	POLITICAL IDEAS OF THE ANCIENT WORLD	
POLS 4328	MODERN POLITICAL IDEAS	
POLS 4329	CONTEMPORARY CONTROVERSIES IN POLITICAL THEORY	
Or equivalent		
Select at least one course from any four of the five areas listed:		12
Area I Political Behavior and Processes:		
POLS 3306	LEGISLATIVE ORGANIZATION AND PROCEDURE	
POLS 3307	COMPARATIVE STATE AND LOCAL POLITICS	
POLS 3311	PUBLIC OPINION	
POLS 3327	AMERICAN POLITICAL PARTIES	
POLS 4316	WOMEN IN THE POLITICAL PROCESS	
POLS 4317	ETHNIC GROUP POLITICS IN THE UNITED STATES	
POLS 4318	POLITICS OF AFRICAN AMERICANS	
POLS 4319	POLITICS OF MEXICAN AMERICANS	
POLS 4324	ELECTORAL BEHAVIOR	
POLS 4326	ELECTION STRATEGY AND CAMPAIGN MANAGEMENT	
POLS 4330	THE U.S. PRESIDENCY	
POLS 4333	PRESIDENTIAL LEADERSHIP IN DOMESTIC POLICY MAKING	
Area II Comparative Politics:		
POLS 3301	INTRODUCTION TO GLOBAL ISSUES	3
POLS 3304	INTRODUCTION TO COMPARATIVE POLITICS	

POLS 3317	MEXICAN POLITICS AND U.S.-MEXICO RELATIONS	
POLS 3328	INTRODUCTION TO MIDDLE EAST POLITICS	
POLS 4361	THE POLITICAL ENVIRONMENT OF RUSSIA AND THE SUCCESSOR STATES	
POLS 4362	RUSSIA AND THE SUCCESSOR STATES TODAY	
POLS 4369	THE ARAB-ISRAELI CONFLICT	3
POLS 4371	THE POLITICS AND FOREIGN POLICY OF ISRAEL	
Area III International Politics:		
POLS 3302	INTRODUCTION TO INTERNATIONAL RELATIONS	3
POLS 4311	INTERNATIONAL RELATIONS AND POLITICAL PSYCHOLOGY	3
POLS 4312	INTERNATIONAL ORGANIZATIONS	3
POLS 4336	CONTEMPORARY UNITED STATES FOREIGN POLICY	
POLS 4360	THEORIES OF INTERNATIONAL RELATIONS	
POLS 4365	FOREIGN POLICIES OF RUSSIA AND THE SUCCESSOR STATES	
POLS 4370	INTERNATIONAL RELATIONS OF THE MIDDLE EAST	
POLS 4372	HUMAN SECURITY, VIOLENCE, AND SCARCITY	3
POLS 4373	POLITICS OF INTERNATIONAL LAW	3
Area IV Public Law:		
POLS 3330	JUDICIAL BEHAVIOR AND THE JUDICIAL PROCESS	
POLS 3331	CONTEMPORARY ISSUES IN CIVIL LIBERTIES	
POLS 3333	JURISPRUDENCE	
POLS 3336	STATE COURTS	3
POLS 4331	U.S. CONSTITUTIONAL LAW: GOVERNMENT POWER	
POLS 4332	U.S. CONSTITUTIONAL LAW: FUNDAMENTAL RIGHTS	
Area V Public Administration and Policy Studies:		
POLS 3303	INTRODUCTION TO PUBLIC ADMINISTRATION	
POLS 3305	GOVERNMENT IN URBAN AMERICA	
POLS 3309	HEALTH POLITICS, POLICY, AND ADVOCACY	3
POLS 3312	INTRODUCTION TO PUBLIC POLICY ANALYSIS	
POLS 4303	PUBLIC ADMINISTRATION AND THE POLITICAL PROCESS	
POLS 4321	INTEREST GROUPS AND POLITICAL ADVOCACY	3
POLS 4340	FEDERAL SOCIAL POLICY	3
POLS 4350	HEALTH POLITICS AND POLICY	3
Students have the option of competing a departmental specialization (between Pre-law, Policy/Public Admin, International studies, and Political behavior and processes).		12-18
Pre-Law:		
Requiring a minimum of 9 hours in the Public Law area of Political Science, plus 9 hours of courses to be chosen from the following:		
COMS 3310	GROUP COMMUNICATION THEORY	
CRCJ 4301	THE AMERICAN JUDICIAL SYSTEM	
ENGL 4371	ADVANCED ARGUMENTATION	
HIST 3330	U.S. LEGAL AND CONSTITUTIONAL HISTORY, COLONIAL TO 1877	3
HIST 3331	U.S. LEGAL AND CONSTITUTIONAL HISTORY, 1877 TO PRESENT	3
HIST 4330	GREAT ANGLO-AMERICAN TRIALS	3
HIST 4331	U.S. CIVIL LIBERTIES	3
HIST 4359	BRITISH CONSTITUTIONAL HISTORY	3
PHIL 1301	FUNDAMENTALS OF REASONING	
PHIL 2311	LOGIC	
PHIL 3320	PHILOSOPHY OF LAW	
SOCI 3313	CRIMINOLOGY	
SOCI 3357	LAW AND SOCIETY	
BLAW 3311	LAW I	
BLAW 3312	LAW II	
Policy/Public Administration:		

Requiring a minimum of 12 hours in the Policy/Public Administration area of Political Science

International Studies:

Requiring a minimum of 12 hours in any combination of the Comparative Politics and International Politics areas of Political Science

Political Behavior and Processes:

Requiring a minimum of 12 hours in the Political Behavior and Processes area of Political Science

Total Hours	120
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- ¹ Students are required to complete 12 hrs of 3000/4000 level POLS coursework to bring their total number of POLS coursework hours to 36. The 36 hours to include POLS 2311 and POLS 2312

Students majoring in Political Science will pursue this general course of study in the discipline AND they may declare a specific area of concentration by filing a statement of intent with the Political Science Department. The area of concentration will require that the student complete the requirements for the general degree plan while also fulfilling certain requirements for the concentration. All students will receive the B.A. in Political Science. Those completing the selected specialization will also receive recognition of completion.

The purpose of the specializations is to provide the student with a focused, systematic, and in-depth educational experience in the context of a broad liberal arts education.

Political Science classes may be used toward the major requirements or minor requirements (at the discretion of the department offering the minor), but not both.

Oral Communication and Computer Use Competencies

Students majoring in political science are required to demonstrate computer use and oral communication competencies. Computer use proficiency can be demonstrated by one of the following:

1. successful completion of POLS 3310 RESEARCH METHODS AND POLITICAL ANALYSIS; or
2. successful completion of CSE 1301 COMPUTER LITERACY or INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING; or
3. successful completion of other courses approved by the Undergraduate Assembly; or
4. passing the University computer use competency exam.

Oral communication proficiency can be demonstrated by one of the following:

COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	3
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	3
COMS 3315	COMMUNICATION FOR EDUCATORS	3

1. successful completion of specific political science courses approved by the department; or
2. successful completion of one of the following:
3. successful completion of other courses approved by the Undergraduate Assembly.

Students should discuss these options with their undergraduate advisor who may also provide a list of other courses approved by the University to meet these requirements.

Requirement for a Minor in Political Science

A minor in political science requires 18 semester hours, at least six of which must be 3000/4000 level.

Political Science classes may be used toward the major requirements or minor requirements (at the discretion of the department offering the minor), but not both.

Fast Track Program in Political Science The Fast Track program allows outstanding senior undergraduate Political Science (POLS) students to take up to three graduate courses (5000-level courses) to replace up to nine credit hours of advanced POLS undergraduate courses (3000- or 4000-level courses); the credit hours earned in these graduate courses can then be applied to both the Bachelor of Arts (BA) and to the Master of Arts (MA) in Political Science. Those who successfully complete the program will be automatically admitted to the Graduate School. They will not be required to take any qualifying test, complete an application for admission to the Graduate School, arrange for letters of reference, or pay an application fee. This enables students to complete their MA degree in a shorter time period.

Applying to the POLS Fast Track Program Undergraduate students apply to the Department of Political Science by completing a Fast Track application form available from the POLS academic advisor. Students will be notified by the Department of their acceptance into the Fast Track program.

Unconditional Admission

1. The student must be within 30 hours of completing a BA in Political Science at UTA.
2. The student must have completed 30 hours of coursework at UTA.
3. The student must have an overall GPA of at least 3.3 in all coursework at all schools and an overall GPA of at least 3.3 in all coursework completed at UTA.
4. The student must have an overall GPA of at least 3.5 in all POLS courses completed at UTA.
5. The student must have completed 12 credit hours of the following specific undergraduate POLS courses, with a GPA of at least 3.5 in these courses. (Courses from other universities or colleges that cover the same or similar material cannot replace any of these specific UTA courses.)

- **POLS 2312 State and Local Government or its equivalent from another institution**

- **POLS 3310 Analyzing Politics**

- **POLS 3302 Introduction to International Relations, POLS 3303 Introduction to Public Administration, POLS 3304 Introduction to Comparative Politics, POLS 3305 Government in Urban America, POLS 3307 Comparative State and Local Politics, POLS 3311 Public Opinion, POLS 3312 Introduction to Public Policy Analysis, OR POLS 3333 Juridprudence**

- **One substantive 4000-level POLS course from any of the area concentrations (excluding internships and conference or directed readings courses).**

Provisional Admission

A student may gain provisional admission if, by the semester in which application is made, he or she has already completed 3 out of the 4 required POLS courses (listed above) with a GPA of at least 3.5 in them, with the 4th course to be completed in the semester of application. All other requirements above must be met. Provisional admission will be changed to unconditional admission upon satisfactory completion of remaining requirements. Students failing to meet all requirements at the end of their semester of application will be removed from the Fast Track program. Any credits earned prior to removal from the program will be applied to the undergraduate degree only. None of the other benefits of the Fast Track program will apply. Provisionally admitted students who have been removed from the program may subsequently apply to graduate programs via the normal application process, paying all fees and meeting all relevant admission criteria. Admission will not be automatic as it will be subject to the normal admission practices of the Department of Political Science and of the Office of Graduate Studies.

Denial

Students who do not meet the requirements set out shall be denied admission to the Fast Track program. They may still apply to the graduate program through the regular application process. Admission will not be automatic as it will be subject to the normal admission practices of the Department of Political Science and of the Office of Graduate Studies.

Good Standing

In order to remain in the Fast Track program, students must meet the following requirements:

1. Students must maintain an overall GPA of at least 3.0 and must earn grades of B or better in all Fast Track-approved graduate courses that will be used to satisfy undergraduate and graduate degree requirements of the Fast Track program.
2. Students must enroll in at least 2 graduate courses prior to receiving their bachelor's degree, and receive at least a B in each course.

Students who, at any time, do not meet these requirements will be obliged to leave the Fast Track program. Any graduate credits earned will be applied only to the undergraduate degree, and none of the other benefits of participation in the Fast Track program will apply. They may apply to the MA program as a regular student after receiving their BA.

For more information about the POLS Fast Track Program, please contact the undergraduate advisor in the Department of Political Science.

Sociology and Anthropology

Undergraduate Degrees

- Bachelor of Arts in Sociology (p. 977)
- Bachelor of Arts in Anthropology (p. 982)
- Minor in Sociology (p. 979)
- Minor in Anthropology (p. 982)
- Minor in Popular Culture (p. 979)

Graduate Degrees

- Sociology, M.A. (<http://catalog.uta.edu/liberalarts/sociology/graduate/#masterstext/#masociology>)
- Sociology, M.A. Thesis Substitute (<http://catalog.uta.edu/liberalarts/sociology/graduate/#masterstext/#masociologythesissub>)
- Sociology, M.A. Non-Thesis (<http://catalog.uta.edu/liberalarts/sociology/graduate/#masterstext/#masociologythesissub>)

COURSES

ANTH 1200. PERSONAL AND PROFESSIONAL SUCCESS IN THE SOCIAL SCIENCES. 2 Hours.

A first year experience course for new students and new transfer students interested in a career in the social sciences. Provides the necessary foundation for success in a college environment while balancing personal and/or work obligations. Orients students to life on campus, demonstrates how to leverage campus resources to achieve career and academic goals, and emphasizes engagement outside the classroom through collaborative and co-curricular opportunities. Fulfills the University requirement for either UNIV 1101 or UNIV 1131. Offered as SOCI 1200 and ANTH 1200; credit will be granted only once.

ANTH 1306. INTRODUCTION TO ANTHROPOLOGY. 3 Hours. (TCCN = ANTH 2346)

This course, primarily intended for nonmajors and as a first course for students considering majoring in anthropology, provides an overview of the subdisciplines of anthropology: ethnology (cultural anthropology), archaeology, physical (biological) anthropology, and linguistic anthropology.

ANTH 1310. GREAT DISCOVERIES IN ARCHAEOLOGY. 3 Hours.

A survey of some of the most spectacular and otherwise significant archaeological discoveries worldwide over the past three centuries. Consideration of particular archaeological sites as case studies to illustrate cultural development from the Stone Age to Medieval times.

ANTH 2307. BIOLOGICAL ANTHROPOLOGY. 3 Hours. (TCCN = ANTH 2301)

Human variation and human evolution. Genetics, living and fossil nonhuman primates, the human skeleton, the fossil record of human evolution, modern human variation and biological adaptation.

ANTH 2322. GLOBAL CULTURES. 3 Hours. (TCCN = ANTH 2351)

Methods and theories of sociocultural anthropology. Examines systems of social organization and cultural meaning in contemporary human societies. Topics include fieldwork, cross-cultural analysis, applied anthropology, and global perspectives on political, economic, and social institutions.

ANTH 2339. INTRODUCTION TO ARCHAEOLOGY. 3 Hours. (TCCN = ANTH 2302)

Archaeology is the study of the human past through physical evidence and material remains. This evidence ranges from entire landscapes to small objects. Students learn how archaeological sites are discovered, investigated, and interpreted, and how this knowledge contributes to our understanding of human society.

ANTH 2349. HONORS PRINCIPLES OF ARCHAEOLOGY. 3 Hours.

Methods and theories of prehistoric archaeology. Techniques and approaches employed in recovering, dating and interpreting prehistoric cultural materials. Writing-intensive course including group and individual projects and oral presentations. Prerequisite: Membership in the Honors College or permission of instructor.

ANTH 2357. ANTHROPOLOGY IN ACTION. 3 Hours.

Anthropological examination of a particular culture, region or cultural industry. Topics include identity, heritage, commoditization, historical and cultural representation, and authenticity. May be offered on campus or as a field course or study abroad course.

ANTH 2358. ARCHAEOLOGICAL CULTURES. 3 Hours.

Survey of a particular archaeological culture, region, or period. Can be offered on campus or as a field course or study abroad course.

ANTH 2359. MYTHS AND MYSTERIES IN ARCHAEOLOGY. 3 Hours.

This course will critically examine pseudoscience, cult archaeology and creationism from a scientific perspective. Through the close examination of case studies we will dispel archaeological myths and mysteries which are often depicted as fantastic or cult archaeology. This course will demonstrate that a strong adherence to scientific investigation can uncover facts about prehistory that are as interesting as the myths.

ANTH 3300. DEBATES IN CULTURAL ANTHROPOLOGY. 3 Hours.

Explores core concepts, critiques of past applications, and current challenges of theory and practice in cultural anthropology.

ANTH 3301. ARCHAEOLOGICAL METHOD AND THEORY. 3 Hours.

Explores core concepts, critiques of past applications, and current challenges of theory and practice in archaeology. Topics include history of archaeological thought, processual and actualistic approaches, ethnoarchaeology, evolutionary archaeology, stewardship of the archaeological past, and post-processual critiques. Prerequisite: ANTH 2339 or permission of instructor.

ANTH 3307. EVOLUTIONARY MEDICINE. 3 Hours.

The application of evolutionary theory to the practice of medicine from an anthropological perspective. Topics include diet/paleodiets, sleep habits, infectious diseases, the developmental origins of health and disease, mental health, women's health and reproduction, and aging/senescence, among others. Offered as BIOL 3307 and ANTH 3307; credit will only be granted in one department.

ANTH 3308. FORENSIC ANTHROPOLOGY. 3 Hours.

Explores the role of skeletal biology and physical anthropology in criminal investigation. Topics include determination of victim identity and context of death. Case studies will be used to demonstrate application of the methods studied.

ANTH 3310. LATINOS IN THE U.S.. 3 Hours.

Examines the Latino experience in the U.S. from an interdisciplinary perspective. Discusses the commonalities and cultural differences among various Latino groups, and focuses on important contemporary Latino issues such as education, employment, family and gender, identity, immigration, and politics. May receive credit for either MAS 3310 or ANTH 3310.

ANTH 3311. HUMAN ADAPTATION AND THE CONCEPT OF RACE. 3 Hours.

The study of modern human biological variation in the context of the history of the concept of race. Detailed historical review explores changing perspectives on variation within our species. Course examines physiological adaptations to environmental stress among a variety of human populations and implications of recent genetic research. Offered as BIOL 3313 and ANTH 3311; credit will only be granted in one department.

ANTH 3313. PRIMATE EVOLUTION AND BEHAVIOR. 3 Hours.

An overview of the Primate Order covering primate origins, evolution, ecology, adaptation, and behavior. Examination of the environmental context within which primates live, how the form of their bodies reflects their activities, and how they relate behaviorally to their environments and to one another. Offered as BIOL 3314 and ANTH 3313; credit will only be granted in one department.

ANTH 3316. LATINO HEALTH ISSUES. 3 Hours.

A cross-cultural examination of issues in Latino health and relevant health practices in the United States through the lenses of social sciences. Themes include the Latino Threat Narrative, acculturation histories and health care status of major Latino ethnic enclaves in the U.S. Listed as SOCI 3316, MAS 3316, and ANTH 3316; may receive credit for either SOCI 3316, MAS 3316, or ANTH 3316.

ANTH 3318. BORDERS, CULTURES, AND CARTELS. 3 Hours.

Critically examines life on the Mexico-U.S. border through ethnography, taking into account the impact of the U.S. war on drugs and the influence of cartels on the lives of those living in the southern border region. Topics may include impacts and influences of drugs and narco life on religion, crime, music, and daily life at the nexus of US-Mexico relations. Listed as ANTH 3318 and MAS 3318; may receive credit for either ANTH 3318 or MAS 3318.

ANTH 3325. ETHNOGRAPHY OF SOUTH AMERICA. 3 Hours.

The indigenous groups of South America, with emphasis on the Aymara and Quechua of the Andes. Topics include culture change, environmental destruction, and preservation of cultural heritage.

ANTH 3328. CIVILIZATIONS OF SOUTH AMERICA. 3 Hours.

Complex agrarian civilizations in South America, concentrating on political, social, and cultural developments of the Chavin, Nazca, Moche, Tiahuanaco, Wari-Tiahuanaco, Inca, and Conquest periods. Formerly listed as ANTH 4328. Credit cannot be given for both ANTH 3328 and ANTH 4328.

ANTH 3329. CONTEMPORARY AFRICAN CULTURES. 3 Hours.

A comparative study of African communities with an emphasis on sub-Saharan Africa. Covers regional cultural geography and history as well as ethnography of specific communities. Explores both the challenges facing contemporary African nations as well as emerging solutions. Includes exposure to African art, literature, music, cinema, and food. Offered as AAST 3329 and ANTH 3329; credit will be granted in only one department.

ANTH 3330. CULTURAL DIVERSITY AND IDENTITY. 3 Hours.

The ways identity is constructed in contemporary societies in an increasingly complex and multicultural world. Ethnic, racial, gender, and class identities. How and when identity is asserted and assigned, and how it can both draw boundaries and forge ties between peoples. Formerly listed as ANTH 2350. Credit cannot be given for both ANTH 2350 and ANTH 3330. Also listed as MAS 3330; credit cannot be granted for both ANTH 3330 and MAS 3330. Offered as AAST 3330 and ANTH 3330; credit will be granted in only one department.

ANTH 3331. CULTURE AND PERSONALITY. 3 Hours.

The interplay of culture and personality in various Western and non-Western societies. The relationship of specific practices to the development of personality and the psychological effects of colonization, modernization, and economic development of traditional societies.

ANTH 3332. FOOD AND CULTURE. 3 Hours.

Considers food systems from biological, ecological, and political-economic perspectives. May include food history, cuisines, food preferences, and other areas of anthropological scholarship on food and culture. May cover food and economic development, hunger and overnutrition, food and religion, and the globalization of foods and food systems.

ANTH 3333. NORTH AMERICAN INDIANS. 3 Hours.

North American Indian cultures and their development both before and after European contact.

ANTH 3334. ANTHROPOLOGY OF SOUTH ASIA. 3 Hours.

With a focus on the Indian subcontinent, this course introduces students to the culture, history and politics of South Asia. Drawing upon anthropological studies and a range of materials, including Bollywood films, music, tourist brochures, advertisements, Gandhi's writings, and South Asian literature, students will gain an increased understanding of the region's past and present.

ANTH 3335. GANDHI: CULTURE AND POLITICS IN A GLOBAL WORLD. 3 Hours.

Introduction to the life and times of Mahatma Gandhi in order to explore the cultural politics of religion, food, animal welfare, sexuality, social movements, and globalization processes. Students gain understanding of Gandhi's enduring significance in the contemporary world.

ANTH 3336. ANTHROPOLOGY OF RELIGION. 3 Hours.

A crosscultural study of magic and religion. Theories of the origin and function of magic and religion in pre-industrial societies.

ANTH 3338. COMPARATIVE KINSHIP AND FAMILY SYSTEMS. 3 Hours.

Variation in kinship and family systems from crosscultural and evolutionary perspectives. Structure, function, and dynamics of kinship and family systems as adaptations to diverse ecological, social, and historical circumstances. Implications of this approach for understanding kinship and family in American society also addressed. Formerly listed as ANTH 4338. Credit cannot be given for both ANTH 3338 and ANTH 4338. Also offered as WOMS 3338; credit will be granted only once. Offered as AAST 3332 and ANTH 3338; credit will be granted in only one department.

ANTH 3339. URBAN ANTHROPOLOGY. 3 Hours.

Examines main issues, theoretical approaches and ethnographic methods used by anthropologists working in cities. Also discusses relevant contemporary topics such as growth of global cities, gentrification, poverty and inequality, and the economic, social and cultural integration of international immigrants in U.S. cities.

ANTH 3341. RESEARCH METHODS IN CULTURAL ANTHROPOLOGY. 3 Hours.

Observational techniques, participant-observation, hypothesis testing, research design, use of the computer in research, analysis, and report writing, and oral presentations of research reports. Satisfies oral communication and computer use competence requirements. Prerequisite ANTH 1306 or ANTH 2322 or permission of instructor.

ANTH 3343. APPLIED ANTHROPOLOGY. 3 Hours.

Explores the use of anthropological knowledge and skills to address practical problems in today's global society, and examines how these are used in government, non-profit, and private sector industries. Addresses issues of health, education, environment, human rights, economic development, and others.

ANTH 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD. 3 Hours.

Introduces students to key concepts in Visual Anthropology. This course highlights the contribution of anthropological methods in theorizing the visual in everyday life for the construction of nationalist, gender, ethnic, and class identities. Readings are drawn from diverse geographical regions. Visual material discussed in class may include ethnographic films, art, graphic novels, comics, illustrated magazines, virtual exhibitions and soap operas. Assignments include a writing and research component, and team-based exercises. Offered as ANTH 3345 and COMM 3345; credit will be granted only in one department.

ANTH 3346. ANTHROPOLOGY OF TOURISM. 3 Hours.

Examines the cultural practices of travel and the impact of tourism on both host and guest communities. Various forms of tourism are addressed including, but not limited to, ethnic, historical, regional, health and medical, and ecotourism. Themes of the "tourist gaze" authenticity, identity, consumption, ritual, borders, and pilgrimage will be explored.

ANTH 3348. ANTHROPOLOGY OF MIGRATION. 3 Hours.

This course focuses on the expanding field of migration studies in social and cultural anthropology. It traces the history of migration studies in anthropology, discusses the major theoretical contributions of anthropologists to the interdisciplinary field of migration, and addresses key contemporary topics in migration studies including globalization, transnational communities, gender, identity, and citizenship. The course heavily relies on ethnographic case studies of different immigrant populations in the U.S. written by anthropologists in the recent past.

ANTH 3349. ANTHROPOLOGY OF GLOBALIZATION. 3 Hours.

The forces of economic globalization now reach every corner of the world to the point that few societies have been untouched by their impact. This course examines the forces that drive globalization and their repercussions upon local communities around the world. It examines how economic globalization affects the lives of real people in developing and industrialized countries as well as in small-scale societies traditionally studied by anthropologists.

ANTH 3350. NORTH AMERICAN ARCHAEOLOGY. 3 Hours.

Prehistoric cultural adaptations in North America from human arrival to European contact. Topics treated include the question of when and where the first Native Americans arrived; the beginnings of village and farming life; and the development of Puebloan and "Mound-building" cultures.

ANTH 3351. ARCHAEOLOGY OF THE AMERICAN SOUTHWEST. 3 Hours.

This course investigates the peoples and places of the prehistoric North American Southwest. The focus is on the period of increasing settlement, diversity, movement, and change from 500 to 1500 C.E. Focuses on the archaeological record, ethnographies and comparative research to understand the past and present peoples of the Southwest.

ANTH 3352. ARCHAEOLOGY OF AFRICA. 3 Hours.

Course follows the African archaeological record from earliest evidence for human behavior through beginnings of state society. Topics may include stone tool technologies, forager strategies, agricultural systems, early iron technology, and trade and social networks. This is a lecture course, with an emphasis on student research. No prerequisites required, but ANTH 2339 is recommended preparation.

ANTH 3353. STONE AGE HUNTERS AND FARMERS. 3 Hours.

Human adaptations and cultural evolution in the Old World from the earliest African sites over two million years ago to the domestication of plants and animals about ten thousand years ago. Formerly ANTH 2353; credit cannot be granted for both ANTH 2353 and ANTH 3353.

ANTH 3354. ANTHROPOLOGY OF HUNTING. 3 Hours.

Covers a broad range of topics exploring hunting through time, from the prehistoric to the present. Topics include cross-cultural issues of meat and diet, hunter-gatherer subsistence behavior, overkill and animal extinction, and sport hunting. Course is relevant to environmental studies and sustainability studies.

ANTH 3355. THE RISE OF CIVILIZATION. 3 Hours.

The development of complex cultures from village farming societies in various regions of the Old and New Worlds. The civilizations of Mesopotamia, Egypt, and Mesoamerica, among others, will be treated, along with general questions concerning the rise, development, and collapse of early civilizations. Formerly ANTH 2355; credit will not be granted for both ANTH 2355 and ANTH 3355.

ANTH 3356. MESOAMERICAN ARCHAEOLOGY. 3 Hours.

Covers cultural developments in Mesoamerica through the rise of complex societies and the Spanish conquest. Topics include the emergence of Olmecs, Zapotecs, Maya, Toltecs, and the Aztecs, and explore the factors that contributed to their appearance and decline. New discoveries within the field of Mesoamerican archaeology will be examined.

ANTH 3357. COLLAPSE AND SUSTAINABILITY OF SOCIETIES. 3 Hours.

This course investigates the collapse of past societies. Understanding why and how archaeologically-known societies collapsed may provide insights to help us understand contemporary social and environmental sustainability problems.

ANTH 3358. UNDERWATER ARCHAEOLOGY. 3 Hours.

Explores the field of underwater archaeology and research methods. Topics include shipwrecks, submerged terrestrial sites, the use of scuba diving, robots, and sonar in excavation and survey, and the history and development of the discipline.

ANTH 3359. STONE TOOLS. 3 Hours.

Covers the evolution of stone tools from the first modified stone objects to the use of stone tools in complex societies such as the ancient Maya and Egyptians. Introduces students to lithic analysis and manufacture, emphasizing hands-on learning.

ANTH 3360. ARCHAEOLOGY IN PRACTICE. 3 Hours.

Covers the practical aspects of archaeology with a focus on hands-on activities and experiential learning. Students learn archaeological skills and understand the life and research of archaeologists. Topics may include research design, survey, and the laws protecting archaeological sites.

ANTH 3366. SEX, GENDER, AND CULTURE. 3 Hours.

The ways gender and sexuality are culturally constructed. Readings include ethnographies, life histories, and fiction. Debates within anthropology and within specific cultures over maleness and femaleness. Offered as ANTH 3366 and WOMS 3366; credit will be granted only once.

ANTH 3369. MEDICAL ANTHROPOLOGY. 3 Hours.

Medical systems studied cross-culturally to understand how environmental, biological, social, and cultural factors affect disease and health. The cultural dynamics of traditional practitioners and rituals within the health care system. Methods of articulating modern medicine with traditional medicine are discussed.

ANTH 3370. ARCHAEOLOGY OF THE PREHISTORIC AEGEAN. 3 Hours.

Origin, evolution and decline of the first high civilizations in Europe, namely the Minoans on the island of Crete and the Mycenaeans in Greece. Stone Age background and Early Bronze Age seafaring in the Cycladic Islands; Late Bronze Age society, economy, and religion; art and architecture of the Minoan and Mycenaean palaces; Linear A and B tablets; Mycenaean collapse and the beginning of the Iron Age; Homer's Iliad, archaeology and the Trojan War.

ANTH 3371. ARCHAEOLOGY OF GREECE. 3 Hours.

Material evidence relevant to our understanding of classical Greek culture and society from the collapse of the Mycenaean Empire through the Hellenistic Period (ca. 1200-31 B.C.). Examination of the magnificent (temples, sculpture, athletic monuments, ships) and the mundane (domestic architecture, pottery, crafts, coinage, inscriptions, architecture and artifacts of civic life, burials). Archaeological evidence will be considered in light of contemporary historical sources.

ANTH 3372. ARCHAEOLOGY OF THE ANCIENT NEAR EAST. 3 Hours.

Survey of the cultures of Mesopotamia, Syria, Palestine, and Anatolia from the earliest agricultural settlements to the late first millennium B.C. based on the surviving archaeological remains. Among the topics covered: Nature of early urbanism; development of religious and economic hierarchies; origins and impact of writing; interrelationships among early states.

ANTH 3373. ARCHAEOLOGY OF EGYPT. 3 Hours.

The culture of ancient Egypt from its earliest occupation until the Arab invasion (7th century A.C.), with emphasis on the first 20 pharaonic dynasties (third and second millennia B.C.). Egyptian social, religious, economic and political development traced through the surviving material culture (architecture, art, industries, artifacts of daily life, funerary remains, etc.) supplemented by historical and literary evidence as pertinent. Egypt's relations with neighboring regions (Crete, Anatolia, Palestine, Nubia and Libya) considered. Offered as AAST 3373 and ANTH 3373; credit will be granted in only one department.

ANTH 3374. ARCHEOLOGY OF EUROPE. 3 Hours.

Ancient Europe is a mosaic of archaeological regionalism whose complexity is arguably unparalleled elsewhere in the world. This course surveys the material remains of several prominent ancient cultures from Iberia to the Danube, from Scandinavia to Greece, dating from stone age to medieval times. Emphasis will be on understanding the various regional traditions and their interactions, and on explicating trends in technology, economy and religion in European society during this long period. Among the topics to be examined: Paleolithic hunters and artists; agricultural origins; megalithic monuments; bronze metallurgy and its ramifications; the first high civilizations in the Mediterranean; the rise of the Celts; the coming of iron; impact of Romanization; the nature of Viking exploration and expansion.

ANTH 3375. NEANDERTHALS AND THE ICE AGE WORLD. 3 Hours.

Explores the archaeological record of Neanderthals, early modern humans, and their contemporaries. Topics include new genetic and isotopic analyses, ancient environments, early art and symbolism, and how the Paleolithic is imagined in modern society.

ANTH 3390. SPECIAL TOPICS IN ANTHROPOLOGY. 3 Hours.

Selected, specialized topics in anthropology. These may be cultural, archaeological, or biological in focus, and vary each semester. Contact the department or click on the course link to find current course title and description. May be repeated for credit with departmental permission as topics vary.

ANTH 3409. PALEOANTHROPOLOGY. 4 Hours.

Paleoanthropology: an exploration of fossil evidence for human origins and human evolution. Course focuses on the evolution of humans and our close relatives, from our origins as a distinct lineage to "anatomically modern" Homo sapiens, including the relationship between biological and cultural/behavioral evolution. Offered as BIOL 3409 and ANTH 3409; credit will be granted only once.

ANTH 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in the designated area. Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of the instructor.

ANTH 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of the instructor.

ANTH 4315. GROWTH, DEVELOPMENT, AND EVOLUTION. 3 Hours.

A survey of topics at the nexus of modern human biological research in growth and development and the evolutionary record of hominid subadults. Offered as BIOL 4316 and ANTH 4315; credit will be granted only in one department. Prerequisite is only required for students registering for ANTH 4315. Prerequisite: ANTH 2307 or permission of the instructor.

ANTH 4322. PROBLEMS IN ANTHROPOLOGY. 3 Hours.

Intensive examination of an important problem in anthropological research selected by the instructor. May be repeated for credit whenever the topic varies.

ANTH 4342. TOPICS IN CULTURAL ANTHROPOLOGY. 3 Hours.

Selected topics, to include anthropological theory, population and cultural ecology, semiotics, and humanistic anthropology. May be repeated for credit with departmental permission. Also offered as ANTH 4342. Credit will be granted in only one department.

ANTH 4348. POLITICAL ANTHROPOLOGY. 3 Hours.

Relationships among power, identity, and culture in cross-cultural perspective. Traditional political systems, political symbols and rituals, gender and power, and the relationship between domination and resistance. How culture influences the ways in which men and women get power, use power, and resist power.

ANTH 4358. TOPICS IN ARCHAEOLOGY. 3 Hours.

Selected topics, to include examination of specific archaeological cultures of the Old World, archaeological theory, and archaeology and pseudoscience. May be taken up to four times for a total of 12 hours credit.

ANTH 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of the instructor.

ANTH 4393. INTERNSHIP IN ANTHROPOLOGY. 3 Hours.

Supervised internship program, in which students intern at various companies, non-profit and governmental agencies, and museums in the Metroplex. Applied use of anthropology in a non-academic setting. Students will learn skills of career development in anthropology. Requirements include several short assignments and a final report to the instructor. Prerequisite: ANTH 2307, ANTH 2322, OR ANTH 2339; permission of the instructor; and junior standing.

ANTH 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department.

ANTH 4398. SUMMER FIELD SCHOOL IN ANTHROPOLOGY. 3 Hours.

(3 or 6 hours credit). Offered only during the summer session. Experience in methods of field research in ethnography or archaeology. May be repeated for credit if research topic changes.

ANTH 4406. HUMAN OSTEOLOGY. 4 Hours.

Detailed examination of human skeletal morphology. Topics include form and function of all skeletal elements in the human body, differentiation of each bone, left and right side identification, identification of fragmented remains, and muscle attachments and articulations. Content useful in forensic anthropology, archaeology, and hominid paleontology. Offered as BIOL 4406 and ANTH 4406; credit will be granted only in one department.

ANTH 4459. BIOARCHAEOLOGY. 4 Hours.

The study of human remains in archaeological contexts in order to reconstruct individual identity, life history, and past population characteristics. No formal prerequisites, but familiarity with the human skeleton is helpful. Lab component is required. Offered as BIOL 4459 and ANTH 4459; credit will be granted only in one department.

ANTH 4460. ZOOARCHAEOLOGY. 4 Hours.

The study of faunal remains from archaeological contexts to understand past human economic strategies and ecological circumstances. Topics include skeletal and taxonomic identification, taphonomic processes, mortality profiles, biometric analyses, and human behavioral ecology. Lab component is required. Offered as BIOL 4460 and ANTH 4460; credit will be granted only once.

ANTH 4698. SUMMER FIELD SCHOOL IN ANTHROPOLOGY. 6 Hours.

(3 or 6 hours credit). Offered only during the summer session. Experience in methods of field research in ethnography or archaeology. May be repeated for credit if research topic changes.

ANTH 5191. CONFERENCE COURSE. 1 Hour.**ANTH 5307. FORENSIC ANTHROPOLOGY. 3 Hours.**

Estimating age, sex, race, stature, pathology, cause of death, and time since death from human remains. The role of skeletal biology and physical anthropology in criminal investigation. Case studies will be used to demonstrate application of the methods studied. Requires enrollment in the undergraduate lab section.

ANTH 5310. HISTORY OF ANTHROPOLOGICAL THEORY. 3 Hours.

This course is a critical examination of major theoretical trends in ethnological theory, from mid-19th century to the present.

ANTH 5315. ARCHAEOLOGICAL METHODS. 3 Hours.

An examination of research methods and underlying theory in archaeology and their evolution since the era of European antiquarianism. Origins and development of archaeology as a scholarly discipline. Emphasis on the period 1960-present; consideration of recent trends in analysis and reportage.

ANTH 5317. ARCHAEOLOGY OF EXPLORATION. 3 Hours.

Archaeological evidence for travel in antiquity. Technology of travel (horse/camel, wheeled vehicles, boats) and related topics (navigation; development of trade and trade routes; nature of discovery, settlement and colonization in antiquity). Case studies drawn from ancient cultures of the Old World from the Stone Age through Medieval times.

ANTH 5320. METHODS IN BIOLOGICAL ANTHROPOLOGY. 3 Hours.

This course covers several topical areas relevant to biological anthropologists specializing in human biology, including osteology and skeletal biology, skeletal maturation (both postcranial and craniofacial), growth and development from birth to biological maturity, and selected topics in forensics, anthropometry, physiology, nutrition, genetics, epidemiology, and demography.

ANTH 5325. QUALITATIVE METHODS. 3 Hours.

Students do fieldwork in anthropology. Students practice participant observation, conduct an interview, collect a kinship chart, map blocks, collect life histories and participate in rituals. Course emphasizes methods of data collection, analysis/interpretation of data, and critical writing.

ANTH 5341. POSTCOLONIAL SOUTH ASIA. 3 Hours.

It approaches the competing and complementary claims on postcolonial theory by mapping the intersections in historical anthropology, literary theory, and cultural analysis. More broadly it brings to focus the shifts from Marxist to Poststructuralist directions. Though the regional focus is on India, the endeavor is also to assess dialogues among varying strands of cultural perspectives and its impact in other postcolonial contexts, both within and beyond the South Asian subcontinent.

ANTH 5342. ADVANCED ETHNOLOGY. 3 Hours.

Seminar based on student reports and critiques of assigned readings. Major emphasis on the areas of ethnology and social anthropology.

ANTH 5344. CULTURES OF LATIN AMERICA. 3 Hours.

An ethnological comparison of societies and cultures in Central and South America. Emphasis on gender, ethnicity, and political economy.

ANTH 5345. RELIGION AND CULTURE. 3 Hours.

An ethnological comparison of native religions to understand non-western belief systems. Emphasis on rituals, myths, totemic systems, taboos, and cosmology.

ANTH 5346. MESOAMERICAN ARCHAEOLOGY. 3 Hours.

An examination of the diversities of several prehistoric Mesoamerican cultures including the Olmec, Maya, Teotihuacan, Zapotec, and the Aztec. Current issues including the beginnings of agriculture, early village life, the rise of complexity and the institution of kingship, warfare, and Mesoamerican ideology and cosmology will be addressed.

ANTH 5349. TOPICS IN ANTHROPOLOGY. 3 Hours.

May be repeated for credit as the topic changes.

ANTH 5351. EMERGENCE OF HUMANKIND. 3 Hours.

An intensive review of the evidence for, and main outlines of, human biological and cultural evolution up to agricultural origins.

ANTH 5353. MEDICAL ANTHROPOLOGY. 3 Hours.

An examination of anthropological concepts for understanding curing practices and attitudes toward health programs in various cultures.

ANTH 5355. HUNTERS AND GATHERERS. 3 Hours.

Cross-cultural approach to the ecological, social, and historical contexts of hunters, gatherers, and foragers.

ANTH 5363. ETHNOGRAPHY AND PERSONAL NARRATIVE. 3 Hours.

Focus is on anthropology and autobiography, autoethnography, life history, and narrative constructions of selfhood in different cultural contexts.

Development of the life history approach in ethnographic research. Methods in the collections and analysis of life stories.

ANTH 5365. GLOBALIZATION AND INTERNATIONAL MIGRATION. 3 Hours.

Examines how the expansion of global capitalist economy has contributed to the growth of international migration around the world. Focuses on how transnational migration affects the economic, social, political, and cultural practices of immigrants in both their countries of origin and destination.

ANTH 5369. FOLKLORE AND MYTHOLOGY. 3 Hours.

Function, forms, and interpretation of folklore and myth in traditional societies; examination of oral literature as an expression of continuity and change; emphasis on a structural analysis of myth.

ANTH 5370. APPLIED ANTHROPOLOGY. 3 Hours.

Examines the application of anthropological knowledge to solve practical problems in today's global world. We learn how anthropological concepts, methods, and insights are applied to understand and solve important problems related to economic development, health, environmental issues, immigration, international business, and others.

ANTH 5371. RESEARCH PRACTICUM / INTERNSHIP. 3 Hours.**ANTH 5373. ARCHAEOLOGY FIELD SCHOOL. 3 Hours.**

This course, conducted during the summer sessions, consists of on-site and classroom instruction in techniques of archaeological survey, excavation, laboratory, processing, and analysis. Students can receive either three or six hours of credit. Enrollment by permission of instructor only. Prior coursework in anthropology desirable but not necessary.

ANTH 5389. TEACHING ANTHROPOLOGY. 3 Hours.

To learn strategies of coping with practical problems of teaching undergraduate anthropology, students confer with one or more professors to discuss preparing syllabi and lectures, constructing and evaluating examinations, etc. Not to be counted toward the degree requirement.

ANTH 5392. CONFERENCE COURSE IN ANTHROPOLOGY. 3 Hours.**ANTH 5398. THESIS. 3 Hours.****ANTH 5406. HUMAN OSTEOLOGY. 4 Hours.**

Detailed examination of human skeletal morphology. Topics include form and function of all skeletal elements in the human body, differentiation of each bone, left and right side identification, identification of fragmented remains, and muscle attachments and articulations. Content useful in forensic anthropology, archaeology, and hominid paleontology. If taken for undergraduate credit either as ANTH 4306 or ANTH 4406, cannot be repeated for graduate credit.

ANTH 5673. ARCHAEOLOGY FIELD SCHOOL. 6 Hours.

This course, conducted during the summer sessions, consists of on-site and classroom instruction in techniques of archaeological survey, excavation, laboratory, processing, and analysis. Students can receive either three or six hours of credit. Enrollment by permission of instructor only. Prior coursework in anthropology desirable but not necessary.

ANTH 5698. THESIS. 6 Hours.

COURSES

SOCI 1200. PERSONAL AND PROFESSIONAL SUCCESS IN THE SOCIAL SCIENCES. 2 Hours.

A first year experience course for new students and new transfer students interested in a career in the social sciences. Provides the necessary foundation for success in a college environment while balancing personal and/or work obligations. Orients students to life on campus, demonstrates how to leverage campus resources to achieve career and academic goals, and emphasizes engagement outside the classroom through collaborative and co-curricular opportunities. Fulfills the University requirement for either UNIV 1101 or UNIV 1131. Offered as SOCI 1200 and ANTH 1200; credit will be granted only once.

SOCI 1310. INTRODUCTION TO POPULAR CULTURE. 3 Hours.

This course will introduce students to the role of popular culture in American society. It examines culture as a process through which people make symbolic meaning out of the world. Since everyone has access to popular culture, it constructs the way that people think about the world around them. The course will explore the creation, production, dissemination, reception and consumption of popular culture.

SOCI 1311. INTRODUCTION TO SOCIOLOGY. 3 Hours. (TCCN = SOCI 1301)

(SOCI 1301). A scientific approach to the analysis and explanation of culture, personality, and social organization. The social processes and mechanisms of interaction involved in the natural process of cultural development, dissemination, assimilation, and the institutions of the group. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

SOCI 2312. SOCIAL PROBLEMS. 3 Hours. (TCCN = SOCI 1306)

A survey of contemporary social problems in the United States. Emphasis is on applying different theoretical perspectives and systematic procedures to understand social problems as public issues rather than personal problems. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

SOCI 3312. JUVENILE DELINQUENCY. 3 Hours.

The delinquent as a person and delinquency as a social problem, theories of delinquency, and methods of correctional treatment and preventive programs.

SOCI 3313. CRIMINOLOGY. 3 Hours.

Crime-related social issues. Defining and measuring crime, surveying major theoretical explanations of criminal behavior, and society's formal responses to crime and criminals.

SOCI 3314. THE LATINA EXPERIENCE. 3 Hours.

Examines the social, cultural and economic experiences of Latin American women in the United States, with particular emphasis on Mexican-origin women. The course surveys the historical and contemporary experiences of Latinas in the United States with respect to family dynamics, religion, education, politics, health and illness, the labor market, mass media, and the arts. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

SOCI 3315. SOCIAL PSYCHOLOGY OF CRIME. 3 Hours.

Selected concepts in social psychology applied to issues in crime and justice, such as the actions of victims, criminals, and criminal justice professionals. Topics include aggression, social perception, cognitions, conformity, obedience, and deviance.

SOCI 3316. LATINO HEALTH ISSUES. 3 Hours.

A cross-cultural examination of issues in Latino health and relevant health practices in the United States through the lenses of social sciences. Themes include the Latino Threat Narrative, acculturation histories and health care status of major Latino ethnic enclaves in the U.S. Listed as SOCI 3316, MAS 3316, and ANTH 3316; may receive credit for either SOCI 3316, MAS 3316, or ANTH 3316.

SOCI 3317. INDIVIDUAL AND SOCIETY. 3 Hours.

How society influences individual thought, feeling, and behavior. Includes interpersonal perception, attitudes, norms, roles, conformity, and such social issues as aggression, helping behavior, prejudice, and interpersonal attraction.

SOCI 3318. SELF AND SOCIAL IDENTITY. 3 Hours.

The social self. Topics include factors in the development, organization, evaluation and presentation of self in everyday life and processes by which social categories and roles influence self concept.

SOCI 3319. SMALL GROUPS. 3 Hours.

The process and structures of small-scale interaction systems, including an analysis of the process of leadership, the exercise of influence, the effect of groups on individuals and of individuals on groups, the relation and function of the small group as a part of a larger whole, and the process of group formation, development, and disintegration.

SOCI 3320. DEVIANCE: SOCIAL AND PERSONAL. 3 Hours.

Theoretical perspectives on societal definitions of behavior as deviant or disorganized. Selected studies, representative of current problems, examined critically in terms of the structural-cultural conditions of contemporary society.

SOCI 3321. SOCIALIZATION AND SOCIAL CONTROL. 3 Hours.

The relationship between social structure and the individual. The influence of social factors on cognitive development, personality formation, and the behavior of individuals throughout the lifecycle. The effect of socialization on conformity and deviance. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3323. COLLECTIVE BEHAVIOR. 3 Hours.

Provides an overview of the elementary forms of collective behavior including riots, panics, fads, fashion, cults and crazes. Explanatory theories and specific instances of the different forms of collective behavior are examined. Prerequisite: SOCI 1311.

SOCI 3324. SOCIAL MOVEMENTS. 3 Hours.

Focuses on twentieth and twenty-first century social movements, including the U.S. civil rights movement, the student and anti-war movements of the 1960s, the women's movement, the environmental movement, and anti-globalization movements. Status politics movements, such as pro-choice/pro-life and gay rights movements, are also explored. Compares these movements with their counterparts in other countries and identifies the reasons for their successes and failures.

SOCI 3327. INTERCULTURAL INTERACTION. 3 Hours.

Patterns and variations in interactions involving people from different cultures and subcultures. Intercultural interaction, both within multicultural societies and between persons from different societies.

SOCI 3328. MARITAL AND SEXUAL LIFESTYLES. 3 Hours.

Contemporary American lifestyles selected from: singles, traditional marriage, homosexuals, single-parent families, open marriage, non-marital sexuality, cohabitation, dual-career marriage, childless couples, egalitarian marriage, families in later life. Offered as DIVR 3328, SOCI 3328 and WOMS 3328; credit will be granted only once.

SOCI 3331. SOCIOLOGY OF THE FAMILY. 3 Hours.

The family's role in American society and in other cultures past, present, and future. Family research methods, comparative family systems, child development/parenting, culture and personality, minority families, social class variation in families, work and family. Prerequisite: sophomore standing or permission of the instructor. Offered as SOCI 3331 and WOMS 3331; credit will be granted only once.

SOCI 3332. SOCIOLOGY OF REPRODUCTION. 3 Hours.

Investigates historical and contemporary cultural customs, social institutions, and personal experiences related to reproduction. Topics may include assisted reproduction, pregnancy loss, living "child-free," sperm/egg donation, and surrogacy. Examines how changing economic conditions, technologies, and social norms shape the meaning of children, childbirth education, infertility, and the experience of birth for both men and women.

SOCI 3334. SOCIOLOGY OF GENDER. 3 Hours.

Examination of theoretical and empirical approaches to understanding the formation of gender. Assesses individual and structural dimensions of gender in various social institutions including work, education, and families. Offered as SOCI 3334 and WOMS 3334; credit will be granted only once.

SOCI 3336. SOCIAL INEQUALITY. 3 Hours.

Examines the processes, characteristics, and consequences of social inequality in society. Topics include the social class structure, status groups, and elite power structure as they influence people's life chances. Offered as AAST 3336 and SOCI 3336; credit will be granted in only one department.

SOCI 3337. RACIAL & ETHNIC GROUPS IN US. 3 Hours.

Compares the immigration, acculturation, and adjustment processes of various racial/ethnic groups in the U.S. Examines historical and contemporary discrimination in relation to the social conditions of racial/ethnic minority groups in the U. S. Topics include classical and contemporary theory; individualistic, cultural, and structural arguments about social arrangements; and conflict among majority and minority groups. Offered as AAST 3337, MAS 3337, and SOCI 3337; credit will be granted in only one department. Credit will not be granted for both SOCI 3337 and SOCI 4310 or for MAS 3337 and MAS 4310.

SOCI 3338. CONTEMPORARY BLACK EXPERIENCE. 3 Hours.

An overview of recent research concerning the African American experience in the post-civil rights era. Topics include explanations for racial differences across spheres of society such as income, education, and occupation; the debate over race versus social class; the persistence of racial discrimination; and emerging disputes within the black community regarding "what it means to be black." Offered as AAST 3338 and SOCI 3338; credit will be granted in only one department.

SOCI 3339. RACE, SPORT AND MEDIA. 3 Hours.

The media, including television, film, print, audio, and online outlets, influence how we view the world. This course analyzes overt, subtle and subliminal messages about culture, race, ethnicity, and sport as presented to us through various forms of the media. Through examinations of media portrayals of race, both past and present, students will analyze media artifacts, identify recurring themes, and examine research focused on the societal effects of stereotypical media portrayals. Offered as AAST 3339 and SOCI 3339; credit will be granted in only one department.

SOCI 3340. SOCIOLOGY OF EDUCATION. 3 Hours.

Social relations between the school and society, teachers and parents, teachers and school management, and other relevant relationships. Studying cooperation and conflict, values, complex organizational structure, and social change. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3341. SOCIOLOGY OF SPORT. 3 Hours.

Sociological examination of the institution of sport in U.S. society. By examining selected topics such as sport and socialization, sport and politics, sport and education, the Olympics, race and sport, violence in sport, women in sport, and the business of sport, this course will address the social significance of sport and its function as a major social institution.

SOCI 3342. SOCIOLOGY OF THE HUMAN BODY. 3 Hours.

Drawing from the social sciences, cultural and gender studies, and exercise physiology, this course in body sociology addresses several contemporary issues relating to diet, nutrition and exercise. Specific topics include eating disorders, factory farming, and "body industries" involving weight-loss diets, gyms, fashion, and cosmetic and bariatric surgery. The medical model of bodies is also examined. Also listed as KINE 3342; credit will not be granted for both.

SOCI 3343. SOCIOLOGY OF RELIGION. 3 Hours.

This course provides an overview of the scientific study of religion from a sociological perspective. The focus is on theories, research and trends relevant to religion in the contemporary United States. Topics include, but are not limited to, religious traditions, practices, and beliefs; declining religious participation; and religion and social change. The relationship between religion, politics, race relations, sex and gender will also be examined. Offered as SOCI 3343 and AAST 3342; credit will be granted in only one department.

SOCI 3345. SOCIOLOGY OF THE 1960S. 3 Hours.

This course presents a sociological analysis of the sixties, stressing the connection between grassroots mobilization and large structures of power, war, race and gender. The legacy of the sixties is examined through stories told by and about activists of the period. Parallels between the sixties and the present are identified. Movements covered may include civil rights, black power, anti-war and women's rights. Offered as AAST 3344 and SOCI 3345; credit will be granted in only one department.

SOCI 3346. U.S. INTO THE TWENTY-FIRST CENTURY. 3 Hours.

Selected problems, prospects, and dilemmas examined in the context of contemporary perspectives in sociology as the United States enters the new millennium as a global actor.

SOCI 3347. ENVIRONMENT AND SOCIETY. 3 Hours.

Explores the causes, consequences, and potential resolutions of environmental issues as they relate to human society. Topics include the social roots of environmental problems, inequalities in the distribution of environmental risks and harms, and new directions in sustainable development.

SOCI 3348. SOCIAL ASPECTS OF RISK. 3 Hours.

An examination of the social aspects of risk in everyday life. The course covers the relationship between risk and thrill-seeking behavior, risk assessment and the management of risk by technical experts, risk perceptions among the general public, and how technology and culture change the nature and meaning of risk over time.

SOCI 3351. WORK, OCCUPATIONS, AND CAREER DEVELOPMENT. 3 Hours.

Combines applied information on career development with a sociological perspective on work and occupations. Career development topics may include academic majors and career options, networking, career mentorship and sponsorship, job searches, resume writing, and interviewing. Other topics may include the historical development of work, occupational structures (professional, managerial, service, and blue-collar occupations), inequalities, work satisfaction, work-life balance, and the future of work.

SOCI 3352. SOCIAL STATISTICS. 3 Hours.

Descriptive statistics including measures of central tendency, measures of dispersion, and measures of association. Emphasis is on probability theory and testing hypotheses. Specific models include T-Test, chi-square, gamma, lambda, theta, analysis of variance and covariance, regression and correlation analysis. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3353. SOCIAL CLIMATE OF CITIES. 3 Hours.

A comparative study of urban communities and metropolitan areas in terms of their distinctive social life and culture. Topics touching on power and urban politics, race and ethnic relations, poverty, and leisure and lifestyles will be examined in terms of their contribution to the unique social climate of cities. Offered as AAST 3353 and SOCI 3353; credit will be granted in only one department.

SOCI 3355. COMPUTER APPLICATIONS IN THE SOCIAL SCIENCES. 3 Hours.

Students will learn how to develop a research proposal, collect and analyze data based on the proposal, and present the results. The course will emphasize computer analysis, graphics and presentation skills through the use of popular software packages such as Word, Excel, Access, Power Point, and SPSS. Internet data collection and web publishing will also be covered. Individual and group oral presentation is a cornerstone of the course mission. Satisfies the university requirements for computer literacy and oral communication. Prerequisite: SOCI 3352 or equivalent.

SOCI 3356. WOMEN, WORK AND SOCIAL CHANGE. 3 Hours.

Women's work experiences, how these experiences are changing, and relationship between paid employment and non-wage household labor. Paid and unpaid work experiences are empirically examined in terms of a variety of theoretical perspectives. Offered as DIVR 3356, SOCI 3356 and WOMS 3356; credit will be granted only once.

SOCI 3357. LAW AND SOCIETY. 3 Hours.

Law as a social institution. The processes of defining criminal conduct and the social functions of law and of legal processes and systems. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3360. TOPICS IN SOCIOLOGY. 3 Hours.

Selected topics in social issues, policy, processes and/or structure. May be repeated for credit with departmental permission.

SOCI 3365. PROGRAM EVALUATION & NEEDS ASSESSMENT. 3 Hours.

Introduces basic concepts in evaluation research addressing the need for and implementation, effectiveness, and efficiency of social intervention efforts. Students will advance their skills in quantitative and qualitative research in partnership with community organizations. The course provides an opportunity to learn about and apply techniques for needs assessment, formative and summative program evaluation, developing and testing social impact models, examining costs and benefits, and communicating findings. Prerequisite: SOCI 3462.

SOCI 3366. POPULATION TRENDS AND PROCESSES. 3 Hours.

Examines the fact that all people are born, usually move from one place to another, and inevitably die. Societal patterns in human fertility, migration and mortality contribute to widely varied life-chances for people over time and across the planet. This course explores theories and research on demographic dimensions of human behavior as they affect social and economic issues. The course provides an understanding of how vital population trends and processes are for assessing social problems and offering solutions. Credit will not be granted for both SOCI 4325 and SOCI 3366.

SOCI 3372. SOCIOLOGICAL THEORY. 3 Hours.

This course introduces students to major theories and figures who have provided sociology with interpretations of the social world. Students will consider how sociologists use theoretical concepts to understand social interactions, social problems, and social change. Students will apply sociological theories to social phenomena. Prerequisite: junior standing or permission of the instructor.

SOCI 3373. SOCIAL THEORY THROUGH POPULAR CULTURE. 3 Hours.

This course examines major theories and figures who have provided sociology with interpretations of the social world. Students will read major social, cultural, and political theories through popular culture texts (including movies, television, music, video games, and comic books) in order to interpret sociological theory. The course is designed to demonstrate the relevance of social theory in students' everyday lives.

SOCI 3380. SCIENCE AND TECHNOLOGY IN SOCIETY. 3 Hours.

Explores the complex relationship between society, science, and technology. Themes include historical perspectives on the production and deployment of scientific knowledge, critical approaches to the social, cultural, and ethical impacts of scientific and technological developments, and the role of democracy in the advancement of science and technology.

SOCI 3381. GIG WORKERS. 3 Hours.

This course examines the way employers increasingly rely on temporary flexible labor, and what it feels like to be employed precariously. Themes may include creative labor, cultural production, automation, algorithmic hiring, labor contracts, and exploitation.

SOCI 3390. HONORS COLLOQUIUM. 3 Hours.

An interdisciplinary course designed to meet the needs of advanced undergraduates in the Honors College. Prerequisite: participation in the Honors College and/or permission of the instructor.

SOCI 3462. SOCIAL RESEARCH. 4 Hours.

Required of all sociology majors. Examines the major quantitative and qualitative techniques for sociological research. Topics include setting up and implementing a research project, interpreting findings, and preparing a final report. Lab includes sampling, instrumentation, data analysis, and communicating results. Prerequisite: SOCI 3352 or permission of the instructor.

SOCI 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in the designated areas. Prerequisite: permission of the instructor.

SOCI 4193. INTERNSHIP IN SOCIOLOGY. 1 Hour.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of sociology in a non-academic setting. Students may complete a maximum of 6 hours in any combination of SOCI 4193, SOCI 4293, and SOCI 4393. Prerequisite: SOCI 1311 or SOCI 2313; permission of the instructor; and junior standing.

SOCI 4195. SERVICE LEARNING INDEPENDENT STUDY. 1 Hour.

This course involves the investigation and application of sociological knowledge through community based service. Involves structured academic analysis of service experiences. The student and supervising faculty will identify the partner agency and social issue to be addressed. Prerequisite: permission of the instructor.

SOCI 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in the designated areas. Prerequisite: permission of the instructor.

SOCI 4293. INTERNSHIP IN SOCIOLOGY. 2 Hours.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of sociology in a non-academic setting. Students may complete a maximum of 6 hours in any combination of SOCI 4193, SOCI 4293 and SOCI 4393. Prerequisite: SOCI 1311 or SOCI 2312; permission of the instructor; and junior standing.

SOCI 4295. SERVICE LEARNING INDEPENDENT STUDY. 2 Hours.

This course involves the investigation of sociological knowledge through community based service. Involves structured academic analysis of service experiences. The student and supervising faculty will identify the partner agency and social issue to be addressed. Prerequisite: permission of the instructor.

SOCI 4303. WOMEN IN SOCIETY. 3 Hours.

Women's status in contemporary American society, including the family, workplace, and politics. Women's status will also be examined in historical and crosscultural perspectives. Offered as SOCI 4303 and WOMS 4303; credit will be granted only once.

SOCI 4306. QUALITATIVE RESEARCH METHODS. 3 Hours.

Conceptual frameworks and techniques for planning, conducting, analyzing, reporting and evaluating qualitative research. Topics include interviewing, participant observation, coding, case studies and focus groups. Prerequisite: sophomore standing or permission of the instructor.

SOCI 4309. WRITING FOR THE SOCIAL SCIENCES. 3 Hours.

This course blends the theory and practice of social science writing in order to teach students how to move from the first draft to the final draft of term papers, theses, dissertations, and articles. The primary skill taught is self-editing --appraising one's work from the outside. The goal is to learn how to write for publication, drawing from postmodern perspectives on writing. Prerequisite: SOCI 1311 or permission of instructor.

SOCI 4315. VIOLENCE IN SOCIETY. 3 Hours.

Violence as a group process directed toward social change. Historical perspectives, current events, preventive and control techniques, public reaction, and individual behavior. Prerequisite: sophomore standing or permission of the instructor.

SOCI 4320. MEDICAL SOCIOLOGY. 3 Hours.

The relationships between different societies and social groups and their incidence of disease and mortality. Also examines culture-related causes of disease and treatment approaches, medicine as an occupation, healer-patient relationships, and the modern hospital as a bureaucratic organization.

SOCI 4331. RACE, ETHNICITY & FAMILY FORMATION. 3 Hours.

Investigates the ways in which cultural understandings of race and ethnicity have shaped historical and contemporary variations in family structure, familial experiences, and the legal possibilities for family formation. Junior standing (60 hours) or permission of the instructor required to enroll in this course. Offered as AAST 4331 and SOCI 4331; credit will be granted in only one department.

SOCI 4341. INEQUALITIES IN PUBLIC EDUCATION. 3 Hours.

This course examines the manner in which race, ethnicity, and class affect the quality of education in the public schools. Topics include the resegregation of schools, class and race based achievement and funding gaps, and the role the schools play in reproducing inequality. This course has a service learning component and requires volunteering in programs designed to reduce inequality in the schools. Offered as AAST 4341 and SOCI 4341; credit will be granted in only one department.

SOCI 4365. TOPICS IN SOCIOLOGY. 3 Hours.

Selected topics in social issues, policy, processes and/or structure. Prerequisite: junior standing or permission of the instructor. May be repeated for credit with departmental permission.

SOCI 4370. SENIOR RESEARCH SEMINAR. 3 Hours.

Provides sociology majors with an opportunity to gain practical experience in social research through in-depth participation in a cooperative research project. Integrates substantive knowledge with methodological and statistical skills. Oral, written, and computer application components are included. Prerequisite: SOCI 3352 and SOCI 3462 or permission of the instructor.

SOCI 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in the designated areas. Prerequisite: permission of the instructor.

SOCI 4393. INTERNSHIP IN SOCIOLOGY. 3 Hours.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of sociology in a non-academic setting. Students may complete a maximum of 6 hours in any combination of SOCI 4193, SOCI 4293, and SOCI 4393. Prerequisite: SOCI 1311 or SOCI 2312; permission of instructor; and junior standing.

SOCI 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department.

SOCI 4395. SERVICE LEARNING INDEPENDENT STUDY. 3 Hours.

This course involves the investigation and application of sociological knowledge through community based service. Involves structured academic analysis of service experiences. The student and supervising faculty will identify the partner agency and social issue to be addressed. Prerequisite: Permission of the Instructor.

SOCI 4396. INTERNSHIP IN POPULAR CULTURE. 3 Hours.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of popular culture knowledge in a non-academic setting. Prerequisite: SOCI 1310; permission of instructor; and junior standing.

SOCI 5191. CONFERENCE COURSE. 1 Hour.**SOCI 5301. SOCIOLOGICAL THEORY. 3 Hours.**

A comprehensive review, analysis, and evaluation of the dominant conceptual perspectives, and their proponents, in sociological theory.

SOCI 5303. RESEARCH DESIGN. 3 Hours.

This seminar course overviews the process of designing, conducting, and presenting research. Topics include writing literature reviews, formulating research questions and hypotheses, designing measures for concepts, crafting research instruments, collecting data, analyzing data, and reporting the results. The course examines both quantitative methods, such as surveys and experiments, as well as qualitative methods, such as interviews and ethnographic observation.

SOCI 5304. SOCIAL STATISTICS I. 3 Hours.

This course reviews univariate and bivariate descriptive and inferential statistics, focuses on ordinary least squares multivariate regression (including statistical control, path analysis, dummy variables, interaction effects, nonlinear relationships, and regression assumptions), and introduces the generalized linear model (binary logistic regression). Emphasis is on the application of these methods to social science data.

SOCI 5305. RACIAL AND ETHNIC GROUPS IN THE UNITED STATES. 3 Hours.

This seminar course compares and contrasts the immigration, acculturation, and adjustment processes of various racial and ethnic groups in the United States. We will examine conventional and controversial arguments, as well as classical and contemporary theories concerning the dynamics of inter-group relations in America. Some of the more controversial topics in sociology-such as debates over assimilation, Americanization, and enduring conflicts between groups-are the foremost intellectual topics to be addressed. The reading list includes a diverse group of scholars who advance relevant research on race and ethnic relations.

SOCI 5306. SEMINAR IN RACE AND ETHNICITY. 3 Hours.

An advanced seminar on Race and Ethnicity in the United States. Past and present discrimination will be examined in relation to the current social conditions of minority groups living in the United States. A sociological approach to the topic begins with the assumption that race and ethnicity are socially and politically constructed phenomena. Race/ethnic categories within the United States have varied significantly across time and place. Sociology connects the concepts of race and ethnicity to social structures of inequality, power, and stratification. Scholarship on race and ethnicity is central to American sociology. We will empirically and theoretically explore: 1) the social, political and historical conditions under which segregation, racial hierarchies and racial conflict emerge, and 2) the institutions through which racial boundaries and hierarchies are produced and reproduced in the United States.

SOCI 5307. INEQUALITY, POVERTY, AND MOBILITY. 3 Hours.

This seminar course provides a graduate-level introduction to inequality, poverty, and mobility. We will focus on the United States, exploring the contemporary structure as well as long term trends in the distribution of material and nonmaterial resources and the economic, social, and cultural forces that generate and perpetuate the unequal distribution of resources. Our focus will be on inequalities in the areas and intersections of social class, gender, and race.

SOCI 5308. COMPARATIVE ETHNIC AND RACIAL CONFLICT. 3 Hours.

This seminar course provides a graduate-level introduction to ethnic and racial conflict from a comparative perspective. The course will focus on topics, such as the creation and maintenance of ethnic, racial, and national identities; the sources of conflict; the consequences of conflict; conflict prevention and resolution; and attaining justice. We will use a variety of cases to examine conflict, such as former Yugoslavia and Rwanda.

SOCI 5309. CONTEMPORARY BLACK EXPERIENCE. 3 Hours.

This seminar course is an overview of the contemporary sociological literature on the black experience in America. Some of the topics to be addressed include (but are not limited to) the debate over the "significance of race," tensions over the cultural/attitudinal adaptation to inequality, and emerging disputes within the black community regarding what it "means to be black" in the post-Civil Rights Era. By the end of this course, students should be more aware of the important role that class position plays in shaping African-American identities and ideologies.

SOCI 5310. SEMINARS IN SOCIAL PSYCHOLOGY. 3 Hours.

Introduction and discussion of theoretical and methodological perspectives in social psychology. Focusing on particular domains of social life, these seminars examine fundamental processes of social interaction and the influence of social situations and social experience on the thought, feeling, and behavior of individuals. (May be repeated for credit when topics vary.).

SOCI 5311. SOCIOLOGY OF FAMILIES. 3 Hours.

This seminar course explores major areas of inquiry in the sociological study of families in the contemporary U.S. We will examine the evolution of American families and the historical processes that have shaped them. Throughout the course, the interconnections between families and social structures will be emphasized. Particular attention will be given to the ways in which gender, class, race and ethnicity influence families.

SOCI 5312. SOCIOLOGY OF REPRODUCTION. 3 Hours.

This seminar course investigates the history and sociology of reproduction in the United States. We examine the history of reproductive politics, the changing meaning of children, childbirth education, the experience of birth for both men and women, pre-natal diagnostic testing, pregnancy loss, adoption, infertility, living "child-free," new reproductive technologies, sperm/egg donation, surrogacy, and the burgeoning "baby business." The course explores the cultural norms, social institutions, and experiences of women and men as they navigate contemporary reproduction, mindful of variations by race, class, and gender.

SOCI 5313. RACE AND FAMILY. 3 Hours.

Who can become a family? This seminar course investigates this question from a socio-historical perspective, focusing on the ways in which dominant cultural understandings of race and ethnicity have shaped the legal possibilities for family formation, family structure, and the experiences of families in the U.S. The course inspects historical and contemporary families, looking at the intersection of race and family formation.

SOCI 5314. GENDER AND FAMILY. 3 Hours.

This seminar course focuses on current issues in the sociology of families, focusing on the intersection of gender and family. The course is organized to provide an overview of the issues of particular interest to contemporary scholars, with theoretical, conceptual and empirical research/work included in the readings. We focus particularly on how gender affects how family is experienced.

SOCI 5315. WOMEN AND WORK. 3 Hours.

This seminar course focuses on current issues in the sociology of women and work. We address contemporary and historical patterns of women's paid and unpaid work focusing on theoretical, conceptual and empirical research.

SOCI 5316. THE SOCIAL MIND AND INTERPERSONAL PROCESSES. 3 Hours.

This seminar course is a study of the influence of the social context on human thoughts, feelings and actions, and on the processes that constitute social interaction. Relevant theories in social psychology and microsociology and original-source readings will be covered.

SOCI 5317. CULTURAL SOCIOLOGY. 3 Hours.

This seminar course examines the relationship between culture and society. Students will study contemporary debates around culture. Students will pay special attention to the use and experience of popular symbols for the ways that their use involves the creation of meanings.

SOCI 5318. MEDIA, CULTURE, AND SOCIETY. 3 Hours.

Media saturate our everyday lives. As such, they have a tremendous impact on the way we understand and interact with society. This seminar course will take a critical approach to the study of culture in order to examine the fundamental role of media in society. We will pay particular attention to the influence of the Culture Industry.

SOCI 5319. SEMINARS IN SOCIAL INSTITUTIONS AND CHANGE. 3 Hours.

Seminars in this area are concerned with the structure and change of the basic elements of society that represent ordered and regulated aspects of social life. Also examined are collective behavior and social movements which result from instability in institutional arrangements and represent efforts to enact social change. (May be repeated for credit when topics vary.).

SOCI 5320. SOCIOLOGY OF EDUCATION. 3 Hours.

This seminar course will examine the relationships between U.S. education institutions and society by reviewing a variety of sociological theories and empirical studies. A primary area of focus will be on the relationship between formal education and class, race/ethnicity, and gender-based inequality. Topics will include, but are not limited to, the following: the history and development of U.S. educational institutions, social mobility and stratification, social reproduction, the dynamics of race, class and gender in education, student teacher relationships, teaching as a profession, higher education, and an exploration of educational reforms.

SOCI 5321. ENVIRONMENTAL SOCIOLOGY. 3 Hours.

This seminar course covers advanced topics in environmental sociology. We will investigate how human social organization affects environmental problems and responses. Specifically, we will explore topics such as environmental inequality, the social construction of nature, risk assessment, consumption and materialism, environmental values and identities, and environmental social movements. We will also look at social problems tied to environmental issues, such as those stemming from disasters, climate change, and food production. We will conclude with new directions in sustainable development.

SOCI 5322. SOCIOLOGY OF SPORT. 3 Hours.

An advanced seminar on the Sociology of Sport. This course is a sociological examination of the institution of sport in American society. By examining selected topics (such as sport and socialization, sport and politics, sport and education, race and sport, violence in sport, women in sport, and the business of sport) this course will address the social significance of sport and its function as a major social institution. We will examine the manner in which society has been shaped by the institution of sport and how sport has been shaped by society.

SOCI 5323. SOCIOLOGY OF RELIGION. 3 Hours.

This seminar course provides an overview of the scientific study of religion from a sociological perspective. The focus in the course will be on theories, research, and trends concerning religion in the contemporary United States. Some of the topics to be addressed include (but are not limited to) understanding the rich variety of religious traditions and affiliations, religious practices and beliefs, as well as the role that religion plays in facilitating and limiting social change as well as conflict in society. We will also examine differences across various religious traditions such as "mainline" and "fundamentalist" believers, secularization, and the often-controversial ways that religion intersects with other spheres of society such as morality, politics, race and ethnic relations, sex and gender.

SOCI 5324. QUALITATIVE RESEARCH METHODS. 3 Hours.

This seminar course introduces students to the qualitative tradition in sociology. We will study the assumptions underlying qualitative methods and important ethical and theoretical issues in field work. Students will become familiar with ethnographic research techniques (participant-observation and in-depth interviewing) and implement those methods in an individual small-scale research project.

SOCI 5325. READING THE QUALITATIVE CLASSICS. 3 Hours.

What makes a classic a classic? In this seminar course we will sample-read, examine, and analyze the wealth of "classic" ethnographies within the field of Sociology. We will study the classics with an eye to exploring the qualities that make these exemplary texts which often connect people to and excite them about the field of Sociology.

SOCI 5326. SOCIAL MOVEMENTS. 3 Hours.

Examines core concepts and theoretical perspectives in social movements. Topics include recruitment and participation, tactics in activism, countermobilization, repression, and the effectiveness of movements in changing both policy and cultural norms.

SOCI 5330. SEMINARS IN SOCIAL DIFFERENTIATION. 3 Hours.

In all human societies, perceptions of differences in individuals, social positions and groups arise and form a basis for social evaluation. Seminars in this area examine the processes involved in social differentiation, social evaluation, and resulting forms of social inequality. (May be repeated for credit when topics vary).

SOCI 5341. SEMINARS IN THEORY AND RESEARCH METHODS. 3 Hours.

Research methods seminars address a variety of issues related to quantitative and qualitative approaches to data collection and analysis. Theory courses offer extended treatment of topics in theory and theory construction, reflecting systematic efforts to understand the nature and operation of human society and social behavior. (May be repeated for credit when topics vary.).

SOCI 5385. NON-THESIS PROJECT. 3 Hours.

A written essay synthesizing the students' coursework in response to one of two supplied prompts. The topic and scope of the written project must be approved by the non-thesis committee chair. A final presentation of the project to the non-thesis committee, composed of the non-thesis committee chair and two additional members of the graduate faculty, is required.

SOCI 5388. RESEARCH PRACTICUM / INTERNSHIP. 3 Hours.**SOCI 5389. TEACHING SOCIOLOGY. 3 Hours.**

To learn strategies of coping with practical problems of teaching undergraduate sociology, students assist one or more professors in lecture preparation, grading, and examination construction. Not to be counted toward the degree requirement.

SOCI 5392. CONFERENCE COURSE IN SOCIOLOGY. 3 Hours.

There is not currently a description listed for this course since the content varies.

SOCI 5393. THESIS SUBSTITUTE. 3 Hours.

An academic literature review, research design, or an internship report on a selected sociological topic of individual interest. The topic and scope of the written project must be approved by the final thesis committee, which is composed of three graduate faculty members. A proposal defense and a final oral defense of the project is required.

SOCI 5398. THESIS. 3 Hours.**SOCI 5698. THESIS. 6 Hours.**

Substantial original empirical or theoretical research project on a sociological topic of individual interest. The topic and scope of the written project must be approved by the final thesis committee, which is composed of three graduate faculty members. A proposal defense and a final oral defense of the project is required.

Sociology - Graduate Programs

Objectives: M.A. in Sociology

The Master of Arts program in sociology is designed to provide students with a firm substantive background in sociological theory and in the techniques of contemporary research methodology and statistical analyses. In addition to these core concerns, the program offers a variety of seminars, as well as practicum opportunities, to help prepare students for a wide range of professional careers in both the private and public sectors or continued graduate education at the Ph.D. level.

Graduate Assistantships and Fellowships in Sociology

Graduate teaching and research assistantships and other forms of financial support will be awarded on a competitive basis. In addition to performance in any graduate courses the student may have taken, the same criteria used to determine admission status will be used in evaluating applications for such awards. No single factor, including standardized test scores, will be used to end consideration of any graduate assistantships.

Admissions Requirements: Sociology

All successful applicants must satisfy the basic graduate admission requirements of UT Arlington as outlined in the University Catalog in the Admissions section. The Sociology graduate program makes admission decisions based on several factors, including grade point averages, preparation in the field of Sociology or related disciplines, letters of recommendation, and statements of interest. There are four categories for acceptance: Facilitated Admission, Unconditional Admission, Probationary Admission, and Provisional Admission.

Facilitated Admission

Available to UTA graduates who have completed their BA from UTA within one year prior to admission. Applicants admitted through Facilitated Admission meet the following three criteria:

- 1) Overall UTA GPA of 3.5, as calculated by Graduate Studies.
- 2) Minimum GPA of 3.5 in last 60 hours, as calculated by Graduate Studies.
- 3) A grade B or better in SOCI 3372 (Sociological Theory), SOCI 3352 (Social Statistics), and SOCI 3462 (Social Research)

To apply for Facilitated Admission, contact the Director of Graduate Studies for Sociology.

Applicants who do not qualify for Facilitated Admission must apply on-line at www.applytexas.org

Letters of Recommendation must be mailed directly from recommenders to the Director of Graduate Studies for Sociology. Statements of Interest must be mailed directly from the applicant to the Director of Graduate Studies for Sociology.

Unconditional Admission

Unconditional Admission is available to applicants who have completed a BA or BS in Sociology or a related discipline from an accredited institution.

Applicants with undergraduate degrees from UTA admitted on Unconditional Admission meet the following three criteria:

- 1) Minimum GPA of 3.0, as calculated by Graduate Studies.
- 2) Two letters of recommendation that favorably assess the applicant's potential for success in a graduate program in Sociology.
- 3) A satisfactory 2-3 page statement of interest describing the applicant's academic background, research or study interests, and professional goals as they relate to the field of Sociology.

Applicants with an undergraduate degree from an institution other than UTA meet the three conditions above for Unconditional Admission plus the following condition:

- 1) GRE scores of at least 150 on the verbal sub-test (500 on the prior scale) and 144 on the quantitative sub-test (500 on the prior scale).

Probationary Admission

Probationary Admission is available to applicants who have completed a BA or BS in Sociology or a related discipline from an accredited institution but who do not qualify for Unconditional Admission due to a GPA below 3.0, as calculated by Graduate Studies. Applicants admitted on probationary admission meet the following three criteria:

- 1) GRE scores of at least 150 on the verbal sub-test (500 on the prior scale) and 144 on the quantitative sub-test (500 on the prior scale).

- 2) Two letters of recommendation that favorably assess the applicant's potential for success in a graduate program in Sociology.
- 3) A satisfactory 2-3 page statement of interest describing the applicant's academic background, research or study interests, and professional goals as they relate to the field of Sociology.

Provisional Admission

Provisional Admission is available to applicants unable to supply all required documentation prior to the admission deadline, but who otherwise appear to meet admission requirements. Provisionally admitted students must satisfy any incomplete documentation by the end of the semester in which they are admitted.

Deferral

An applicant may be deferred when a file is incomplete or when a denial decision is not appropriate.

International Students

To qualify for admission, international students must score 550 or above on the TOEFL.

Degree Requirements: Sociology

Students may select from three options: the non-thesis, thesis substitute, or thesis degree plan.

The Non-Thesis degree plan is designed for students who wish to complete a written essay synthesizing their coursework in response to one of two supplied prompts. The non-thesis degree plan requires satisfactory completion of a minimum of 36 hours of coursework, including core courses in theory, methods, and statistics, and the three hour non-thesis course SOCI 5385. Non-thesis students must form a non-thesis faculty committee, consisting of a non-thesis chair and two additional members of the graduate faculty. Non-thesis degree seeking students are required to give a presentation on their written essay to their non-thesis faculty committee. The scope, content, and form of the non-thesis document must be approved by the student's non-thesis committee chair. SOCI 5385.

The Thesis-substitute degree plan is designed for students who wish to complete an academic literature review, research design, or an internship report on a selected sociological topic of personal interest. The thesis-substitute degree plan requires satisfactory completion of a minimum of 33 hours of coursework, including core courses in theory, methods, and statistics, and the three hour thesis substitute course SOCI 5393. Thesis-substitute degree students are required to write and orally defend a proposal for their thesis-substitute project in addition to writing and orally defending their thesis-substitute document. Thesis-substitute students must form a thesis-substitute faculty committee, consisting of a thesis-substitute chair and two additional members of the graduate faculty. The scope, content, and form of the thesis-substitute document shall be determined by the student's thesis committee. SOCI 5393.

The Thesis degree plan is designed for students who wish to research and write a substantial, original empirical or theoretical work on a sociological topic of personal interest. The thesis degree plan requires satisfactory completion of a minimum of 30 hours of coursework, including core courses in theory, methods, and statistics, and the six hour thesis course SOCI 5698. Thesis degree students are required to write and orally defend a proposal for their research project in addition to completing original research and writing and orally defending their thesis. Thesis students must form a thesis faculty committee, consisting of a thesis chair and two additional members of the graduate faculty. The scope, content, and form of the thesis shall be determined by the student's thesis committee. SOCI 5698.

Dual Degree Program

Students in sociology may participate in a dual degree program where by they can earn a Master of Arts in Sociology and another field, such as Master of Public Administration or Master of Science in Social Work. By participating in a dual degree program, students can apply a number of semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately. Six or more hours may be jointly applied depending on the total number of hours required for both degrees, and subject to the approval of graduate advisors from both programs.

To participate in the dual degree option, students must make separate application to each program and must submit a separate Program of Work for each program. Admission to and enrollment in the two programs must be concurrent (admitted to the second program before completing more than 24 hours in the first). Those interested should consult each of the appropriate graduate advisors for coursework requirements and refer to Graduate Studies catalog entry on Dual Degree Program in the Advanced Degrees and Requirements section for further details.

Fast Track Program in Sociology

The Fast Track Program allows outstanding undergraduate students in sociology at UT Arlington to take up to three graduate seminars in sociology that will earn credit toward *both* the Bachelor's degree and the Master's degree in Sociology. It is designed to encourage high standards of performance, to facilitate the transition from undergraduate to graduate study, and to reduce time needed to complete the MA. Interested undergraduate students should apply for the Fast Track Program when they are within 30 hours of completing the Bachelor's degree. To qualify, students must have completed at least 30 hours at UTA with a GPA of 3.0 in all courses and 3.25 in the last 30 hours. Before entering the Fast Track, students must also have completed the

four required core courses in the Sociology major with a GPA of at least 3.5, or three of the four with a GPA of 3.66 or more. Additionally, they must have already taken at least two non-core sociology courses with a GPA of 3.5 or higher.

Students who successfully complete the Fast Track Program will be admitted automatically to Graduate Studies to continue their graduate work in the Sociology MA Program once the Bachelor's degree is awarded. They will *not* be required to take the GRE, complete an additional application for admission to Graduate Studies, supply letters of recommendation, or pay an application fee. An undergraduate student completing the maximum of nine graduate hours would be admitted to the Sociology MA Program with only five additional courses and a thesis remaining to complete the requirements for the thesis option.

To remain in the Fast Track Program, students must receive no grade lower than a B in any graduate seminars taken as an undergraduate, selected with the advice and approval of the Sociology Graduate Advisor. Undergraduate students who do not maintain grades of B or A in the graduate courses taken will be unable to continue in the Fast Track Program but, if the courses are completed passing, will still receive credit toward their undergraduate degree requirements. Students originally denied entry into the Fast Track Program, discontinued after provisional admission, subsequently dropped or opting out are still welcome to apply to the Sociology MA Program in the usual way and will be considered without prejudice.

For an application form or to obtain more details about this program, contact the Sociology Undergraduate Advisor.

Sociology - Undergraduate Programs

Overview

The principal common educational objective in the Department of Sociology and Anthropology is to develop a systematic understanding of social behavior, human culture, and social institutions. Knowledge of human social and cultural relationships is vital to a meaningful perspective on and understanding of the society in which we live. Contemporary societies are characterized by diversity, rapid change, complex organization, and extensive specialization. Programs of study in the Department of Sociology and Anthropology pursue the challenge of:

1. creating and disseminating general knowledge that will render this world more understandable and
2. providing an educational base for more effective and humane planning and social intervention in society.

Each of the programs of study relates to this general objective in a somewhat different manner. Students are encouraged to visit with the faculty and learn more about the programs offered in the department.

Sociology

A program of study in sociology has three principle objectives: to foster the ability to analyze human relationships from a sociological perspective, to develop the theoretical, methodological, and statistical skills necessary for asking and answering sociological questions, and to enhance individuals' awareness of the relationship between events in their own lives and the structure of the society in which they live. The program is designed to prepare students both to pursue graduate work in sociology and to seek a career in a variety of private and public settings where knowledge of human relationships and/or social research skills is particularly useful. Students seeking certification to teach in the public schools can use sociology as a teaching area.

Popular Culture Minor

The Popular Culture Minor allows students from across campus to develop important skills no matter their major. Students in the Popular Culture Minor prepare themselves to 1) work in the entertainment industry; and/or 2) understand the role and power of popular culture in their everyday lives. Whether students seek employment in the creative industries (video games, music, film, social media, etc.) or other employment areas, they will be able to look at complex problems and develop innovative solutions. Students will have the opportunity to analyze popular culture, its production, consumption, and reception. The minor mixes a classic approach to a liberal arts education with opportunities to prepare for real-world employment.

Fast Track Program

The Fast Track Program in Sociology allows outstanding seniors in sociology to take up to three graduate seminars for credit toward both the Bachelor's degree and the Master's degree in Sociology. Interested undergraduate students should apply for the Fast Track Program when they are within 30 hours of completing the Bachelor's Degree. Students who successfully complete the Fast Track Program will be admitted automatically to Graduate Studies. They will not be required to take the Graduate Record Examination, complete an application for admission to Graduate Studies, supply letters of recommendation, or pay an application fee. An undergraduate student completing the maximum of nine graduate hours would be admitted to the Sociology MA program with only five additional courses and a thesis remaining to complete the requirements for thesis option. For more details about the program contact the Undergraduate Advisor for the Department of Sociology and Anthropology and consult the on-line catalog.

Requirements for a Bachelor of Arts Degree in Sociology

Pre-professional Courses

UNIV 1131 STUDENT SUCCESS or UNIV 1101 STUDENT SUCCESS (for transfer students) or meet the requirement through SOCI 1200 PERSONAL AND PROFESSIONAL SUCCESS IN THE SOCIAL SCIENCES

General Core Requirements

POLS 2311 GOVERNMENT OF THE UNITED STATES

POLS 2312 STATE AND LOCAL GOVERNMENT

HIST 1301 HISTORY OF THE UNITED STATES TO 1865

HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT

Communication - 6 hours from approved list.

8 hours in the same modern or classical language (1441, 1442).

Creative Arts - 3 hours from approved list.

Language Philosophy and Culture - 3 hours from approved list.

Life and Physical Sciences - 6 hours from approved list.

Mathematics - 6 hours MATH 1301 or higher. Math 1308 is recommended.

Required Component Area Option - Any course listed above. A course may fulfill only one component area.

Major Courses

37 hours including:

SOCI 1311 INTRODUCTION TO SOCIOLOGY

SOCI 3352 SOCIAL STATISTICS

SOCI 3372 SOCIOLOGICAL THEORY or SOCI 3373 SOCIAL THEORY THROUGH POPULAR CULTURE

SOCI 3462 SOCIAL RESEARCH

One course in Anthropology

Electives

Sufficient to give the total number of hours required for the degree.

Total

120 hours, at least 36 of which must be 3000/4000 level.

Optional Concentrations in Sociology

Students majoring in Sociology may pursue a general course of study in the discipline or concentrate in a specific area or areas. The purpose of specialization is to provide the student with a focused, systematic, and in-depth educational experience in the context of a broad liberal arts education. These specializations are also related to different career paths. Please see the Sociology academic advisor for more information on completing an area concentration.

General Requirements:

Completing four courses in any area fulfills requirements for the concentration. See the Sociology academic advisor for more information.

The areas of specialization are:

Human Capital and Work

SOCI 3317 INDIVIDUAL AND SOCIETY

SOCI 3319 SMALL GROUPS

SOCI 3331 SOCIOLOGY OF THE FAMILY

SOCI 3336 SOCIAL INEQUALITY

SOCI 3351 WORK, OCCUPATIONS, AND CAREER DEVELOPMENT

SOCI 3356 WOMEN, WORK AND SOCIAL CHANGE

SOCI 3381 GIG WORKERS

Social Services and Diverse Populations

SOCI 3317 INDIVIDUAL AND SOCIETY

SOCI 3319 SMALL GROUPS

SOCI 3320 DEVIANCE: SOCIAL AND PERSONAL

SOCI 3331 SOCIOLOGY OF THE FAMILY

SOCI 3332 SOCIOLOGY OF REPRODUCTION

SOCI 3337 RACIAL & ETHNIC GROUPS IN US

SOCI 3338 CONTEMPORARY BLACK EXPERIENCE

SOCI 3339 RACE, SPORT AND MEDIA

SOCI 3343 SOCIOLOGY OF RELIGION

SOCI 4306 QUALITATIVE RESEARCH METHODS

SOCI 4331 RACE, ETHNICITY & FAMILY FORMATION

Non-Profit and Community Organizations

SOCI 3319 SMALL GROUPS

SOCI 3324 SOCIAL MOVEMENTS

SOCI 3331 SOCIOLOGY OF THE FAMILY

SOCI 3332 SOCIOLOGY OF REPRODUCTION

SOCI 3343 SOCIOLOGY OF RELIGION

SOCI 3347 ENVIRONMENT AND SOCIETY

SOCI 4331 RACE, ETHNICITY & FAMILY FORMATION

Health, Science and Technology

SOCI 3316 LATINO HEALTH ISSUES

SOCI 3317 INDIVIDUAL AND SOCIETY

SOCI 3332 SOCIOLOGY OF REPRODUCTION

SOCI 3341 SOCIOLOGY OF SPORT

SOCI 3347 ENVIRONMENT AND SOCIETY

SOCI 3348 SOCIAL ASPECTS OF RISK

SOCI 3380 SCIENCE AND TECHNOLOGY IN SOCIETY

SOCI 4320 MEDICAL SOCIOLOGY

The following courses may be used to complete any of the area concentrations if the content is related to the concentration (approval is required):

SOCI 3360 TOPICS IN SOCIOLOGY

SOCI 4365 TOPICS IN SOCIOLOGY

SOCI 4391 CONFERENCE COURSE

SOCI 4393 INTERNSHIP IN SOCIOLOGY

SOCI 4395 SERVICE LEARNING INDEPENDENT STUDY

Requirements for a Minor in Sociology

A minor in sociology requires 18 hours in sociology, at least six of which must be at the 3000/4000 level.

Requirements for a Minor in Popular Culture

A minor in popular culture requires 18 semester hours, including 6 required hours and 3 experiential learning hours.

- Required (6 credit hours)
 - SOCI 1310. INTRODUCTION TO POPULAR CULTURE
 - SOCI 3373. SOCIAL THEORY THROUGH POPULAR CULTURE

- Experiential Learning – 3 Credit hours from the following
 - Internship, Independent Study or Conference Course related to Popular Culture – with prior approval of the advisor of the Popular Culture Minor
 - SOCI 4396. INTERNSHIP IN POPULAR CULTURE
 - MUSI 4395. INTERNSHIP
 - SOCI 4391. CONFERENCE COURSE
 - THEA 4391. INDEPENDENT STUDY
 - THEA 4395. THEATRE INTERNSHIP LEVEL I
 - COMM 4395, ADVT 4395, BCMN 4395, COMS 4395, CTEC 4395, JOUR 4395, PREL 4395 (Internships in Communication)
 - DS 4395. DISABILITY STUDIES INTERNSHIP
 - ART 4382. ENTREPRENEURSHIP IN THE ARTS
 - MUSI 3396. RECORD LABEL AND STUDIO MANAGEMENT
 - SOCI 3381. GIG WORKERS
- Choose 9 credit hours related to popular culture
 - SOCI 3380. SCIENCE AND TECHNOLOGY IN SOCIETY
 - SOCI 3339. RACE, SPORT AND MEDIA.
 - SOCI 3341. SOCIOLOGY OF SPORT
 - SOCI 3318. SELF AND SOCIAL IDENTITY
 - ADVT 3304. STRATEGIC COMMUNICATION
 - ADVT 3305. ADVERTISING MEDIA
 - ADVT 3308. DIGITAL ADVERTISING DESIGN
 - ANTH 2322. GLOBAL CULTURES
 - ANTH 3332. FOOD AND CULTURE
 - ANTH 3334. ANTHROPOLOGY OF SOUTH ASIA
 - ANTH 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD (COMM 3345)
 - ANTH 3346. ANTHROPOLOGY OF TOURISM
 - ANTH 3366. SEX, GENDER, AND CULTURE (WOMS 3366)
 - ARAB 3312. TOPICS IN ARABIC LITERATURE AND CULTURE*
 - ART 3339. DIRECTED SCREENINGS
 - BCMN 2360. INTRODUCTION TO BROADCASTING
 - CHIN 2310. CHINESE CULTURE IN THE WORLD
 - CHIN 3304. CHINESE CONVERSATION AND CULTURE II*
 - CHIN 4334 CONTEMPORARY CHINESE CULTURE
 - COMM 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD
 - COMM 4305. COMMUNICATION & SOCIETY
 - COMM 4306. RACE, GENDER, AND MEDIA
 - COMM 4360. EMERGING MEDIA STRATEGY
 - DS 3302. DISABILITY & ART
 - DS 3327/HIST 4327. CYBORGS & PROSTHETICS
 - DS 3346/COMM 3346. DISABILITY IN MASS MEDIA
 - ENGL 4350. TOPICS IN FILM AND LITERATURE
 - ENGL 4328: J. R. R. TOLKIEN
 - ENGL 4365: CHILDREN'S LITERATURE
 - ENGL 4366: YOUNG ADULT LITERATURE
 - FREN 2310. FRENCH AND FRANCOPHONE CULTURES IN THE WORLD
 - FREN 3316. TOPICS IN CITIES OF FRANCE*
 - FREN 4334. CONTEMPORARY FRENCH CULTURE*
 - GLOBAL 3301. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS I
 - GLOBAL 3302. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS II
 - GERM 2310. GERMAN CULTURE IN THE WORLD
 - HIST 3303. HISTORY OF VIDEO GAMES
 - HIST 3306. HISTORY AND FILM
 - HIST 3326. TWENTIETH-CENTURY AMERICAN CULTURAL HISTORY

- HIST 4325. HISTORY OF HIP HOP
- HIST 4340. HOLLYWOOD AND THE WEST
- KORE 2310. KOREAN CULTURE IN THE WORLD
- LING 2321. CONSTRUCTED LANGUAGES
- LING 2351. E-LANGUAGES
- MODL 2301. INTRODUCTION TO WORLD LANGUAGES
- MUSI 1303. HISTORY AND APPRECIATION OF HIP HOP AND R&B MUSIC
- MUSI 1304. HISTORY OF ROCK MUSIC
- MUSI 2301. APPRECIATION OF MUSIC IN FILM
- MUSI 3320. MUSIC AND TECHNOLOGY IN GAME AUDIO
- MUSI 3322. INTRODUCTION TO SONGWRITING
- MUSI 4323. BUSINESS OF MUSIC
- PREL 3320. STRATEGIC SOCIAL MEDIA COMMUNICATION
- PREL 4316. PUBLIC RELATIONS CAMPAIGNS
- RUSS 2310. RUSSIAN CULTURE IN THE WORLD
- SPAN 2310. HISPANIC CULTURE IN THE WORLD
- SPAN 3311. SPANISH CULTURE AND CIVILIZATION
- SPAN 3312. LATIN AMERICAN CULTURE AND CIVILIZATION
- SPAN 3318 MEXICAN POPULAR CULTURE
- SPAN 4313. TOPICS IN HISPANIC CULTURE
- SPAN 4334. CONTEMPORARY HISPANIC CULTURE
- THEA 1342. THEATRE AND FILM APPRECIATION
- THEA 3302. FILM STUDIES
- THEA 3320. PLAYWRITING
- THEA 3360. GENDER AND THE PERFORMING ARTS (WOMS 3360)
- THEA 3361. WOMEN IN THEATRE (WOMS 3361)
- THEA 3342. COSPLAY COSTUME FABRICATION
- THEA 4304. MODERN THEATRE HISTORY
- THEA 4310. MUSICAL THEATRE HISTORY
- POLS 4300. POLITICS IN POPULAR CULTURE
- Note: Special Topics courses will be considered on a course-by-course basis. Approval will be made by the advisor of the Popular Culture Minor.

Fast Track Program in Sociology

The Fast Track Program allows outstanding undergraduate students in sociology at UT Arlington to take up to three graduate seminars in sociology that will earn credit toward *both* the Bachelor's degree and the Master's degree in Sociology. It is designed to encourage high standards of performance, to facilitate the transition from undergraduate to graduate study, and to reduce time needed to complete the MA . Interested undergraduate students should apply for the Fast Track Program when they are within 30 hours of completing the Bachelor's degree. To qualify, students must have completed at least 30 hours at UTA with a GPA of 3.0 in all courses and 3.25 in the last 30 hours. Before entering the Fast Track, students must also have completed the four required core courses in the Sociology major with a GPA of at least 3.5, or three of the four with a GPA of 3.66 or more. Additionally, they must have already taken at least two non-core sociology courses with a GPA of 3.5 or higher.

Students who successfully complete the Fast Track Program will be admitted automatically to Graduate Studies to continue their graduate work in the Sociology MA Program once the Bachelor's degree is awarded. They will *not* be required to take the GRE, complete an additional application for admission to Graduate Studies, supply letters of recommendation, or pay an application fee. An undergraduate student completing the maximum of nine graduate hours would be admitted to the Sociology MA Program with only five additional courses and a thesis remaining to complete the requirements for the thesis option.

To remain in the Fast Track Program, students must receive no grade lower than a B in any graduate seminars taken as an undergraduate, selected with the advice and approval of the Sociology Graduate Advisor. Undergraduate students who do not maintain grades of B or A in the graduate courses taken will be unable to continue in the Fast Track Program but, if the courses are completed passing, will still receive credit toward their undergraduate degree requirements. Students originally denied entry into the Fast Track Program, discontinued after provisional admission, subsequently dropped or opting out are still welcome to apply to the Sociology MA Program in the usual way and will be considered without prejudice.

For an application form or to obtain more details about this program, contact the Sociology Undergraduate Advisor.

Anthropology Undergraduate Programs

Overview

The principal common educational objective in the Department of Sociology and Anthropology is to develop a systematic understanding of social behavior, human culture, and social institutions. Knowledge of human social and cultural relationships is vital to a meaningful perspective on and understanding of the society in which we live. Contemporary societies are characterized by diversity, rapid change, complex organization, and extensive specialization. Programs of study in the Department of Sociology and Anthropology pursue the challenge of:

1. creating and disseminating general knowledge that will render this world more understandable and
2. providing an educational base for more effective and humane planning and social intervention in society.

Each of the programs of study relates to this general objective in a somewhat different manner. Students are encouraged to visit with the faculty and learn more about the programs offered in the department.

Anthropology

A program of study in anthropology has the objective of grounding students in three main subfields of anthropology: cultural anthropology (the comparative analysis of human lifeways around the world), archaeology (the systematic analysis of the material remains of past cultures), and physical anthropology (the study of humans as a biological species). The program prepares students both for graduate work in anthropology and for many careers in which anthropological perspectives and training are useful.

Requirements for a Bachelor of Arts Degree in Anthropology

UNIVERSITY CORE REQUIREMENTS (P. 50)

College of Liberal Arts Requirements

8 hours in the same modern or classical language (first-year college-level: 1441, 1442)

Anthropology Program Requirements

BIOLOGICAL ANTHROPOLOGY (ANTH 2307)

GLOBAL CULTURES (ANTH 2322)

INTRODUCTION TO ARCHAEOLOGY (ANTH 2339)

One approved ANTH method course

One approved ANTH theory course

One advanced (3000/4000 level) elective in Sociology (SOCI)

6 hours of modern or classical languages

24 additional hours of approved ANTH electives

Summary: 40 hours, including ANTH 2307, 2322, and 2339; one approved ANTH course in Methods; one approved ANTH course in Theory; one advanced (3000/4000 level) SOCI elective; 6 hours of modern or classical languages, and 24 additional hours of approved ANTH electives. Contact the department advisor for the list of approved courses for method, theory, and electives.

Additional University Requirements

UNIV 1131 STUDENT SUCCESS or UNIV 1101 STUDENT SUCCESS (for transfer students) which may also be met by completing ANTH 1200 PERSONAL AND PROFESSIONAL SUCCESS IN THE SOCIAL SCIENCES.

Additional elective hours sufficient to reach 120 total credit hours, with 36 advanced (3000/4000) hours; may include an optional minor.

Requirement for a Minor in Anthropology

The Anthropology minor (6 courses/18 hours total) can be fulfilled by successfully completing:

Select two of the following:

ANTH 2307 BIOLOGICAL ANTHROPOLOGY

ANTH 2322 GLOBAL CULTURES

ANTH 2339 INTRODUCTION TO ARCHAEOLOGY

Any other four ANTH courses, at least two of which must be at the advanced level (3000 or above)

Questions about the Anthropology minor may be directed to the department advisor.

Theatre Arts

Undergraduate Degrees

- Bachelor of Arts in Theatre Arts (<http://catalog.uta.edu/liberalarts/theatre/undergraduate/#bachelorstext/#batheatrearts>)
- Bachelor of Fine Arts in Theatre Arts (<http://catalog.uta.edu/liberalarts/theatre/undergraduate/#bachelorstext/#bfatheatrearts>), **Design and Technology Sub-plan**
- Bachelor of Fine Arts in Theatre Arts (<http://catalog.uta.edu/liberalarts/theatre/undergraduate/#bachelorstext/#bfatheatrearts>), **Musical Theatre Sub-plan**
- Bachelor of Fine Arts in Theatre Arts (<http://catalog.uta.edu/liberalarts/theatre/undergraduate/#bachelorstext/#bfatheatrearts>), **Acting Sub-plan**
- Minor in Theatre Arts (p. 1001)
- Minor in Dance (p. 1001)

COURSES

THEA 0181. THEATRE PRACTICUM. 1 Hour. (TCCN = DRAM 1120)

Open to all students interested in participating in dramatic productions on-stage, backstage, or front of house. Considers aspects of play production which may include scenery construction, publicity, costumes, and lighting. Practicum students participate in auditions and are assigned to production crews. May be repeated for credit. All Theatre Arts majors register for THEA 0181 each semester. Prerequisite: Permission of advisor.

THEA 1101. THEATRE ARTS SYMPOSIUM. 1 Hour.

An orientation to academic and professional theatre skills and resources. Prerequisite: Permission of advisor.

THEA 1140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1140 and THEA 1140; credit will be granted only in one department. Prerequisite: Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 1141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1141 and THEA 1141; credit will be granted only in one department. Prerequisite: C or better in MUSI 1140 or THEA 1140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 1302. VOCAL FUNDAMENTALS. 3 Hours. (TCCN = DRAM 2336)

Introduction to the fundamentals of vocal production for the stage and oral communication skills in presentations, including interaction in the classroom setting to meet the needs of course work. Emphasis on relaxation, breathing techniques, the creation of vocal sound, the interconnection of voice and body, and the use of acceptable grammar and pronunciation in formal presentations. Prerequisite: Permission of advisor.

THEA 1303. FUNDAMENTALS OF PRESENTATION. 3 Hours.

The fundamentals of vocal performance as it relates to effective oral communication. Students develop ideas for the purpose of communication and learn effective techniques for clarity of expression, ideas, and message while considering the effect on an audience. Theatrical communication techniques are one of several skill sets taught. Oral, aural, written, and visual literacy are all explored, with intense focus on oral presentation. This course satisfies the University of Texas at Arlington core curriculum requirement in Communication.

THEA 1304. STAGECRAFT I. 3 Hours. (TCCN = DRAM 1330)

An introduction to all areas of theatre craft, technology, and production. The development and application of technical skills, production organization, and an orientation to production facilities, equipment, and materials. Prerequisite: Permission of Advisor.

THEA 1305. INTRODUCTION TO THEATRICAL DESIGN. 3 Hours.

Fundamentals of design elements, theory and practice as applied to costume, scenic, properties, lighting, and sound design. Prerequisite: Permission of advisor.

THEA 1307. ACTING I: BASIC TECHNIQUES. 3 Hours. (TCCN = DRAM 1351)

Study and exercise in fundamentals of the actor's craft utilizing the Stanislavsky Method. Emphasis on the development of basic acting techniques including: characterization, objectives, beats, action, and script analysis. Performance requirements include improvisation, monologues, and scene study. Attendance at productions outside of the classroom may be required. Prerequisite: Permission of advisor.

THEA 1315. THEATRICAL MAKEUP. 3 Hours.

Types, styles, and techniques of make-up application for stage, television, and film. May not be repeated for credit. Prerequisite: Permission of advisor.

THEA 1342. THEATRE AND FILM APPRECIATION. 3 Hours.

Develops awareness of and appreciation for dramatic art as reflected in theatre and film. Designed to increase the student's enjoyment and knowledge of drama and its historical, social and cultural contexts. Students may be required to attend plays. Theatre Arts BFA and BA majors and minors may not use this course in place of THEA 1343. This course satisfies the University of Texas at Arlington core curriculum requirement in Creative Arts.

THEA 1343. INTRODUCTION TO THEATRE. 3 Hours. (TCCN = DRAM 1310)

Acquaints the student with major phases of theatrical activity and production research. Considers the duties and contributions of director, actor, scene designer, costumer, and others involved in play production. Students may be required to attend and review productions. This course satisfies the University of Texas at Arlington core curriculum requirement in Creative Arts.

THEA 2140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2140 and THEA 2140; credit will be granted only in one department. Prerequisite: C or better in MUSI 1141 or THEA 1141. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 2141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2141 and THEA 2141; credit will be granted only in one department. Prerequisite: C or better in MUSI 2140 or THEA 2140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 2306. COSTUME TECHNOLOGY. 3 Hours. (TCCN = DRAM 1342)

Introduction to the process and application of the fundamental skills of costuming and costume design preparation methods. Prerequisite: Permission of advisor.

THEA 2309. SCRIPT ANALYSIS. 3 Hours.

An investigation of dramatic structure from the points of view of the director, actor, and designer. Elements of dramatic theory are included. Prerequisite: Permission of advisor.

THEA 2337. IMPROVISATION. 3 Hours.

The study of modern improvisational skills and techniques for the performer, director, playwright, and instructor. Improvisation I focuses on short form improv, defined as unrelated games, scenes, and exercises that encourage spontaneity and group cohesion. Prerequisite: Permission of advisor.

THEA 2352. ACTING II: SCENE STUDY. 3 Hours. (TCCN = DRAM 1352)

Acting technique exercise to enhance and develop acting skills through scene study. Methods of characterization, research, and role preparation. Prerequisite: THEA 1307 and permission of advisor.

THEA 3140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3140 and THEA 3140; credit will be granted only in one department. Prerequisite: C or better in MUSI 2141 or THEA 2141. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 3141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3141 and THEA 3141; credit will be granted only in one department. Prerequisite: C or better in MUSI 3140 or THEA 3140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 3300. DIRECTING I. 3 Hours.

The techniques of staging plays. Play interpretation, casting, rehearsal procedure, staging, and the role of the director in character analysis and creation. Prerequisite: THEA 1305, THEA 1307, THEA 1343, and THEA 2309 or permission of advisor.

THEA 3301. SCENE DESIGN I. 3 Hours.

History, theory, and basic concepts of design methods with application for stage, television, and film. Aesthetic skills of color, line, texture, and form, and the interactions of these elements. Mechanics and techniques of illustration and rendering of design ideas. Prerequisites: THEA 1304, THEA 1305, THEA 1343, THEA 3309, THEA 3318, and permission of advisor.

THEA 3302. FILM STUDIES. 3 Hours.

Principles of film study, including history, genre, aesthetics, theory, and criticism of U.S. and international films. Lecture and discussion, including the viewing of selected films.

THEA 3303. SOUND DESIGN. 3 Hours.

The study of the fundamentals of sound design as related to the theatrical production environment. The study of basic sound design tools and the practical application of these tools through project work. Prerequisites: THEA 1305, THEA 3316, or permission of advisor.

THEA 3304. STAGECRAFT II. 3 Hours.

An overview of and hands-on training in advanced production techniques, including metalworking and welding, theatrical rigging, automation principles, advanced wood joinery, and fabrication utilizing new materials, as well as an in-depth study of theatrical safety practices. Prerequisites: THEA 1304 or permission of advisor.

THEA 3305. LIGHTING DESIGN I. 3 Hours.

The study of basic design principles and techniques and their application in theatrical lighting design. The practical application of computer-aided design tools and the use of theatrical lighting equipment in realized design projects. Prerequisites: THEA 1305, THEA 3316, and THEA 3318 or permission of advisor.

THEA 3306. SCENE PAINTING FOR THE STAGE. 3 Hours.

Instructional and demonstrative approaches to scenic painting for the stage. Prerequisite: THEA 1304 or permission of advisor.

THEA 3307. COSTUME HISTORY. 3 Hours.

Historical styles and trends of fashion to the present as applied to stage, television, and film. Prerequisite: Permission of advisor.

THEA 3308. ACTING FOR THE CAMERA. 3 Hours.

An advanced acting course to acquire performance technique on camera. Credit will be granted only once. Prerequisite: THEA 1307, THEA 2352, or permission of instructor.

THEA 3310. CREATIVE DRAMA. 3 Hours.

The theory and practice of creative dramatics exercises and activities. The application of the artistic elements in creative drama and interdisciplinary applications of creative drama activities.

THEA 3311. DIALECTS IN PERFORMANCE. 3 Hours.

The study and application of selected dialects for performance. Prerequisite: Permission of advisor.

THEA 3312. THEATRE FOR YOUNG AUDIENCES. 3 Hours.

The theory and practice of creating and producing plays for young audiences. Students shall be required to act in selected works. Prerequisite: Permission of advisor.

THEA 3313. PERIOD STYLES. 3 Hours.

Survey of architectural elements, fashion, and decorations throughout history and their relationship to theatrical design. Provides a foundation in visual history and an historical framework in which to develop inspiration for visual ideas and needs for stage design.

THEA 3314. VOICE AND MOVEMENT. 3 Hours.

An intermediate course in vocal production and its integration with movement. Primarily focuses on articulation, breath support, and voice/movement interaction. Only Theatre Arts majors or minors may enroll. Prerequisite: Must be a Theatre Arts major or minor; permission of advisor.

THEA 3316. LIGHTING AND SOUND TECHNOLOGY. 3 Hours.

An introduction to the equipment, technologies, terminology, and careers in the theatrical areas of lighting and sound. Examines the theories and application of optical control and distribution, the physics of audio, distribution of acoustical energy, and lighting color theory. Prerequisite: Permission of advisor.

THEA 3317. SINGING FOR THE ACTOR I. 3 Hours.

An applied study of the vocal apparatus, vocal placement, the voice/body relationship, character, working with text, phrasing, and auditioning as they relate to singing in musical theatre for the Broadway or West End theatre. Emphasis is placed on integrating singing and acting skills. Same as offering MUSI 3317; may not be repeated and credit will only be granted in one department. Prerequisites: THEA 1307 or permission of advisor.

THEA 3318. DRAFTING FOR THE ARTS. 3 Hours.

The principles and application of computer-aided drafting techniques for the entertainment industry. Prerequisite: Permission of advisor.

THEA 3320. PLAYWRITING I. 3 Hours.

The art and craft of constructing a play. Students write playlets, scenes, and one-act plays for in-house performance and/or instructor evaluation.

THEA 3337. IMPROVISATION II: LONG FORM. 3 Hours.

Revisits concepts learned from Improvisation I and applies them to an advanced structure of interrelated scenes, monologues, and stories based on a theme or idea. The students will explore this long-form structure as it applies to playwriting, acting, and directing.

THEA 3340. MOVEMENT PERFORMANCE I: FUNDAMENTALS. 3 Hours.

Development of movement techniques and movement performances. Freeing the body through exercises and experiences in relaxation, physical awareness, and movement through space. Focus on body awareness and the release of habitual patterns that restrict the body. Prerequisite: THEA 1307 and permission of advisor.

THEA 3342. COSPLAY COSTUME FABRICATION. 3 Hours.

Exploration and practice of theatrical construction and fabrication techniques used in the cosplay industry.

THEA 3343. MAKEUP FOR THE CAMERA. 3 Hours.

Exploration and practice of styles, techniques, and types of make-up and make-up application for film, photography and fashion.

THEA 3346. STAGE COMBAT. 3 Hours.

An introduction to stage combat. Students will safely explore the choreographed illusion of stage violence through the skills of unarmed and armed combat. Prerequisite: Permission of advisor.

THEA 3350. FABRIC MODIFICATION AND COSTUME CRAFTS. 3 Hours.

Exploration and practice of the process and application of techniques in fabric modification and costume crafts. Prerequisite: Permission of advisor.

THEA 3351. ROBOTS, DIGITAL HUMANITIES, AND THEATRE. 3 Hours.

Lecture and applied practices of the emerging emotional interaction between robots and humans utilizing theatrical methodologies. Course will emphasize human and robot interactions from interdisciplinary approaches including cultural, historical, sociological, health-care, disability studies, and performing arts frameworks.

THEA 3352. STAGE MANAGEMENT & THEATRE ADMINISTRATION. 3 Hours.

Managerial activities and responsibilities as applicable to community or professional theatre. Prerequisite: THEA 1343 or permission of advisor.

THEA 3355. UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS. 3 Hours.

Explores the principles of Universal Design using the performing arts as a case study: creating environments, events, buildings, and products to accommodate the broadest spectrum of human ability, size, age, and other characteristics. Investigates how to put into practice the accessibility guidelines of the Americans with Disabilities Act of 1990. Performing is not required. Offered as THEA 3355 and DS 3355; credit will only be granted in one department.

THEA 3360. GENDER AND THE PERFORMING ARTS. 3 Hours.

Examines the role of gender in the performing arts, including theory and practice focused on gender. Additional topics may include female pioneers in the performing arts, the image of gender in different media, the way gender affects actors and artists, and the effect of cultural definitions of gender on audience reception. Offered as THEA 3360 and WOMS 3360. Credit will be granted only once.

THEA 3361. WOMEN IN THEATRE. 3 Hours.

Examines the history, theory, and practice of women in theatre. Pioneering female writers, directors, producers, actors, designers, and activists will be explored as will their influence upon drama in its historical, social, and cultural contexts. Students will also be introduced to theory that examines female characters in plays and their impact on the artist and audience. Offered as THEA 3361 and WOMS 3361. Credit will be granted only once.

THEA 3387. ART DIRECTION I. 3 Hours.

The history, theory, and basic concepts of art direction methods and basic construction techniques for television and film. Prerequisite: Permission of advisor.

THEA 4110. THEATRE PEDAGOGY FIELD-BASED EXPERIENCE. 1 Hour.

Supervised and directed professional practice in local schools. The student will be assigned to a public-school site for five hours per week. Weekly seminars are required. Field-based experience must be taken the semester immediately preceding student teaching residency. Prerequisite: Permission of advisor.

THEA 4140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4140 and THEA 4140; credit will be granted only in one department. Prerequisite: C or better in MUSI 3141 or THEA 3141. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 4141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4141 and THEA 4141; credit will be granted only in one department. Prerequisite: C or better in MUSI 4140 or THEA 4140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

THEA 4270. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 2 Hours.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music Degree. Prerequisite: THEA 3141 and permission of Advisor.

THEA 4271. PRIVATE LESSONS IN VOICE - MUSICAL THEATRE. 2 Hours.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music Degree. Prerequisite: C or better in THEA 4270 and permission of advisor.

THEA 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

THEA 4300. DIRECTING II. 3 Hours.

Continuation of THEA 3300. Students will direct scenes and/or one-act plays. Prerequisite: THEA 3300 and permission of advisor.

THEA 4301. ACTING III: ADVANCED ACTING ENSEMBLE. 3 Hours.

Students will perform solo and/or group performances devised from their own and/or other artists' research and development in a collaborative, ensemble environment. May not be repeated for credit. Prerequisite: THEA 1307, THEA 2352, THEA 3340, or permission of advisor.

THEA 4303. CLASSICAL THEATRE HISTORY. 3 Hours.

The development of world theatre from its beginnings through the Renaissance. Analysis of representative plays of each period with particular emphasis on drama in its historical context. History of acting, costuming, and directing. Prerequisite: THEA 1343 and permission of advisor.

THEA 4304. MODERN THEATRE HISTORY. 3 Hours.

The development of Western theatre from the Renaissance to the present. Analysis of representative plays from Europe, England, and America. Development of the modern stage, acting methods, and production techniques. Prerequisite: THEA 1343 and permission of advisor.

THEA 4305. SCENE DESIGN II. 3 Hours.

Continuation of THEA 3301. Distinctions among stage, television, and film design, interaction of one with another, advanced methods, and application of scene design concepts. Prerequisite: THEA 3301 and permission of advisor.

THEA 4306. LIGHTING DESIGN II. 3 Hours.

Specialized topics and advanced design technique and application principles. Participation on light crews in departmental productions required. Prerequisite: THEA 3305 and permission of advisor.

THEA 4310. MUSICAL THEATRE HISTORY. 3 Hours.

The history, development, and contemporary manifestations of the musical theatre art form in America and London's West End, and its relation to the continually changing social milieu. The course follows the development of musical theatre from its inception to the present.

THEA 4311. SHAKESPEARE AND VERSE IN PERFORMANCE. 3 Hours.

The study and performance of iambic pentameter and verse as found in Shakespearean and verse plays. Prerequisite: THEA 1303 and permission of instructor.

THEA 4314. ADVANCED PRODUCTION TECHNIQUES. 3 Hours.

An advanced examination of theatre craft, technology, and production. Prerequisite: THEA 3304.

THEA 4315. SPECIAL EFFECTS MAKEUP DESIGN. 3 Hours.

The examination of styles and techniques of specialty makeup applications for the stage and how these relate to television and film.

THEA 4317. SINGING FOR THE ACTOR II. 3 Hours.

The advanced study of musical theatre performance as it relates to the integration of acting, singing and dance skills into an effective performance. The script, score, character, vocal demands, and movement requirements of both solo and ensemble works will be studied, and the works will be performed in a culminating, musical revue-styled performance. This course may be repeated once for credit. Prerequisite: THEA 1307 and THEA 3317, or permission of instructor.

THEA 4320. STAGE WELDING, RIGGING, AND FABRICATION. 3 Hours.

Styles and techniques of welding, rigging, and specialized materials fabrication for the stage and in video and film production. Prerequisite: THEA 1304 and permission of advisor.

THEA 4322. PLAYWRITING II. 3 Hours.

The art and craft of constructing a full-length, two-act play. Course content will include references to the work of major playwrights and playwriting theory. Students will receive course content through a combination of class lectures and one-on-one writing conferences with the instructor. Prerequisites: THEA 3320 or permission of faculty.

THEA 4330. U.S. THEATRE HISTORY. 3 Hours.

The evolution of theatre in the United States from its beginning in colonial times to the present day. Representative plays from various periods are studied.

THEA 4333. MUSICAL THEATRE PORTFOLIO AND SHOWCASE. 3 Hours.

Advanced principles of character development for musical theatre are explored with emphasis on the development of a role through script, music, and character analysis. The semester is structured toward the development of an actor's final portfolio culminating in an audition context presentation or showcase. Prerequisite: THEA 2352, THEA 4317, DNCE 3335 and permission of instructor.

THEA 4340. MOVEMENT PERFORMANCE II: PHYSICAL THEATRE. 3 Hours.

The study and performance of physical theatre techniques. Prerequisites: THEA 3340 and permission of advisor.

THEA 4341. ACTING IV: PERFORMANCE, PORTFOLIO & SHOWCASE. 3 Hours.

The development and presentation of a professional audition with an additional emphasis on advanced character development, acting as a business, entrepreneurial opportunities, and the planning and research needed to establish an acting career in a city or region. (Formerly THEA 3341; may not be repeated for credit). Prerequisite: THEA 1303, THEA 1307, THEA 1343, THEA 2352, THEA 2309, and THEA 3340, or permission of advisor.

THEA 4343. COSTUME DESIGN. 3 Hours.

Theory and practice of costume design and application of those principles to theatrical production. Prerequisites: THEA 1343, THEA 1305, THEA 2309 or permission of instructor.

THEA 4344. PORTFOLIO AND RENDERING. 3 Hours.

The application of the principles of developing and disseminating professional materials in the 21st century, including résumés, business cards, digital portfolios, and web-based portfolios. Includes developing interview skills and practices, accounting for the independent contractor, job searching, and research into unions on the theatrical industry. The lab component focuses on rendering techniques, both traditional and digital. Prerequisite: Permission of advisor.

THEA 4345. SUMMER THEATRE ACTIVITIES. 3 Hours.

The study and application of specialized production and performance activities in a summer repertory theatre setting.

THEA 4346. THEATRICAL WEAPONRY. 3 Hours.

This course fosters a practical and theoretical understanding for the process of creating the illusion of safe and credible violence for the stage. Emphasis is placed on textual characterization and working with the weapons most frequently used in stage violence. Depending upon the semester, the student may be trained in broadsword, single rapier, rapier and dagger, small sword, or quarterstaff.

THEA 4355. STRATEGIES, ASSESSMENT, AND CHILD DEVELOPMENT IN THEATRE PEDAGOGY. 3 Hours.

Open to theatre majors only. Current trends in theatre education will be examined. Topics include effective differentiated instruction, classroom management, strategies for working with diverse learners, and examination of major learning theories and principles of cognitive, social, emotional, physical and aesthetic development. This course will also examine a variety of assessment techniques that are used in a theatre classroom.

Assessment tools such as rubrics, rating scales, National Standards, TEKS, STAAR, and TExES will be examined and implemented into lesson planning. Prerequisite: For Theatre Arts majors only. Admission into the College of Education.

THEA 4387. ART DIRECTION II. 3 Hours.

An applied course in art direction methods, construction practices and techniques in video and film production. Prerequisite: Permission of faculty.

THEA 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

THEA 4393. SPECIAL TOPICS. 3 Hours.

Special studies in drama and theatre. Topic varies from semester to semester. May be repeated as topic changes or until a maximum of six credit hours is attained. Prerequisite: Permission of advisor.

THEA 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department. Prerequisite: Permission of advisor.

THEA 4395. THEATRE INTERNSHIP LEVEL I. 3 Hours.

Individual research through working with a professional theatre or performing arts organization. Individual conference to be arranged. Graded on a pass/fail basis. Prerequisite: Theatre Arts major with permission of advisor and department chair.

THEA 4695. THEATRE INTERNSHIP LEVEL 2. 6 Hours.

Individual research through working with a professional theatre or performing arts organization. Individual conference between sponsor and departmental advisor required. Graded on a pass/fail basis. Prerequisite: Theatre Arts major with permission of advisor and department chair.

THEA 4995. THEATRE INTERNSHIP LEVEL 3. 9 Hours.

Individual research through working with a professional theatre or performing arts organization. Individual conference between sponsor and departmental advisor required. Graded on a pass/fail basis. Prerequisite: Theatre Arts major with permission of advisor and department chair.

THEA 5391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of instructor.

THEA 5393. TOPICS IN THEATRE ARTS. 3 Hours.

Special topics in theatre; offered periodically with subject matter determined by instructor and student interest. Previous topics have included: Design Portfolio Workshop; Alternative Actor Training Workshop; Playwriting; Improvisation; and Styles in Acting. Prerequisite: Permission of advisor.

Theatre Arts - Graduate Programs

Objective

A few graduate course offerings in theatre arts are provided to support other graduate degree programs and to meet the express needs of students. These 5000-level courses may be found in the undergraduate course list. No program leading to a graduate degree in theatre arts exists at this time.

Theatre Arts - Undergraduate Programs

The mission of the Department of Theatre Arts in the College of Liberal Arts at The University of Texas at Arlington is to provide a comprehensive undergraduate education through theory, research, and practice in the theatre arts and dance.

The objective of the department is to provide an extensive and wide-ranging education in the theatrical and dance professions through applied and practical experiences acquired through performance and production opportunities. Undergraduate students in the Department of Theatre Arts explore the components which comprise the performance and production event. The research of new theories and their applications to the art, craft, and management of Theatre Arts and Dance is highly encouraged through one-on-one mentoring and supervision by specialized, professional faculty. A primary aspect of the Department of Theatre Arts is to provide a challenging educational environment for each student characterized by shared values, unity of purpose, diversity of opinion, mutual respect, and a commitment to lifelong learning. The following degrees are offered:

- **Bachelor of Arts (B.A.) in Theatre Arts**
- **Bachelor of Fine Arts (B.F.A.) in Theatre Arts, with sub-plans in:**
 - Design and Technology
 - Musical Theatre
 - Acting

In addition, the Department offers the following minors:

- **Minor in Dance**
- **Minor in Theatre Arts**

Dance courses are listed as Dance (DNCE). Several approved University core courses are also offered by the Department that satisfies core degree requirements in other disciplines.

Production and Performance

Maverick Theatre Company

The Maverick Theatre Company is the production company of the Department of Theatre Arts at the University of Texas at Arlington, providing a showcase for the creative research of the academic program. A resident company of professional artists and students present a wide variety of plays and musicals from past and current theatrical literature with a special focus on new play development. Every student, upon admission to a theatre degree program in the department, becomes a Maverick Theatre Company member. These activities directly support the academic objectives of the department.

Maverick Dance Company

The Maverick Dance Company is the resident dance company of the Department of Theatre Arts, producing performances featuring the University of Texas at Arlington dance students, faculty, and guest artists. Directors, choreographers, and performers of Maverick Dance Company emphasize creative research to develop original, progressive dance works for the concert stage. Every student enrolled in a Dance Performance course becomes a Maverick Dance Company member. Each performance activity expands upon a variety of theories and practices studied within the dance curriculum.

The Bachelor of Arts (B.A.) in Theatre Arts

Liberal Arts Requirements

The Bachelor of Arts degree provides a general background in Theatre Arts and Liberal Arts. The B.A. allows students the opportunity, through elective coursework in Theatre Arts, to tailor their degree program in areas of interest that the student may wish to explore.

Admission

In addition to the general requirements for admission to the University, the aspiring undergraduate must meet the following requirement for admission to the Bachelor of Arts degree program:

- Participation in advisement and a personal interview.

To be fully accepted in the Bachelor of Arts (B.A.) in Theatre Arts degree program, all students must complete at least one semester as a "Theatre Arts Intended" student and earn a 2.25 cumulative grade point average in all courses including theatre courses taken at UT Arlington. Once these standards are met, the student may be declared as a Bachelor of Arts in Theatre Arts major.

B.A. in Theatre Arts - Academic Requirements

All Theatre Arts majors shall enroll in THEA 0181 for one hour per semester in residence in order to graduate. Eight (8) hours of THEA 0181 are required. Students should see their advisor regarding practicum obligations.

All B.A. students are encouraged to audition for each major production each semester they are enrolled, though they may choose to decline being considered for a role at the time of the audition. Production activities and Theatre Arts disciplinary rules are governed by a student handbook that is available to the student through the Department of Theatre Arts.

A minimum **2.25 overall grade point average** is required for all courses, including theatre courses, taken at UT Arlington in order to remain in the B.A. degree program. Students currently enrolled at UT Arlington who wish to declare Theatre Arts as a major must have a minimum grade point average of 2.25 in overall coursework taken at UT Arlington in order to be admitted.

A student will be placed on **departmental academic probation** in the Department of Theatre Arts if her/his grade point average drops below the minimum requirements for the degree plan in which they are enrolled. A theatre arts student who is on academic probation is not allowed to audition for or accept an acting role or serve as a designer, stage manager or other significant production position for any of the productions during the next regular semester they are enrolled. If after a regular semester the student's grade point average returns to at least the minimum required grade point average for their degree plan, then the probation is removed. However, if after a regular semester the student's grade point average does not meet the minimum required grade point average, the student may, at the discretion of the department chair, be removed from the degree program and will be advised as to other degree plan alternatives, should they exist.

Department Scholarships

The Department of Theatre Arts offers limited scholarships to deserving students based upon talent, academic excellence, and merit. Work-study positions are also available. Contact the Department of Theatre Arts for information.

The Bachelor of Fine Arts (B.F.A.)

Liberal Arts Requirements

The Bachelor of Fine Arts degree is a specialized, pre-professional degree that provides a background in the liberal arts with specialized sub-plans in: Design and Technology, Musical Theatre, or Acting.

- **The Design and Technology Sub-plan is for students seeking a professional career as a scenic, lighting, sound or costume designer, technical director, and/or theatre technician.**
- **The Musical Theatre Sub-plan is designed for students seeking a professional career in musical theatre performance.**
- **The Acting Sub-plan is designed for students seeking a professional career as an actor.**

Students seeking the B.F.A. elect additional courses chosen from the University and Liberal Arts core curricula outside the Department of Theatre Arts.

Admission - B.F.A.

The aspiring undergraduate must meet the following requirements for admission to the Bachelor of Fine Arts (B.F.A.) degree program:

- * Participation in advisement.
- * A personal interview with a designated faculty member (all students).
- * A design/technical production portfolio review for the Design and Technology BFA Sub-plan or an audition and interview for the Musical Theatre B.F.A. Sub-plan and the Acting B.F.A. Sub-plan are required for admittance into one of these three B.F.A. sub-plans.
- * Upon acceptance by the University and the Department of Theatre Arts, an indication of an area of specialization (Design and Technology, Musical Theatre, or Acting) is required.

B.F.A. - Academic Requirements

All Theatre Arts majors shall enroll in THEA 0181 for one hour per semester in residence in order to graduate. Eight (8) hours of THEA 0181 are required. Students should see their advisor regarding practicum obligations. Transfer students must discuss THEA 0181 requirements with the Theatre Arts academic advisor.

- **B.F.A. Design and Technology Sub-plan** students are required to present an updated portfolio and resume of production and course work at a formal portfolio review session at the end of each semester enrolled. Students are required to perform an assigned production position each semester enrolled. The production position is in addition to the requirements of the THEA 0181 Theatre Practicum course and will be assigned by the Area Head of the Design and Technology Sub-plan. Upon completion of the final semester of the B.F.A. Design and Technology Sub-plan, students shall present their work at an exit portfolio presentation: all accumulated design and production work completed while enrolled in the B.F.A. sub-plan shall be presented.
- **B.F.A. Musical Theatre Sub-plan** students are required to audition for each major production each semester they are enrolled and must accept roles for which they are cast, unless special permission has been obtained in advance of the audition from the Musical Theatre Sub-plan Chair or the Chair of the Department.
- **B.F.A. Acting Sub-plan** students are required to audition for each major production each semester they are enrolled and must accept roles for which they are cast, unless special permission has been obtained in advance of the audition from the Acting Sub-plan Chair or the Chair of the Department.

A **minimum grade point average of 2.25 is required in overall coursework** taken at UT Arlington in order to remain in the B.F.A. degree program. A **minimum grade point average of 2.50 is required for all Theatre courses** taken at UT Arlington in order to remain in the B.F.A. degree program. Students currently enrolled at UT Arlington who wish to declare Theatre Arts as an intended B.F.A. major must have a minimum grade point average of 2.25 in overall coursework taken at UT Arlington, in addition to the admission requirements stated above, in order to be admitted.

Concurrent enrollment in more than one B.F.A. sub-plan is not allowed. A student must complete a B.F.A. sub-plan and graduate with that sub-plan before being allowed to enroll in a second B.F.A. sub-plan.

Students wishing to change their B.F.A. sub-plan from one plan to another must reapply for and be accepted by the faculty to the new sub-plan according to the application procedures applicable for that sub-plan. Students should be aware that changing B.F.A. sub-plans may result in additional semesters of study. Students should contact their academic advisor to obtain a new graduation date when changing sub-plans.

A student will be placed on **departmental academic probation** in the Department of Theatre Arts if their grade point average drops below the minimum requirements for the degree plan in which they are enrolled. A theatre arts student who is on academic probation is not allowed to audition for or accept an acting role or serve as a designer, stage manager or other significant production position for any of the productions during the next regular semester they are enrolled. If after a regular semester the student's grade point average returns to at least the minimum required grade point average for their degree plan, then the probation is removed. However, if after a regular semester the student's grade point average does not meet the minimum required grade point average, the student may be removed from the degree program as determined by the Department Chair and will be advised as to other degree plan alternatives, should they exist.

Production activities and Theatre Arts disciplinary rules shall be governed by a student handbook that is available to the student upon request through the Department of Theatre Arts or at <<https://www.uta.edu/theatre>>.

Department Scholarships

The Department of Theatre Arts offers limited scholarships to deserving students based upon talent, academic excellence, and merit. Work-study positions are also available. Contact the Department of Theatre Arts for information.

Requirements for a Bachelor of Arts (B.A.) in Theatre Arts

Pre-Professional Courses

General Core Requirements (p. 50) 42

See UT Arlington approved Core Curriculum for Core requirements.

Core courses also in the THEA B.A. degree plan:

ENGL 1301, ENGL 1302, THEA 1303, THEA 1343

Program Requirements:

Modern and Classical Languages: 1441, 1442. 8

Electives:

Sufficient to give the total number of hours required for degree, six hours of which must be at the 3000/4000 level

Professional Courses

B.A. THEATRE ARTS: Lower-Division Hours

UNIV 1131	STUDENT SUCCESS ¹	1
THEA 0181	THEATRE PRACTICUM ²	1
THEA 1101	THEATRE ARTS SYMPOSIUM	1
THEA 1303	FUNDAMENTALS OF PRESENTATION (Also Area Option Core Course)	Core
THEA 1304	STAGECRAFT I	3
THEA 1305	INTRODUCTION TO THEATRICAL DESIGN	3
THEA 1307	ACTING I: BASIC TECHNIQUES	3

THEA 1315	THEATRICAL MAKEUP	3
THEA 1343	INTRODUCTION TO THEATRE (Also Creative Arts Core Course)	Core
ENGL 1301	RHETORIC AND COMPOSITION I (Also Communication Core Course)	Core
ENGL 1302	RHETORIC AND COMPOSITION II (Also Communication Core Course)	Core
THEA 2306	COSTUME TECHNOLOGY	3
THEA 2309	SCRIPT ANALYSIS	3
B.A. THEATRE ARTS: Upper-Division Hours		
THEA 3300	DIRECTING I	3
THEA 3318	DRAFTING FOR THE ARTS	3
THEA 4303	CLASSICAL THEATRE HISTORY	3
THEA 3352	STAGE MANAGEMENT & THEATRE ADMINISTRATION	3
THEA 4304	MODERN THEATRE HISTORY	3
THEA Electives at the 3000/4000 level		9
Advanced Elective, any subject		18
Total Hours		120

TOTAL B.A. HOURS= 42 +78 = 120 HOURS

- ¹ **UNIV 1131 is for entering Freshman Theatre Arts majors only. If a student is transferring in as a Theatre Arts major, the student shall enroll in UNIV 1101 instead of UNIV 1131.**
- ² All Theatre Arts majors shall enroll in THEA 0181 for one hour per semester in residence in order to graduate. Eight (8) hours of THEA 0181 are required. Students should see their advisor regarding practicum obligations. Transfer students must discuss THEA 0181 THEATRE PRACTICUM requirements with the Theatre Arts academic advisor.

Bachelor of Arts in Theatre Arts (B.A.)-Sample Plan of Study Grid*:

First Year			
First Semester	Hours	Second Semester	Hours
UNIV 1131 ¹		1 THEA 0181 ³	1
THEA 0181 ³		1 THEA 1304	3
THEA 1101		1 THEA 1305	3
THEA 1307		3 THEA 1315	3
THEA 1343 (Approved Creative Arts Core course.) ²		3 ENGL 1302 (Approved Communication Core course) ²	3
ENGL 1301 (Approved Communication Core course) ²		3 Mathematics: Choose from approved core ²	3
THEA 1303 (Satisfies Core Option Area) ²		3	
		15	16
Second Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 2306		3 HIST 1302	3
THEA 2309		3 THEA 3352	3
HIST 1301		3 Advanced Theatre Elective	3
Mathematics: Choose from approved core ²		3 Social & Behavioral Sciences: Choose from approved core ²	3
Modern Language Level 1 (1441)		4 Modern Language Level 2 (1442)	4
		17	17
Third Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 3318		3 Elective: Advanced Theatre Elective	3
POLS 2311 ²		3 Elective: Advanced Theatre Elective	3
Life & Physical Sciences: Choose from approved lab science core ²		3 POLS 2312 ²	3

Elective: Advanced, any subject		3 Life & Physical Sciences: Choose from approved lab science core ²	3
Component Area Core		3	
		16	13
Fourth Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 3300		3 THEA 4304	3
THEA 4303		3 Elective: Advanced, any subject	3
THEA Elective: Advanced, any subject		3 Component Area Course	3
Elective: Any level, any subject		3 Elective: Advanced, any subject	3
		13	13
Total Hours: 120			

* NOTE: The study grid above is for informational purposes only and is not an official degree plan. See the department's academic advisor for more information.

- ¹ **UNIV 1131 is for entering Freshman Theatre Arts majors only. If a student is transferring in as a Theatre Arts major, the student shall enroll in UNIV 1101 instead of UNIV 1131.**
- ² Satisfies core requirement.
- ³ All Theatre Arts majors shall enroll in one (1) hour per semester in residence in THEA 0181 in order to graduate. Eight (8) hours of THEA 0181 THEATRE PRACTICUM are required. Students should see their advisor regarding practicum obligations. Transfer students must discuss THEA 0181 THEATRE PRACTICUM requirements with the Theatre Arts advisor.

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Optional Minor in DANCE or Another Discipline

B.A. Degree students may pursue a minor in Dance or another discipline after filing a statement of intent with their undergraduate advisor.

Requirements for a Bachelor of Fine Arts (B.F.A.) in Theatre Arts

Pre-Professional Courses

General Core Requirements (p. 50) 42

See UT Arlington approved Core Curriculum for Core requirements. Core courses also in the THEA B.F.A. degree plan:

ENGL 1301, ENGL 1302, THEA 1303, THEA 1343

Program Requirements

Electives: Sufficient to give the total number of hours required for degree.

Professional Courses

Sub-plans 65-77

B.F.A. MUSICAL THEATRE SUB-PLAN:

Lower-Division Hours

UNIV 1131	STUDENT SUCCESS ¹	1
DNCE 1132	MODERN DANCE I	1
DNCE 1135	BALLET I	1
DNCE 1136	JAZZ DANCE I	1
THEA 0181	THEATRE PRACTICUM ²	1
THEA 1101	THEATRE ARTS SYMPOSIUM	1
THEA 1140	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 1141	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 1303	FUNDAMENTALS OF PRESENTATION	3
THEA 1304	STAGECRAFT I	3
THEA 1305	INTRODUCTION TO THEATRICAL DESIGN	3

THEA 1307	ACTING I: BASIC TECHNIQUES	3
THEA 1315	THEATRICAL MAKEUP	3
THEA 1343	INTRODUCTION TO THEATRE	3
THEA 2140	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 2141	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 2306	COSTUME TECHNOLOGY	3
THEA 2309	SCRIPT ANALYSIS	3
THEA 2352	ACTING II: SCENE STUDY	3
MUSI 0010	STUDIO CLASS <small>MUSI 0010 is taken each semester enrolled in Private Lessons in Voice.</small>	0
MUSI 1180	FUNCTIONAL PIANO I	1
MUSI 1185	SIGHTSINGING AND EAR TRAINING I	1
MUSI 1301	ELEMENTS OF MUSIC	3
MUSI 1325	THEORY AND HARMONY I	3
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Upper-Division Hours		
THEA 3140	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 3141	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 3300	DIRECTING I	3
THEA 3317	SINGING FOR THE ACTOR I	3
THEA 3340	MOVEMENT PERFORMANCE I: FUNDAMENTALS	3
THEA 4140	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 4141	PRIVATE LESSONS IN VOICE-MUSICAL THEATRE	1
THEA 4304	MODERN THEATRE HISTORY	3
THEA 4310	MUSICAL THEATRE HISTORY	3
THEA 4317	SINGING FOR THE ACTOR II (This course is taken two times.)	3
THEA 4317	SINGING FOR THE ACTOR II (This course is taken two times.)	3
THEA 4333	MUSICAL THEATRE PORTFOLIO AND SHOWCASE	3
DNCE 3335	DANCE FOR MUSICAL THEATRE (This course is taken two times.)	3
DNCE 3335	DANCE FOR MUSICAL THEATRE (This course is taken two times.)	3

B.F.A. ACTING SUB-PLAN:

Lower-Division Hours		
UNIV 1131	STUDENT SUCCESS ¹	1
DNCE 1132	MODERN DANCE I	1
DNCE 1135	BALLET I	1
DNCE 1136	JAZZ DANCE I	1
THEA 0181	THEATRE PRACTICUM ²	1
THEA 1101	THEATRE ARTS SYMPOSIUM	1
THEA 1303	FUNDAMENTALS OF PRESENTATION	3
THEA 1304	STAGECRAFT I	3
THEA 1305	INTRODUCTION TO THEATRICAL DESIGN	3
THEA 1307	ACTING I: BASIC TECHNIQUES	3
THEA 1315	THEATRICAL MAKEUP	3
THEA 1343	INTRODUCTION TO THEATRE	3
THEA 2306	COSTUME TECHNOLOGY	3
THEA 2309	SCRIPT ANALYSIS	3
THEA 2337	IMPROVISATION	3
THEA 2352	ACTING II: SCENE STUDY	3
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Upper-Division Hours		

THEA 3300	DIRECTING I	3
THEA 3308	ACTING FOR THE CAMERA	3
THEA 3314	VOICE AND MOVEMENT	3
THEA 3317	SINGING FOR THE ACTOR I	3
THEA 3340	MOVEMENT PERFORMANCE I: FUNDAMENTALS	3
THEA 3346	STAGE COMBAT	3
THEA 3352	STAGE MANAGEMENT & THEATRE ADMINISTRATION	3
THEA 4301	ACTING III: ADVANCED ACTING ENSEMBLE	3
THEA 4303	CLASSICAL THEATRE HISTORY	3
THEA 4304	MODERN THEATRE HISTORY	3
THEA 4311	SHAKESPEARE AND VERSE IN PERFORMANCE	3
THEA 4340	MOVEMENT PERFORMANCE II: PHYSICAL THEATRE	3
THEA 4341	ACTING IV: PERFORMANCE, PORTFOLIO & SHOWCASE	3

B.F.A. DESIGN & TECHNOLOGY SUB-PLAN:

Lower-Division Hours		
UNIV 1131	STUDENT SUCCESS ¹	1
THEA 0181	THEATRE PRACTICUM ²	1
THEA 1101	THEATRE ARTS SYMPOSIUM	1
THEA 1303	FUNDAMENTALS OF PRESENTATION	3
THEA 1304	STAGECRAFT I	3
THEA 1305	INTRODUCTION TO THEATRICAL DESIGN	3
THEA 1307	ACTING I: BASIC TECHNIQUES	3
THEA 1315	THEATRICAL MAKEUP	3
THEA 1343	INTRODUCTION TO THEATRE	3
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
THEA 2306	COSTUME TECHNOLOGY	3
THEA 2309	SCRIPT ANALYSIS	3
Upper-Division Hours		
THEA 3300	DIRECTING I	3
THEA 3301	SCENE DESIGN I	3
THEA 3303	SOUND DESIGN	3
THEA 3304	STAGECRAFT II	3
THEA 3305	LIGHTING DESIGN I	3
THEA 3306	SCENE PAINTING FOR THE STAGE	3
THEA 3316	LIGHTING AND SOUND TECHNOLOGY	3
THEA 3318	DRAFTING FOR THE ARTS	3
THEA 3352	STAGE MANAGEMENT & THEATRE ADMINISTRATION	3
THEA 4303	CLASSICAL THEATRE HISTORY	3
THEA 4304	MODERN THEATRE HISTORY	3
THEA 4343	COSTUME DESIGN	3
THEA 4344	PORTFOLIO AND RENDERING	3

TOTAL FOR EACH B.F.A. SUB-PLAN = 128 HOURS, OF WHICH AT LEAST 39 MUST BE AT THE 3000/4000 LEVEL.

¹ UNIV 1131 is for entering Freshman Theatre Arts majors only. If a student is transferring in as a Theatre Arts major, the student shall enroll in UNIV 1101 instead of UNIV 1131.

² All Theatre Arts majors shall enroll in one (1) hour per semester in residence in THEA 0181 in order to graduate. Eight (8) hours of THEA 0181 THEATRE PRACTICUM are required. Students should see their advisor regarding practicum obligations. Transfer students must discuss THEA 0181 THEATRE PRACTICUM requirements with the Theatre Arts advisor.

B.F.A. SUB-PLANS-SAMPLE PLANS OF STUDY GRIDS

Bachelor of Fine Arts - Musical Theatre Sub-plan: Sample Plan of Study Grid*

First Year			
First Semester	Hours	Second Semester	Hours
UNIV 1131 ²		1 THEA 0181 ³	1
THEA 0181 ³		1 THEA 1141	1
THEA 1140		1 THEA 1305	3
THEA 1343 ¹		3 THEA 1307	3
MUSI 0010		0 MUSI 0010	0
MUSI 1180		1 MUSI 1325	3
MUSI 1301		3 DNCE 1132	1
DNCE 1135		1 ENGL 1302 ¹	3
ENGL 1301 ¹		3 Mathematics: Select from approved core. ¹	3
		14	18
Second Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 2140		1 THEA 1304	3
MUSI 0010		0 THEA 2141	1
THEA 2309		3 THEA 2352	3
MUSI 1185		1 DNCE 3335	3
DNCE 1136		1 Life and Physical Sciences: Select from approved lab science in core. ¹	3
		3 MUSI 0010	0
POLS 2311 ¹		3 POLS 2312 ¹	3
Life and Physical Sciences: Select from approved lab science core. ¹		3	
Mathematics: Select from approved core. ¹		16	17
Third Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 1303 ¹		3 THEA 2306	3
THEA 3140		1 THEA 3340	3
THEA 3317		3 THEA 3141	1
MUSI 0010		0 THEA 4317	3
HIST 1301		3 MUSI 0010	0
Language, Philosophy & Culture: Select from approved core. ¹		3 HIST 1302	3
Fine Arts Elective: Select any level Fine Arts course.		3 Social and Behavioral Sciences: Select from approved core. ¹	3
		17	17
Fourth Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 3300		3 THEA 1315	3
THEA 4140		1 THEA 4141	1
THEA 4310		3 THEA 4304	3
THEA 4317		3 THEA 4333	3
MUSI 0010		0 MUSI 0010	0
DNCE 3335		3 Component Area: select from approved core	3
		Elective, any subject	1
		14	15

Total Hours: 128

¹ Satisfies core requirement.

² UNIV 1131 is for entering Freshman Theatre Arts majors only. If a student is transferring in as a Theatre Arts major, the student shall enroll in UNIV 1101 instead of UNIV 1131.

³ All Theatre Arts majors shall enroll in one (1) hour per semester in residence in THEA 0181 in order to graduate. Eight (8) hours of THEA 0181 THEATRE PRACTICUM are required. Students should see their advisor regarding practicum obligations. Transfer students must discuss THEA 0181 THEATRE PRACTICUM requirements with the Theatre Arts advisor.

*** NOTE: The study grid above is for informational purposes only and is not an official degree plan. See the department's academic advisor for more information.**

Bachelor of Fine Arts - Acting Sub-plan: Sample Plan of Study Grid*

First Year			
First Semester	Hours	Second Semester	Hours
UNIV 1131 ²		1 THEA 0181 ³	1
THEA 0181 ³		1 THEA 1304	3
THEA 1307		3 THEA 1305	3
THEA 1343 ¹		3 THEA 2337	3
ENGL 1301 ¹		3 ENGL 1302 ¹	3
DNCE 1132, 1135, or 1136 (Courses not repeatable.)		1 Mathematics: Select course from approved core. ¹	3
Elective: Any level, any subject		3	
		15	16
Second Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 1303 ¹		3 THEA 2352	3
THEA 2309		3 THEA 3352	3
HIST 1301		3 THEA 3340	3
Social & Behavioral Sciences ¹		3 HIST 1302	3
Component Area: select from approved core		3 POLS 2311 ¹	3
		16	16
Third Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 2306	3
THEA 3308		3 THEA 0181 ³	1
THEA 4341		3 THEA 3300	3
THEA 1315		3 THEA 3314	3
DNCE 1132, 1135, or 1136 (Courses not repeatable.)		1 Life & Physical Sciences: Select lab course from approved core. ¹	3
		Language, Philosophy & Culture: Select course from approved core. ¹	3
POLS 2312 ¹		3	
Life and Physical Sciences: Select lab course from approved core. ¹		3	
		17	16
Fourth Year			
First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 3317		3 THEA 4301	3
THEA 3346		3 THEA 4304	3
THEA 4303		3 DNCE 1132, 1135, or 1136 (Courses not repeatable.)	1
THEA 4311		3	
THEA 4340		3 Fine Arts Elective: Any Fine Arts course, any level.	3
		Elective: Any level, any subject	3
		Elective: Any level, any subject	2
		16	16

Total Hours: 128

¹ Satisfies core requirement.

² **UNIV 1131 is for entering Freshman Theatre Arts majors only. If a student is transferring in as a Theatre Arts major, the student shall enroll in UNIV 1101 instead of UNIV 1131.**

³ All Theatre Arts majors shall enroll in one (1) hour per semester in residence in THEA 0181 in order to graduate. Eight (8) hours of THEA 0181 THEATRE PRACTICUM are required. Students should see their advisor regarding practicum obligations. Transfer students must discuss THEA 0181 THEATRE PRACTICUM requirements with the Theatre Arts advisor.

*** NOTE: The study grid above is for informational purposes only and is not an official degree plan. See the department's academic advisor for more information.**

Bachelor of Fine Arts - Design & Technology Sub-plan: Sample Plan of Study Grid*

First Year

First Semester	Hours	Second Semester	Hours
UNIV 1131 ²		1 THEA 0181 ³	1
THEA 0181 ³		1 THEA 1307	3
THEA 1304		3 THEA 1305	3
THEA 1343 ¹		3 THEA 2306	3
ENGL 1301 ¹		3 Mathematics: Select course from approved core. ¹	3
Elective: Any level, any subject.		2 ENGL 1302 ¹	3
THEA Elective: Any level		3	
		16	16

Second Year

First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 2309		3 THEA 1315	3
THEA 3318		3 THEA 3305	3
THEA 4343		3 THEA 3352	3
THEA 3316		3 POLS 2311 ¹	3
Language, Philosophy & Culture: Select course from approved core. ¹		3 Mathematics: Select course from approved core. ¹	3
		16	16

Third Year

First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 3306		3 THEA 3301	3
THEA 3303		3 THEA 3304	3
Life & Physical Sciences: select lab course from approved core. ¹		3 Life and Physical Science: Select course from approved core. ¹	3
POLS 2312 ¹		3 THEA 4344	3
HIST 1301 ¹		3 HIST 1302 ¹	3
		16	16

Fourth Year

First Semester	Hours	Second Semester	Hours
THEA 0181 ³		1 THEA 0181 ³	1
THEA 3300		3 THEA 4304	3
THEA 1303 ¹		3 Fine Arts Elective: Any fine arts course, any level.	3
THEA 4303		3 Elective: Any level, any subject.	3
Social & Behavioral Sciences: Select course from approved core. ¹		3 Elective: Any level, any subject.	3
Elective: Any level, any subject.		3 Component Area, select from approved core.	3
		16	16

Total Hours: 128

- ¹ Satisfies core requirement.
- ² **UNIV 1131 is for entering Freshman Theatre Arts majors only. If a student is transferring in as a Theatre Arts major, the student shall enroll in UNIV 1101 instead of UNIV 1131.**
Entering and Transfer Freshman, Sophomore, Junior, and Senior-level students must also take THEA 1101 Theatre Symposium. Discuss requirement with the Theatre Arts academic advisor.
- ³ All Theatre Arts majors shall enroll in one (1) hour per semester in residence in THEA 0181 in order to graduate. Eight (8) hours of THEA 0181 THEATRE PRACTICUM are required. Students should see their advisor regarding practicum obligations. Transfer students must discuss THEA 0181 THEATRE PRACTICUM requirements with the Theatre Arts advisor.

*** NOTE: The study grid above is for informational purposes only and is not an official degree plan. See the department's academic advisor for more information.**

Oral Communication Competency

Students majoring in Theatre Arts may demonstrate competency in oral communications by taking any course approved by the Undergraduate Assembly for this purpose. Alternatively, they may demonstrate this competency by passing the University proficiency examination in oral communication.

Computer Use Competency

Students majoring in Theatre Arts may demonstrate competency in computer use by taking any course approved by the Undergraduate Assembly for this purpose. Alternatively, they may demonstrate this competency by passing the University proficiency examination in computer use.

Requirements for a Minor in Theatre Arts

Students who are not majoring in Theatre Arts may elect to minor in it. Eighteen (18) hours of Theatre Arts courses are required. This includes:

THEA 1304	STAGECRAFT I	3
THEA 1307	ACTING I: BASIC TECHNIQUES	3
THEA 1343	INTRODUCTION TO THEATRE	3
Electives: 3 hr any level. 6 hr advanced level.		9
Total Hours		18

Students interested in theatre arts as a minor should consult a Theatre Arts Department advisor to determine the most advantageous selection of courses in light of their interests and experience. With such consultation, departmental prerequisites may be waived for the purposes of a Theatre Arts minor.

Requirements for a Minor in Dance (DNCE)

Any undergraduate student may elect to minor in Dance (DNCE). The Dance Minor offers a variety of dance technique and theory courses to develop a well-rounded artist/scholar. Students have some flexibility in designing their coursework with the ability to choose from a variety of DNCE elective courses towards the Dance Minor.

Requirements:

- At least four (4) credit hours in level 2 dance technique courses DNCE 3232, DNCE 3235, or DNCE 3236 must be completed at UT Arlington.
- A placement exam may be required prior to enrolling in level 2 technique courses.
- A maximum of two (2) credits of DNCE 1139 Dance Performance may be applied towards the Dance Minor.
- Eighteen (18) hours of specified Dance courses are required:

DNCE 1300	DANCE APPRECIATION	3
DNCE 3232	MODERN DANCE II	2
DNCE 3235	BALLET II	2
DNCE 3236	JAZZ DANCE II	2
Electives: A minimum of six (6) DNCE elective hours must be at the 3000 or 4000 level.		9
Total Hours		18

Students interested in a minor in Dance should consult with a Theatre Arts Department academic advisor to enroll in the appropriate courses.

Women's and Gender Studies - Undergraduate Program

Overview

The Women's and Gender Studies Program provides students with the opportunity to engage in critical analysis of issues related to women, gender, and sexuality. Courses typically emphasize how women, gender, and sexuality have shaped and been shaped by history, culture, and society, with particular attention to the role of race, ethnicity, class, nation, age, and religion in forming gender identities. This interdisciplinary program is taught by faculty from diverse fields and offers a unique opportunity for students to complement their work in traditional disciplines with courses that can be tailored to meet specific interests and needs.

Students may receive a Minor in Women's and Gender Studies by taking 18 credit hours from a selection of courses offered across several disciplines. Most of our courses are cross-listed with courses offered in other departments. Students should consult the Women's and Gender Studies website for a list of the courses being offered in any specific semester.

Women's and Gender Studies Minors are encouraged to take two foundation courses: WOMS 2310: Introduction to Women's & Gender Studies and WOMS 2315: Introduction to Gay & Lesbian Studies.

Women's and Gender Studies Minors may also consider taking the Internship course, which involves working off campus at a local organization that addresses women's or gender issues.

Students seeking the Women's and Gender Studies minor should first consult with the advisors in their major departments or programs for approval, then with the Women's and Gender Studies Program advisor.

A Graduate Certificate program in Women's & Gender Studies is an interdisciplinary program that advances knowledge and research in the fields of women's and gender studies. A Graduate Certificate demonstrates students' understanding of the issues related to women, gender, and sexuality that have shaped social structures, institutions, and identities across human history. Students gain a specialization within the fields of women's and gender studies that enhances their graduate educations and equips them with skills to succeed in their chosen careers.

Applicants seeking the Women's & Gender Studies Graduate Certificate will be restricted to students currently enrolled in a Masters or PhD program at UT Arlington, having met their admission standards. In these cases, the Women's & Gender Studies Program will defer to the admissions standards of each individual graduate program. As long as the student remains in good standing within her/his primary degree-granting department, s/he may be admitted to the Women's & Gender Studies Graduate Certificate Program. **Students should consult with the Graduate Studies Advisory of their Masters or Ph.D. program before applying to the Graduate Certificate in Women's and Gender Studies.**

Students may receive a Graduate Certificate in Women's & Gender Studies by taking **12 hours** of courses that are designated by the Women's and Gender Studies Program as having a central focus on women, gender, sexuality, or related topics. These courses may be taken within the graduate student's primary degree-granting department, or within other participating graduate programs. Courses may be counted twice, for both the student's primary graduate degree and her/his Graduate Certificate in Women's & Gender Studies. A list of approved classes will be generated at the beginning of each semester, posted on the Women's & Gender Studies website, and circulated to all certificate-seeking students.

COURSES

WOMS 2301. TOPICS IN WOMEN'S AND GENDER STUDIES. 3 Hours.

Special topics of interest in the disciplines of Women's and Gender Studies. May be repeated for credit when the topic changes.

WOMS 2307. WOMEN IN THE ANCIENT WORLD. 3 Hours.

Exploration of roles and images of women in ancient Greece and Rome, using a variety of primary (ancient) sources: literature, legal and medical texts, visual art, and inscriptions. Offered as CLAS 2307 and WOMS 2307. Credit will be granted only once.

WOMS 2310. INTRO TO WOMEN'S & GENDER STUDIES. 3 Hours.

Provides an introduction to Women's Studies and Gender Studies as fields that place women and gender at the center of inquiry. Examines topics such as work, family, reproduction, sexuality, politics, art, literature, and contemporary media. Explains the diversity of methods and theories employed in Women's and Gender Studies scholarship, emphasizing the intersection of gender, sexuality, race, ethnicity, and class. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture.

WOMS 2315. INTRODUCTION TO LGBTQ+ STUDIES. 3 Hours.

Provides an introduction to Gay and Lesbian Studies, including the study of transsexual, transgender, and queer identities. May address topics such as LGBTQ history; sexuality and civil rights; the representation of LGBTQ in art, literature, and popular culture; and/or feminist analysis of sex, gender, and sexuality. Explains the methods and theories employed in gay and lesbian studies, emphasizing the intersection of gender, sexuality, race, ethnicity, class, and ability/disability. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. This course is offered as WOMS 2315 and DIVR 2315. Credit will be granted in only one department.

WOMS 2317. BASIC CONCEPTS IN HUMAN SEXUALITY. 3 Hours.

The physiological, psychological, and sociological aspects of human sexuality. Offered as BIOL 2317, HEED 2317, PSYC 2317, and WOMS 2317. Credit will be granted for one of these courses only. Students seeking certification in Health Education must enroll in HEED 2317. Students seeking credit toward their science requirement must enroll in BIOL 2317. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, medical technology, psychology, or sociology.

WOMS 3300. TOPICS IN WOMEN'S AND GENDER STUDIES. 3 Hours.

Special topics of interest in the disciplines of Women's and Gender Studies. May be repeated for credit when the topic changes. Offered as WOMS 3300 and AAST 3300; credit will be granted in only one department.

WOMS 3301. INTRODUCTION TO LATINA/HISPANIC FEMINISM. 3 Hours.

This interdisciplinary course explores Latina/Hispanic feminism through the intersection of race, class, gender, and sexuality. This course is organized around the following issues: colonization, immigration, globalization, sexism, health, and violence. Through an analysis of cultural production, politics, socio-economics, literary texts, and feminist methodology, the goal of this course is to develop a robust understanding of how Latina/Hispanic feminist methodologies can be used as tools for social change and social justice. Offered as WOMS 3301, MAS 3301, and DIVR 3301. Credit will only be granted in one department.

WOMS 3305. WOMEN'S HEALTH ISSUES. 3 Hours.

Will address specific issues of importance to women and their health, including growth and development, nutrition, reproductive health, pregnancy, chronic diseases, and relationship/family issues. Offered as DIVR 3305, HEED 3305 and WOMS 3305. Credit will be granted only once.

WOMS 3313. CULTURAL PSYCHOLOGY. 3 Hours.

Theory and research regarding psychological issues related to gender and cultural diversity. These issues will be approached from different perspectives within psychology, including clinical, developmental, social, health, and cognitive psychology. Prerequisite: PSYC 1315. Offered as PSYC 3313 and WOMS 3313; credit will be granted only once.

WOMS 3314. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

WOMS 3324. U.S. WOMEN'S HISTORY. 3 Hours.

An examination of women in US politics, work and society from the colonial era to the present. Offered as HIST 3324 and WOMS 3324; credit will be granted only once.

WOMS 3328. MARITAL AND SEXUAL LIFESTYLES. 3 Hours.

Contemporary American lifestyles selected from: singles, traditional marriage, homosexuals, single-parent families, open marriage, non-marital sexuality, cohabitation, dual-career marriage, childless couples, egalitarian marriage, families in later life. Offered as DIVR 3328, SOCI 3328 and WOMS 3328; credit will be granted only once.

WOMS 3331. SOCIOLOGY OF THE FAMILY. 3 Hours.

The family's role in American society and in other cultures past, present, and future. Family research methods, comparative family systems, child development/parenting, culture and personality, minority families, social class variation in families, work and family. Prerequisite: sophomore standing or permission of the instructor. Offered as SOCI 3331 and WOMS 3331; credit will be granted only once.

WOMS 3334. SOCIOLOGY OF GENDER. 3 Hours.

Examination of theoretical and empirical approaches to understanding the formation of gender. Assesses individual and structural dimensions of gender in various social institutions including work, education, and families. Offered as SOCI 3334 and WOMS 3334; credit will be granted only once.

WOMS 3338. COMPARATIVE KINSHIP AND FAMILY SYSTEMS. 3 Hours.

Variation in kinship and family systems from crosscultural and evolutionary perspectives. Structure, function, and dynamics of kinship and family systems as adaptations to diverse ecological, social, and historical circumstances. Implications of this approach for understanding kinship and family in American society also addressed. Formerly listed as ANTH 4338. Credit cannot be given for both ANTH 3338 and ANTH 4338. Also offered as WOMS 3338; credit will be granted only once. Offered as AAST 3332 and ANTH 3338; credit will be granted in only one department.

WOMS 3356. WOMEN, WORK AND SOCIAL CHANGE. 3 Hours.

Women's work experiences, how these experiences are changing, and relationship between paid employment and non-wage household labor. Paid and unpaid work experiences are empirically examined in terms of a variety of theoretical perspectives. Offered as DIVR 3356, SOCI 3356 and WOMS 3356; credit will be granted only once.

WOMS 3360. GENDER AND THE PERFORMING ARTS. 3 Hours.

Examines the role of gender in the performing arts, including theory and practice focused on gender. Additional topics may include female pioneers in the performing arts, the image of gender in different media, the way gender affects actors and artists, and the effect of cultural definitions of gender on audience reception. Offered as THEA 3360 and WOMS 3360. Credit will be granted only once.

WOMS 3361. WOMEN IN THEATRE. 3 Hours.

Examines the history, theory, and practice of women in theatre. Pioneering female writers, directors, producers, actors, designers, and activists will be explored as will their influence upon drama in its historical, social, and cultural contexts. Students will also be introduced to theory that examines female characters in plays and their impact on the artist and audience. Offered as THEA 3361 and WOMS 3361. Credit will be granted only once.

WOMS 3364. TOPICS IN LGBTQIA+ LITERATURE AND THEORY. 3 Hours.

Studies representations of the sexual and/or gender identities of LGBTQIA+ people and the intersectionality among them through a variety of texts. Specific topics may include the history of marginalized sexualities, crossdressing in literature, or transvestite saints; the texts may be philosophical, political, literary, and/or scientific. Offered as ENGL 3364 and WOMS 3364; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 3366. SEX, GENDER, AND CULTURE. 3 Hours.

The ways gender and sexuality are culturally constructed. Readings include ethnographies, life histories, and fiction. Debates within anthropology and within specific cultures over maleness and femaleness. Offered as ANTH 3366 and WOMS 3366; credit will be granted only once.

WOMS 3368. TOPICS IN FEMINIST THEORY, GENDER, AND SEXUALITY. 3 Hours.

Examines issues of gender and sexuality through literary, theoretical, and philosophical texts that foreground questions feminist theory raises about desire, sexual identity, and gender asymmetry. Considers how gender and sexuality shape and are shaped by race, ethnicity, class, ability/disability, religion, and age. May be repeated for credit as course content changes. Offered as ENGL 3368 and WOMS 3368; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 3370. HISTORY OF WOMEN'S WRITING. 3 Hours.

Examines women's writing in English from the Medieval period to the present. Offered as ENGL 3370 and WOMS 3370; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 3385. WOMEN AND CRIME. 3 Hours.

This course examines criminology and criminal justice issues as they relate specifically to women. The three major areas of coverage include (1) women and girls as victims of crime, (2) women and girls as criminal offenders; and (3) women working in the criminal justice system. Offered as DIVR 3385, CRCJ 3385 and WOMS 3385; credit will be granted only once.

WOMS 4190. CONFERENCE COURSE. 1 Hour.

Independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for credit when the subject matter varies, but only with permission of director of Women's and Gender Studies Program.

WOMS 4290. CONFERENCE COURSE. 2 Hours.

Independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for credit when the subject matter varies, but only with permission of director of Women's and Gender Studies Program.

WOMS 4301. ART AND GENDER. 3 Hours.

Approaches to the interpretation of art from the stance of gender and feminism. Emphasis is placed on the work of significant female artists and on the gendered representations of art. Offered as ART 4301 and WOMS 4301; credit will be granted only once. Fulfills the Social/Cultural Studies requirement. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

WOMS 4302. WOMEN AND WORK IN TRANSATLANTIC PERSPECTIVE. 3 Hours.

Examines the history of women and work, both waged and nonwaged, in Europe and the Americas, including the United States. Highlights differences within women's work cultures as well as variation in women's employment opportunities and their efforts to achieve equality with men in the workplace, by ethnicity, region, and nation. Offered as HIST 4302 and WOMS 4302; credit will be granted only once.

WOMS 4303. WOMEN IN SOCIETY. 3 Hours.

Women's status in contemporary American society, including the family, workplace, and politics. Women's status will also be examined in historical and crosscultural perspectives. Offered as SOCI 4303 and WOMS 4303; credit will be granted only once.

WOMS 4305. TRANSNATIONAL FEMINISMS. 3 Hours.

Explores transnational feminist frameworks and the heterogeneous processes used in the cultural construction of gender in a global context. Centering non-Western perspectives, the class analyzes the intersectional inequalities experienced by women in different cultural contexts and explores the workings of power and gender that shape the lives of women around the world. Topics may include reproductive rights, poverty, education, and religious, economic, political, and legal mechanisms of women's subordination and inequality.

WOMS 4307. 'EVIL' WOMEN: WITCHES, HARLOTS & 'MADWOMEN'. 3 Hours.

Examines the definition of "evil" women as a mechanism for the control of women and the maintenance of patriarchal gender relations in Western societies. Will address the philosophical and religious ideologies that underpin manifestations of misogyny and the extreme, narrow boundaries Western societies historically used in defining female gender roles. Topics include witch hunts, policing of women's sexual behavior, and using labels of mental illness to punish women for social transgressions.

WOMS 4316. WOMEN IN THE POLITICAL PROCESS. 3 Hours.

This course introduces students to the unique experiences of women in the political process, the impact of these experiences on the political system, and theories of gender and politics. Offered as POLS 4316 and WOMS 4316; credit will be granted only once.

WOMS 4318. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, women's and men's language in other cultures, the acquisition of gendered ways of speaking, and sexism in language. Offered as LING 4318 and WOMS 4318; formerly offered as LING 4392/WOMS 4392; credit will be granted only once. Prerequisite: LING 3311.

WOMS 4323. FEMINIST POLITICAL THOUGHT. 3 Hours.

Issues raised by the feminist critique of political theory; the exclusion of women from the political sphere until the 20th century; Marxist, liberal, and radical feminist political thought; alternative feminist conceptions of the political. Offered as POLS 4323 and WOMS 4323; credit will be granted only once.

WOMS 4325. WOMEN IN SCIENCE. 3 Hours.

Explores the role of women in science. Emphasis on gender and science, the history of women in science, gender equity in the classroom, strategies for the retention of women scientists, the current culture/climate for women in science, and contemporary women in science. Offered as EDUC 4325, SCIE 4325, and WOMS 4325. Credit will be granted only once.

WOMS 4326. DIVERSITY IN ORGANIZATIONS. 3 Hours.

This course examines the implications of employee diversity in organizations, an issue of increasing importance. It includes study of the changing demographics of workers, including multiple demographic groups and areas of difference important to organizational treatment and outcomes. This course examines research on treatment, access, and customer discrimination. Legislation related to diversity is also reviewed. This course also provides suggestions for individuals and organizations to increase opportunities and outcomes for workers of all backgrounds. Offered as MANA 4326, AAST 4326 and WOMS 4326; credit will be granted in only one department. Prerequisite: Junior standing.

WOMS 4327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Considers women as characters in and writers of Hispanic literature. Includes the analysis of themes, language, and how the writings of women often give voice to lesser known aspects of culture. Offered as SPAN 4327, MAS 4327, and WOMS 4327; credit will be granted only once. Prerequisite: SPAN 3315 with a grade of C or better.

WOMS 4340. TOPICS IN WOMEN'S WRITING. 3 Hours.

Focuses on women's writing in a particular genre or historical period or on a concept or issue of importance to women writers. May be repeated for credit as course content changes. Offered as ENGL 4340 and WOMS 4340; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 4390. CONFERENCE COURSE. 3 Hours.

Independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for credit when the subject matter varies, but only with permission of director of Women's and Gender Studies Program.

WOMS 4392. SPECIAL TOPICS IN WOMEN'S STUDIES. 3 Hours.

Special topics related to women's and gender studies. May be repeated for credit when the topic changes, with permission of the director of the Women's and Gender Studies Program.

WOMS 4393. WOMEN'S STUDIES INTERNSHIP. 3 Hours.

Supervised internship through which students apply the academic skills they have acquired in Women's and Gender Studies courses by working in a related business or non-profit environment. Required coursework will be determined by instructor. Prerequisite: WOMS 2310 and permission of Director of Women's and Gender Studies.

WOMS 5301. TOPICS WOMEN'S & GENDER STUDIES. 3 Hours.

Special topics of interest in the discipline of Women's and Gender Studies. May be repeated for credit when the topic changes.

College of Nursing and Health Innovation

CONHI Website

Mission and Vision

The College of Nursing and Health Innovation is an integral component of The University of Texas at Arlington and subscribes to the mission of the University.

The **mission** of the College of Nursing and Health Innovation is to advance global health and the human condition through transdisciplinary collaboration by engaging in high quality teaching, research, scholarship, practice and service to prepare a diverse population of health professionals and to reduce health disparities. The **vision** of the College of Nursing and Health Innovation is to provide innovative, exceptional education through research and practice to advance health and the human condition globally.

The academic programs in Undergraduate Nursing, Graduate Nursing, and Kinesiology prepare individuals for professional roles in health care, health sciences, and health-related professions. In addition, these programs prepare individuals for collaboration with other professionals and consumers in the delivery of holistic health care, health-related research, exercise science and advocacy for the improvement of health outcomes.

History and Overview

The UT Arlington College of Nursing was established in 1971 as the U.T. System College of Nursing in Fort Worth and was housed in John Peter Smith Hospital. The first baccalaureate class enrolled in fall of 1972; the graduate program (MSN) began in 1975. In 1976, the school became an academic unit of UT Arlington, moving to the campus in 1977. Degree program offerings continued to expand to include a PhD in Nursing in fall 2003. In fall of 2014, the Department of Kinesiology was combined with the College of Nursing to create the College of Nursing and Health Innovation. Before joining with the College of Nursing, the department of Kinesiology was a department in the College of Education and Health Sciences at UTA.

The Undergraduate Nursing Department consists of the BSN and the RN to BSN programs. In addition to the Arlington campus, these programs are offered online through the UT Arlington Academic Partnership program.

The Graduate Nursing Department offers a Master of Science in Nursing (MSN) with preparation as a nurse practitioner in the population areas of Adult-Gerontology Acute Care, Adult Gerontology Primary Care (previously Adult and Gerontology), Family, Neonatal, Acute Care Pediatric, Primary Care Pediatric and Psychiatric-Mental Health. Post-master's certificates are available in all the above nurse practitioner specialties. In addition, the UT Arlington MSN Program offers preparation in Nursing Administration, Nursing Education, Family Nurse Practitioner, Adult Gerontology Primary and Acute Care Nurse Practitioner, and Pediatric Primary and Acute Care Nurse Practitioner options in an online accelerated format. An RN to MSN option is also available in an accelerated online format in Nursing Education, Nursing Administration and Family Nurse Practitioner. Post baccalaureate certificates are offered in Nursing Administration and Nursing Education. Post Master's Certificates options are available in all Nurse Practitioner tracks and in Nursing Administration. Many of the Post Master's Certificates are also available in the accelerated online format. The PhD in Nursing was approved in April 2003 with classes beginning in Fall 2003. A BSN-to-PhD entry option was approved in 2005, with classes beginning in Fall 2006. The Doctor of Nursing Practice (DNP) began in Fall 2009.

The undergraduate programs within the Department of Kinesiology are organized into four areas: exercise science, physical education teacher education, sports leadership & management and public health. The graduate programs include a Graduate Certificate in Public Health, a Master of Science in Exercise Science, a Master of Science in Athletic Training and a PhD in Kinesiology. Each of these academic programs provide students with a strong foundation in the sciences of their respective fields and provides a comprehensive discipline-specific program of study designed to prepare students for a specific career path. Some of the degree options work towards meeting the prerequisite requirements for admission to physical therapy, occupational therapy and physician's assistant graduate programs, as well as medical and dental schools (e.g., BS in Exercise Science - Clinical Health Professions). Other degree plans prepare students for state and national certification/licensure (e.g., Physical Education Teacher Education and Athletic Training) programs. The Public Health programs prepare students for careers in public health, as well as preparation for advanced degrees in public health. The PhD in Kinesiology prepares students for careers in research, academic and related industry settings.

Accreditation

The baccalaureate degree program in nursing, master's degree program in nursing, Doctor of Nursing Practice program, and post-graduate APRN certificate program at The University of Texas at Arlington is accredited by the Commission on Collegiate Nursing Education, 655 K Street NW, Suite 750, Washington, DC 20001, 202-887-6791.

The Kinesiology Athletic Training Program is accredited by the Commission on Accreditation of Athletic Training Education (CAATE). CAATE ensures that accredited institutions and education programs that offer athletic training meet the rigorous standards for professional athletic training education and encourages continuous enhancement in the quality of preparing athletic trainers.

Research Interests of Faculty

The research programs of the College of Nursing and Health Innovation faculty are diverse. A sampling of their areas of study includes oncology, health disparities, leadership in nursing education, technology in the care of older adults, simulation and technology in health professional education, exercise interventions to mitigate heart disease, inter-professional collaborations education, statistical models, gerontology, bone and muscle disease and heart disease. Other faculty research interests include adapted sports, sports pedagogy, applied biomechanics, motor development, cardiovascular physiology, autonomic function, environmental physiology, cardiac function, pulmonary responses to exercise, postural control in the elderly, dynamic regulation of blood pressure, assessment and management of sports-related concussions, the effects of therapeutic modalities on the treatment of athletic injuries, and the effects of hyperbaric oxygen on the treatment of diseases.

Special

Smart Hospital™

Assistant Dean: Jennifer Royce

The Smart Hospital™ is a simulated hospital environment complete with state-of-the-science equipment and furnishings. In this facility, students interact with and provide care to a full array of simulated patients who occupy the Emergency Department, ICU, Labor and Delivery suite, pediatric unit, Neonatal ICU, adult medical/surgical beds and the resuscitation room for large team training. Students learn utilizing simulation technology including full body interactive patient simulators, computerized scenario-based programs and individual trainers for specific skills.

The "patients" who populate our Smart Hospital are life-sized computerized manikins that actually interact with the learners. Patients include infants, children, adults, and even a mother in labor who goes through the labor process and delivers a newborn. Some manikins are static but others are interactive and responsive—they can speak and breathe, have heart sounds and lung sounds, and can progress through the various stages of numerous clinical states from birth through death. In addition, we have specially trained actors who can serve as patients or family members in clinical teaching scenes. In each clinical scenario, the students are exposed to situations and changes in patient conditions, both subtle and obvious, that they will experience in actual practice. With repeated exposure to these situations, students develop a deeper understanding of clinical conditions and become more adept at critical and clinical thinking. With this foundation, our students move more quickly from novice to expert and in so doing enhance the quality of patient care they provide.

Center for Research and Scholarship

Associate Dean: Dr. Paul J. Fadel

Scholarship is an essential component of the professional role in the College of Nursing. The Center provides support services to faculty and students: identifying funding sources; developing competitive proposals; writing grant applications; retrieving literature; collecting, entering and analyzing data; and disseminating research results and other scholarly products. Collaborative relationships for research with Metroplex health care agencies are in place.

Center for Hispanic Studies in Nursing and Health

The Center is dedicated to fostering an understanding between health care professionals and people of Hispanic origin for the purpose of increasing understanding of health and healing through research of individual experience, cultural meanings, and the structure of institutions as important variables influencing health outcomes. The Center is also committed to the provision of educational programs and services which will assist health care providers to gain the necessary knowledge and skills to deliver increasingly culturally sensitive and competent care. The Center promotes interdisciplinary and interuniversity collaboration as a strategy for development of resources to solve or deal with bi-cultural issues facing health care professionals.

Rural Health Outreach Program

The purpose of the Center is to provide appropriate, affordable, accessible continuing education to the nursing staffs of acute care and psychiatric hospitals, long term care facilities, home health agencies, and other health care facilities in the rural communities of North Central Texas.

Center for Healthy Living and Longevity

Associate Dean: Dr. David Keller

The Department of Kinesiology's Center for Healthy Living and Longevity provides a multidisciplinary approach to improving health throughout the lifespan. Research and education initiatives focus on keeping older adults active, decreasing the incidence of sedentary-related diseases (diabetes, cardiovascular disease, osteoporosis, obesity, etc.), and the assessment and management of concussions. Contact: Dr. David Keller, kellerd@uta.edu.

Programs

BACHELOR'S DEGREES

- Bachelor of Arts in Kinesiology (Sport Leadership and Management) (p. 1082)
- Bachelor of Arts in Physical Education Teacher Education (PETE) (p. 1082)
- Bachelor of Science in Exercise Science - Clinical Health Professions (CHP) (p. 1082)

- Bachelor of Science in Exercise Science - Fitness/Wellness (F/W) (p. 1082)
- Bachelor of Science in Nursing, B.S.N. (p. 1038)
- Bachelor of Science in Public Health (p. 1083)

MASTER'S DEGREES

- Master of Science in Athletic Training (p. 1068)
- Master of Science in Exercise Science (p. 1068)
- Master of Public Health (p. 1068)
- Master of Science in Nursing - Administration, M.S.N. (p. 1027)
- Master of Science in Nursing - Education, M.S.N. (p. 1027)
- Master of Science in Nursing - Nurse Practitioner, M.S.N. (p. 1027)

DOCTORAL DEGREES

- Doctor of Nursing Practice, D.N.P. (p. 1032)
- PhD in Nursing (p. 1032)
- PhD in Kinesiology (p. 1068)

CERTIFICATES

- Gerontology Healthcare Certificate (p. 1034)
- Nurse Educator Certificate (p. 1034)
- Nurse Practitioner, Acute Care Pediatric (p. 1034)
- Nurse Practitioner, Adult Gerontology Acute Care (p. 1034)
- Nurse Practitioner, Adult (p. 1034) Gerontology Primary Care
- Nurse Practitioner, Family (p. 1034)
- Nurse Practitioner, Neonatal (p. 1034) – Gainful Employment Disclosure (<http://grad.pci.uta.edu/prospective/programs/degrees/gainfulemployment/#neonatal>)
- Nurse Practitioner, Primary Care Pediatric (p. 1034)
- Nurse Practitioner, Family Psychiatric/Mental Health (p. 1034)
- Graduate Certificate of Public Health Studies (p. 1080)
- Telehealth and Health Informatics (p. 1048)

Elizabeth Merwin, PhD, RN, FAAN
Dean & Professor

Kathryn Daniel, PhD, RN, A/GNP-BC, GS-C, AGSF, FAAN
Associate Dean, Academic Affairs, Nursing & Associate Professor

Paul Fadel, PhD
Associate Dean, Research & Professor

David Keller, PhD
Associate Dean & Chair, Kinesiology & Professor

Kimberly A. Siniscalchi, DNP, RN, FAAN
Professor of Practice

Candice Calhoun-Butts, PhD
Assistant Dean, Enrollment and Student Services

Lalita Thompson, B.A.
Assistant Dean, Administrative Affairs

John Gonzalez, DNP, RN, ACNP-BC, ANP-C
Chair, Graduate Nursing & Assistant Clinical Professor

Jeanean Boyd, DNP, RN
Chair, Undergraduate Nursing & Assistant Clinical Professor

For a comprehensive list of faculty and staff in the College of Nursing in Health Innovation, visit the College of Nursing and Health Innovation Directory (<https://www.uta.edu/conhi/people/>).

COURSES

NURS 2200. CONCEPTS IN PROFESSIONAL NURSING. 2 Hours.

Designed to introduce the pre-nursing student to specific professional concepts in nursing. Selected concepts and processes for professional nursing will include an introduction to nursing's theoretical, philosophical, ethical, and legal dimensions with an emphasis on professional formation. Course activities will focus on development of teamwork, communication skills, effective decision-making and reflective practice.

NURS 2232. LEARNING PROFESSIONAL NURSING AND LIFE SKILLS. 2 Hours.

This course focuses on the development and successful use of time management, test-taking skills, study methods, and additional student success strategies that can support students enrolled in the upper division prelicensure Bachelor of Science in Nursing (BSN) program. Required for students who fail an upper division nursing course. Prerequisite: Admission to the BSN program.

NURS 2300. INTRODUCTION TO PROFESSIONAL AND CLINICAL CONCEPTS IN NURSING. 3 Hours.

Designed to introduce the pre-nursing student to specific professional concepts in nursing as well as academic success strategies. Selected concepts and processes for professional nursing will include an introduction to nursing's theoretical, philosophical, ethical, and legal dimensions with an emphasis on professional formation. Course activities will focus on development of teamwork, communication skills, effective decision making and reflective practice.

NURS 3100. COOPERATIVE NURSING WORK EXPERIENCE. 1 Hour.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. This course is graded as pass/fail. Prerequisite: Consent of instructor.

NURS 3137. INDEPENDENT STUDY. 1 Hour.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3147. SPECIALIZED TOPICS IN NURSING. 1 Hour.

Areas of special interest. May be repeated with varied topics. Must complete with C or better for credit. Prerequisite: Junior standing and consent of instructor.

NURS 3200. COOPERATIVE NURSING WORK EXPERIENCE. 2 Hours.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. This course is graded as pass/fail. Prerequisite: Consent of instructor.

NURS 3237. INDEPENDENT STUDY. 2 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3247. SPECIALIZED TOPICS IN NURSING. 2 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: Junior standing and consent of instructor.

NURS 3261. NURSING OF OLDER ADULTS. 2 Hours.

Selected concepts and issues related to aging and its impact on society and health care. Introduction to gerontologic nursing principles. Clinical application in diverse settings across the continuum of care. Prerequisite: NURS 3632, NURS 3320.

NURS 3300. COOPERATIVE NURSING WORK EXPERIENCE. 3 Hours.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. Must earn a C or better to earn credit. Prerequisite: Admission into nursing degree program.

NURS 3309. MEDICAL TERMINOLOGY FOR HEALTHCARE PROVIDERS. 3 Hours.

This course will enable the student to speak, use, and understand commonly used terms in the healthcare field. This course can be used as the upper division elective. Formerly taught as BIOL 3309. Credit will not be given for both.

NURS 3315. RN-BSN HOLISTIC HEALTH ASSESSMENT ACROSS THE LIFESPAN. 3 Hours.

Theory and practice of holistic health assessment of individuals and families across the life span designed for the registered nurse. RN-BSN students only. Prerequisite: or Corequisite NURS 3345.

NURS 3320. HOLISTIC HEALTH ASSESSMENT ACROSS THE LIFESPAN. 3 Hours.

Theory and practice of holistic health assessment of individuals and families across the life span with emphasis on normal findings. Prerequisite: or Corequisite: NURS 3632.

NURS 3321. NURSING RESEARCH. 3 Hours.

Basic concepts, processes and applications of nursing research. Research role of the nurse in decision making and clinical practice. Prerequisite: NURS 3632.

NURS 3325. RN-BSN HOLISTIC CARE OF THE OLDER ADULT. 3 Hours.

Introduction to gerontologic nursing principles and standards. Selected concepts and issues related to aging and its impact on society and health care. RN-BSN students only. Previously listed as NURS 3322. Prerequisite: or Corequisite: NURS 3345.

NURS 3333. PROMOTING HEALTHY LIFESTYLES. 3 Hours.

Focus on health promotion and disease prevention strategies that promote healthy lifestyles and empower individuals, families, and populations to achieve optimal health and wellness. The role of the nurse in health promotion is emphasized. Students will examine the impact of nurses' overall wellness on patient safety. Prerequisite: Acceptance into the upper division nursing program.

NURS 3335. RN-BSN PROMOTING HEALTHY LIFESTYLES. 3 Hours.

Focus on health promotion and disease prevention strategies that promote healthy lifestyles and empower individuals, families, and populations to achieve optimal health and wellness. The role of the nurse in health promotion is emphasized. Students will examine the impact of nurses' overall wellness on patient safety. RN-BSN students only. Previously NURS 3435. Prerequisite: NURS 3345.

NURS 3337. INDEPENDENT STUDY. 3 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn a grade of C or better for credit. Prerequisite: Consent of Instructor.

NURS 3344. ENHANCING NURSING PRACTICE AND SAFETY WITH HISPANIC PATIENTS THROUGH BETTER COMMUNICATION. 3 Hours.

Explores and augments the understanding of factors which facilitate or inhibit effective communication with Spanish-speaking clients. Focus on vocabulary specific to assessment and intervention with persons whose primary language is Spanish.

NURS 3345. ROLE TRANSITION TO PROFESSIONAL NURSING. 3 Hours.

Course addresses the role transition to Professional Nursing, nursing theory, ethics, decision making, critical thinking/clinical judgment, introduction to evidence-based practice, and informatics/technology in practice. Identifies strategies for personal and professional empowerment. Prerequisite: Accepted to RN to BSN program.

NURS 3347. SPECIALIZED TOPICS IN NURSING. 3 Hours.

Areas of special interest. May be repeated with varied topics. Must earn a C or better to earn credit.

NURS 3352. THE LEGACY OF THE FAMILY. 3 Hours.

Explore and enhance understanding and application of the principles of family science knowledge in therapeutic relationships with families across the lifespan.

NURS 3365. PHARMACOLOGY IN NURSING PRACTICE. 3 Hours.

Introduction to current concepts of pharmacology and their relationship to nursing practice. Included are basic principles of drug actions, side effects for major drug classifications, and the role of the nurse in drug therapeutics. Must be taken no more than three years prior to acceptance into the nursing program. Prerequisite: BIOL 2457, BIOL 2458, CHEM 1451.

NURS 3366. PATHOPHYSIOLOGIC PROCESSES: IMPLICATIONS FOR NURSING. 3 Hours.

Pathophysiologic alterations, their interactions, and effects on persons across the life span as a basis for therapeutic nursing interventions. Must be taken no more than three years prior to acceptance into the nursing program. Prerequisite: BIOL 2457, BIOL 2458, CHEM 1451.

NURS 3375. RN-BSN HEALTH POLICY, LEGAL ASPECTS AND INFORMATICS IN NURSING. 3 Hours.

This course provides an introduction to legal and ethical concepts, values, and behaviors necessary for transitioning to a professional nursing role. Topics include health care policy development, legal overview and peer-review process, health care informatics, economic and political issues, laws, rules, challenges, boundaries, malpractice and societal issues and trends influencing health care. Prerequisite: NURS 3345.

NURS 3381. PSYCHIATRIC MENTAL HEALTH NURSING OF INDIVIDUALS, FAMILIES, AND GROUPS. 3 Hours.

Application of the nursing process with emphasis on critical thinking, therapeutic nursing interventions, and effective communication and interpersonal skills as they relate to persons with psychiatric mental health conditions. Prerequisite: NURS 3632 and NURS 3320.

NURS 3437. INDEPENDENT STUDY. 4 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3447. SPECIALIZED TOPICS IN NURSING. 4 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3537. INDEPENDENT STUDY. 5 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3547. SPECIALIZED TOPICS IN NURSING. 5 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: Junior standing and consent of instructor.

NURS 3632. CLINICAL NURSING FOUNDATIONS. 6 Hours.

Basic therapeutic nursing interventions with individuals and families in diverse settings using nursing process framework. Prerequisite: or Corequisite: NURS 3320.

NURS 3637. INDEPENDENT STUDY. 6 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be offered with any combination of lecture/lab hours. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3647. SPECIALIZED TOPICS IN NURSING. 6 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: junior standing and consent of instructor.

NURS 3661. NURSING OF ADULTS. 6 Hours.

Application of the nursing process with emphasis on critical thinking, therapeutic nursing interventions, and effective communication for persons experiencing medical-surgical problems. Theory and clinical application in diverse settings. Prerequisite: NURS 3632 and NURS 3320.

NURS 4100. COOPERATIVE NURSING WORK EXPERIENCE. 1 Hour.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. Prerequisite: Consent of instructor.

NURS 4199. ROLE DEVELOPMENT IN PROFESSIONAL NURSING SEMINAR. 1 Hour.

The course addresses professional nursing role development integrating concepts of professional comportment. Prerequisite: NURS 3661, NURS 3381.

NURS 4200. COOPERATIVE NURSING WORK EXPERIENCE. 2 Hours.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. Prerequisite: Consent of instructor.

NURS 4223. PROFESSIONAL NURSING TRENDS. 2 Hours.

Analysis of societal issues and trends influencing health care. Application of ethical, legal, economic, and political concepts. Identification of strategies for personal and professional empowerment. Prerequisite: NURS 4431, NURS 4441, and NURS 4581.

NURS 4300. COOPERATIVE NURSING WORK EXPERIENCE. 3 Hours.

Designed for nursing cooperative education student to integrate classroom study with career-related practical experience in the workplace. Prerequisite: Admission into nursing degree program.

NURS 4323. HEALTH POLICY, LEGAL ASPECTS AND INFORMATICS IN NURSING. 3 Hours.

This course provides an introduction to legal and ethical concepts, values, and behaviors necessary for transitioning to a professional nursing role. Topics include health care policy development, legal overview and peer-review process, health care informatics, economic and political issues, laws, rules, challenges, boundaries, malpractice and societal issues and trends influencing health care. Prerequisite: NURS 4331, NURS 4341, and NURS 4581.

NURS 4325. RN-BSN NURSING RESEARCH. 3 Hours.

Basic concepts, processes and applications of nursing research. Research role of the nurse in decision making and clinical practice. RN-BSN students only. Prerequisite: ENGL 2338 or equivalent, Math 1308 or equivalent, and NURS 3345 or NURS 3645.

NURS 4331. NURSING OF CHILDREN AND ADOLESCENTS. 3 Hours.

Nursing care for infants, children, adolescents, and their families. Theory and clinical application in diverse settings. Prerequisite: NURS 3661, NURS 3381.

NURS 4341. NURSING OF THE CHILDBEARING FAMILY. 3 Hours.

Application of the nursing process with emphasis on critical thinking, communication and therapeutic nursing interventions as related to care of individuals and families during the childbearing experience. Prerequisite: NURS 3381 and NURS 3661.

NURS 4350. CAPSTONE: Transition to Professional Nursing. 3 Hours.

Focus on the synthesis of knowledge acquired throughout the curriculum and the enactment of the professional nurse role in a concentrated practicum. Prerequisite: or Corequisite: NURS 4350, NURS 4462, NURS 4323.

NURS 4351. BSN NURSING LEADERSHIP AND MANAGEMENT. 3 Hours.

Exploration of organizational strategies, leadership theories and societal trends with implications for decision making in health care. Introduction to management skills needed by professional nurses in diverse settings. Prerequisites: NURS 4331, NURS 4341, NURS 4581.

NURS 4393. NURSING CERTIFICATION. 3 Hours.

NURS 4455. RN-BSN NURSING LEADERSHIP & MANAGEMENT. 4 Hours.

Exploration of organizational strategies, leadership theories and societal trends with implications for decision making in health care. Introduction to management skills needed by professional nurses with clinical application in diverse settings. RN-BSN students only. Prerequisite: or Corequisite: NURS 3345.

NURS 4462. POPULATION AND COMMUNITY HEALTH NURSING. 4 Hours.

Integrate knowledge from nursing theory and public health science in assessing health care needs of aggregates, communities, and society. Prerequisite: NURS 4331, NURS 4341, NURS 4581.

NURS 4465. RN-BSN POPULATION AND COMMUNITY HEALTH NURSING. 4 Hours.

Integrates knowledge from nursing theory and public health science in assessing health care needs of aggregates, communities, and society for the Registered Nurse. RN-BSN students only. Prerequisite: NURS 3345.

NURS 4581. NURSING OF ADULTS WITH COMPLEX NEEDS. 5 Hours.

Use of critical thinking, therapeutic nursing interventions and communication skills in promoting quality of life for persons with complex health needs. Application of nursing roles in diverse settings. Prerequisite: NURS 3661, NURS 3381.

NURS 4685. RN-BSN CAPSTONE. 6 Hours.

Synthesis of knowledge acquired in the RN-BSN curriculum and development of the Nurse Role with evolving professional issues, health care environment, lifelong learning, and promotion of the Nursing profession designed for Registered Nurses RN-BSN student only. Prerequisite: NURS 4325, NURS 4455 Corequisite: NURS 4465.

NURS 5110. NEONATAL ASSESSMENT LAB. 1 Hour.

Conduct comprehensive health assessment in the neonatal population. Prerequisite: NURS 5220 or concurrent enrollment or permission of instructor or Certificate Program Standing.

NURS 5112. THERAPY CONCEPTS FOR PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONERS. 1 Hour.

This course provides evidenced based practice principles of non-pharmacological individual, family and group therapies for psychiatric disorders and mental health problems across the lifespan. Prerequisite: NURS 5315, NURS 5410 or concurrent enrollment, NURS 5140 or concurrent enrollment, or Certificate Program Standing.

NURS 5120. ADULT-GERONTOLOGY ASSESSMENT LAB. 1 Hour.

Conduct comprehensive health assessment in the adult-gerontology population. Prerequisite: NURS 5220 or concurrent enrollment or Certificate Program Standing.

NURS 5130. PEDIATRIC ASSESSMENT LAB. 1 Hour.

Conduct comprehensive health assessment in the pediatric population. Prerequisite: NURS 5220 or concurrent enrollment or Certificate Program Standing.

NURS 5140. PSYCHIATRIC ASSESSMENT LAB FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 1 Hour.

Introduces the PMHNP student to the psychiatric mental health assessment applied to the pediatric, adult, and geriatric patient with a mental health disorder through knowledge acquisition and skill development. Prerequisite: NURS 5220, NURS 5120, and NURS 5130, NURS 5410 or concurrent enrollment, NURS 5112 or concurrent enrollment, or Certificate Program Standing.

NURS 5170. INDEPENDENT STUDY IN NURSING. 1 Hour.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, P, R. Prerequisite: Graduate standing.

NURS 5190. TOPICS IN NURSING. 1 Hour.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 5204. NEONATAL NURSING I. 2 Hours.

Clinical management of the high-risk neonate with a focus on the perinatal and transition periods as well as stabilization of the ill newborn at birth. Includes fluid and electrolyte management, nutrition, and identification of the indications and complications associated with invasive skills and procedures relevant to the high-risk neonate. Prerequisite: NURS 5315; NURS 5316 or NURS 5220 or concurrent enrollment and NURS 5110 or concurrent enrollment or Certificate Program Standing.

NURS 5210. NEUROSCIENTIFIC BASES IN PSYCHIATRY AND MENTAL HEALTH. 2 Hours.

This course provides the scientific foundations of neurobiology for various psychiatric disorders and mental health problems across the lifespan. An analysis of the relationships between neurobiology, psychopharmacology and genetics for various psychiatric disorders and mental health problems will be provided. Prerequisite: NURS 5315, NURS 5220, NURS 5120, NURS 5130, or Certificate Program Standing.

NURS 5211. DIAGNOSTIC PRINCIPLES IN PSYCHIATRY AND MENTAL HEALTH. 2 Hours.

This course provides the scientific foundations for diagnostics for various psychiatric disorders and mental health problems across the lifespan. Prerequisite: NURS 5315; NURS 5210 or concurrent enrollment or Certificate Program Standing.

NURS 5212. THERAPY CONCEPTS FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 2 Hours.

This course provides evidenced based practice principles of non-pharmacological individual, family and group therapies for psychiatric disorders and mental health problems across the lifespan. Prerequisite: NURS 5315; NURS 5210 or concurrent enrollment, NURS 5211 or concurrent enrollment or Certificate Program Standing.

NURS 5213. PSYCHOPHARMACOLOGY FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 2 Hours.

This course provides advanced study of clinical psycho-pharmacological therapeutics for the psychiatric mental health nurse practitioner. Foundations of advanced psychopharmacology in common and complex mental health disorders and conditions in populations across the lifespan are explored. Prerequisite: NURS 5334, NURS 5410, NURS 5140, NURS 5112, NURS 5222 or concurrent enrollment, NURS 5223 or concurrent enrollment.

NURS 5220. ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING. 2 Hours.

Apply theoretical foundations of comprehensive health assessment across the lifespan. Prerequisite: Graduate or Certificate Program Standing. NURS 5315 or Special Permission.

NURS 5222. CHILD, ADOLESCENT, AND SPECIAL POPULATIONS PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP. 2 Hours.

This course provides the scientific foundations and evidence-based practice principles necessary for managing children, adolescents, and special populations (and/or at risk for) various commonly occurring and complex psychiatric disorders and mental health problems as well as comorbid medical illnesses. Prerequisite: NURS 5410, NURS 5213, NURS 5112, NURS 5223 or concurrent enrollment, or Certificate Program Standing.

NURS 5223. ADULT AND GERIATRIC PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP. 2 Hours.

This course provides the scientific foundations and evidence-based practice principles necessary for managing adult and geriatric populations with (and/or at risk) for commonly occurring and complex psychiatric disorders and mental health problems as well as co-morbid medical illnesses. Prerequisite: NURS 5410, NURS 5140, NURS 5213 or concurrent enrollment, NURS 5222 or concurrent enrollment, or Certificate Program Standing.

NURS 5270. INDEPENDENT STUDY IN NURSING. 2 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, P, R. Prerequisite: Graduate Standing and permission of instructor.

NURS 5290. TOPICS IN NURSING. 2 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 5302. CURRICULUM DEVELOPMENT IN NURSING EDUCATION. 3 Hours.

Explore the nature of nursing education. Focus on the curriculum process and its application to nursing education programs. Prerequisite: Graduate standing.

NURS 5308. NURSING INFORMATICS. 3 Hours.

Focus on application of computer technology that supports the dissemination of health care data, information and knowledge. Selected software packages/applications are presented and used. Prerequisite: NURS 5367.

NURS 5310. TEACHING AND LEARNING THEORIES AND STRATEGIES IN NURSING EDUCATION. 3 Hours.

Teaching/Learning theories, strategies, and evaluation for educators. Prerequisite: Graduate standing.

NURS 5311. NURSING MANAGEMENT IN THE HEALTH CARE ENVIRONMENT. 3 Hours.

Considers development of management and organizational theories as applied to health care organizations and their environment. Prerequisite: NURS 5367.

NURS 5312. ASSESSMENT AND EVALUATION STRATEGIES IN NURSING EDUCATION. 3 Hours.

Integration of concepts of assessment and evaluation into a nursing evaluation framework. Prerequisite: Graduate standing.

NURS 5313. CLINICAL PROCEDURES FOR ADVANCED PRACTICE NURSES. 3 Hours.

A theory and clinical procedures course designed for the Advanced Practice Nurse to acquire skills and procedures in the clinical management of selected patients. Prerequisite: NURS 5220; NURS 5120; NURS 5130 or concurrent enrollment and NURS 5334 or Certificate program standing.

NURS 5315. ADVANCED PATHOPHYSIOLOGY. 3 Hours.

Builds on a previous understanding of anatomy and physiology and focuses on developing advanced knowledge of physiologic and pathophysiologic concepts across the life span. Prerequisite: Graduate Standing.

NURS 5318. ADVANCED PATHOPHYSIOLOGY FOR NURSE EDUCATORS. 3 Hours.

This course develops advanced knowledge of pathophysiology. Principles of advanced physiology and pathophysiology are applied to disease processes, plans of care, and teaching plans. This course prepares Nurse Educators to educate clients, students, colleagues to facilitate patients and/or their support systems understanding of the disease process plan of care. Prerequisite: NURS 5367 and NURS 5310 and NURS 5329 and NURS 5302 and NURS 5312.

NURS 5319. ADVANCED PHARMACOLOGY FOR NURSE EDUCATORS. 3 Hours.

This course develops advanced knowledge of clinical pharmacological therapeutics through the evaluation of classes of drugs and pharmacologic plans of care. This course prepares Nurse Educators to educate clients, students, and colleagues to facilitate patients and/or their support systems understanding of the pharmacologic plan of care. Prerequisite: NURS 5318.

NURS 5322. CHILD, ADOLESCENT AND GERIATRIC PSYCHIATRIC MENTAL HEALTH FOR THE PSYCH NP. 3 Hours.

This course provides the scientific foundations and evidenced based practice principles necessary for managing children, adolescents, and geriatric populations with (and/or at risk for) various commonly-occurring and complex psychiatric disorders and mental health problems and comorbid medical illnesses. Prerequisite: NURS 5210 and NURS 5211. NURS 5212 or concurrent enrollment or Certificate Program Standing.

NURS 5323. ADULT PSYCHIATRIC MENTAL HEALTH FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 3 Hours.

This course provides the scientific foundations and evidence based practice principles necessary for managing adults with (and/or at risk) for commonly occurring and complex psychiatric disorders and mental health problems as well as co-morbid medical illnesses. Prerequisite: NURS 5210 and NURS 5211. NURS 5212 or concurrent enrollment; NURS 5322 or concurrent enrollment or Certificate Program Standing.

NURS 5324. PSYCHIATRIC MENTAL CLINICAL PRACTICE I. 3 Hours.

This course provides application of theoretical knowledge and clinical skills to patients with commonly occurring psychiatric and mental health disorders across the life span in the context of advanced nursing practice. Prerequisite: NURS 5222 and NURS 5223 or Certificate Program Standing. Good academic standing (GPA 3.0).

NURS 5325. PSYCHIATRIC MENTAL HEALTH CLINICAL PRACTICE II. 3 Hours.

This course provides application of theoretical knowledge and clinical skills to patients with various commonly occurring and complex psychiatric and mental health disorders across the life span in the context of advanced nursing practice. Prerequisite: NURS 5324 or concurrent enrollment, or Certificate Program Standing. Good academic standing (GPA 3.0).

NURS 5327. EXPLORATION OF SCIENCE AND THEORIES FOR NURSING. 3 Hours.

This course provides a critical examination of the philosophical and theoretical bases for nursing science. Prerequisite: Graduate standing.

NURS 5329. ROLE OF THE NURSE EDUCATOR. 3 Hours.

Investigation of the roles and functions of the nurse educator. Prerequisite: Graduate program standing.

NURS 5333. FAMILY I. 3 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on pediatric wellness, women's health, men's health, and geriatrics concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 and NURS 5313 or Certificate Program Standing.

NURS 5334. ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS. 3 Hours.

Study of clinical pharmacological therapeutics for advanced nursing practice. Prerequisites: NURS 5315 or Certificate Program Standing.

NURS 5335. FAMILY II. 3 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of commonly occurring conditions seen in primary care patients across the lifespan. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 and NURS 5313 or Certificate Program standing.

NURS 5336. FAMILY III. 3 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on adult wellness, psychiatric, and cardiometabolic concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 and NURS 5313 or Certificate Program standing.

NURS 5337. FAMILY CLINICAL PRACTICE 1. 3 Hours.

Initial clinical preceptorship in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the family nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5432, NURS 5433, NURS 5434 and Good academic standing (GPA 3.0) or certificate program standing.

NURS 5338. FAMILY CLINICAL PRACTICE 2. 3 Hours.

Continued clinical preceptorship with opportunities for increased clinical knowledge in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the family nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5432, NURS 5433, NURS 5434, NURS 5337 or concurrent enrollment; Good academic standing (GPA 3.0) or Certificate Program standing.

NURS 5339. ROLES AND FUNCTIONS OF THE NURSE ADMINISTRATOR. 3 Hours.

Examine and implement administrative and managerial roles in health care organizations. Prerequisite: NURS 5311.

NURS 5340. MANAGEMENT SEMINAR AND PRACTICE. 3 Hours.

Synthesize management, organizational, and leadership concepts and theories in selected health care settings. Prerequisite: NURS 5308; NURS 5311; NURS 5339; NURS 5341; NURS 5343; NURS 5342; NURS 5382. Good Academic Standing (3.0 GPA).

NURS 5341. FINANCIAL MANAGEMENT IN NURSING. 3 Hours.

Analyze and apply financial management concepts to financial planning, budgeting, and reimbursement systems in health care. Prerequisite: NURS 5311.

NURS 5342. MANAGEMENT OF NURSING OPERATIONS. 3 Hours.

Examine strategic planning for health care systems. Prerequisite: NURS 5311.

NURS 5343. NURSING LEADERSHIP AND COMPLEX HEALTH CARE SYSTEMS. 3 Hours.

Analyze leadership strategies in current and predicted health care systems including dimensions of workforce and workplace issues, leadership, and evidenced-based decision-making. Prerequisite: NURS 5367.

NURS 5348. NURSING CARE AT THE END OF LIFE. 3 Hours.

Addresses concepts of palliative care of patients with life limiting disease and their families. Explores the physiology of end stage disease processes, clinical approaches to pain and symptom management, societal issues and trends in end of life care, models of care delivery and the impact of personal values and beliefs about death. Prerequisite: Graduate Standing.

NURS 5350. ROLE OF THE NURSE IN ADVANCED PRACTICE. 3 Hours.

Theory and application of the multiple roles of the advanced practice nurse within the health care system. Prerequisite: Graduate Standing.

NURS 5352. ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 1. 3 Hours.

Clinical experience in primary and long term health care settings with focus on managing adolescents, adults, and elders with common episodic acute and chronic health care needs. Prerequisite: NURS 5462 or concurrent enrollment; Good academic standing (GPA 3.0) or certificate program standing.

NURS 5353. ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 2. 3 Hours.

Continued clinical experience in primary and long term health care settings with focus on managing adolescents, adults, and elders with common episodic acute and chronic health care needs. Prerequisite: NURS 5462 and NURS 5352 or concurrent enrollment and Good academic standing (GPA 3.0) or certificate program standing.

NURS 5354. ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 1. 3 Hours.

Clinical experience in specialty practice and high acuity health care settings with focus on managing adolescents, adults, and elders with common secondary and tertiary health care needs. Prerequisite: NURS 5463 or concurrent enrollment and Good academic standing (GPA 3.0) or certificate program standing.

NURS 5355. ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 2. 3 Hours.

Continued clinical experience in specialty practice and high acuity health care settings with focus on managing adolescents, adults, and elders with common secondary and tertiary health care needs. Prerequisite: NURS 5354 or concurrent enrollment; Good academic standing (GPA 3.0) or certificate program standing.

NURS 5356. GLOBAL HEALTH POLICY, HEALTH LITERACY, AND MODELS OF CARE FOR OLDER ADULTS. 3 Hours.

This course will focus on healthcare policy issues and models of healthcare delivery for older adults at the state, national and global levels. Prerequisite: Graduate Standing.

NURS 5357. ADVANCED CLINICAL MANAGEMENT OF OLDER ADULTS WITH COMPLEX MULTIMORBIDITY. 3 Hours.

This course will focus upon an inter-professional approach to develop advanced knowledge in the chronic health care management of older adults, their families, and communities in a variety of health care settings. Prerequisite: Graduate Standing or permission of instructor.

NURS 5358. ADVANCED CLIN MGMT OF OLDER ADULTS W/COMPLEX MULTIMORBIDITY DURING ACUTE ILLNESS CRISIS. 3 Hours.

This course will focus upon an inter-professional approach to develop advanced knowledge in aging issues and paradigms of care for the older adult; in addition, this course will accentuate the management of older adults with acute health problems, their families, and communities in a variety of health care settings. Prerequisite: Graduate Standing or permission of instructor.

NURS 5360. SIMULATION APPLICATION IN NURSING. 3 Hours.

Application of and active learning strategies in nursing education. Prerequisite: NURS 5367, NURS 5220.

NURS 5362. TEACHING PRACTICUM. 3 Hours.

Nursing education preceptorship in selected health care sites with opportunities to apply clinical and educational knowledge, skills, and concepts in a guided, progressive context of nursing education. Graded F,R,P,W. Prerequisite: Completion of all courses in the Nursing Education Program and Good academic standing (GPA 3.0).

NURS 5366. PRINCIPLES OF RESEARCH IN NURSING. 3 Hours.

This course focuses on integration of theoretical and empirical principles of nursing research to generate evidence for nursing practice. Prerequisite: Graduate Standing.

NURS 5367. EVIDENCE BASED PRACTICE. 3 Hours.

Preparation to lead evidence-based practice teams, to interpret best evidence, to plan for change, to evaluate outcomes, and to disseminate the project. Prerequisite: Graduate standing; NURS 5366 and NURS 5327.

NURS 5370. INDEPENDENT STUDY IN NURSING. 3 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F,R,P,W. Permission of instructor. Graduate standing.

NURS 5371. PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 1. 3 Hours.

Initial clinical preceptorship in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5465. Good academic standing (GPA 3.0) or Certificate program standing.

NURS 5372. PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 2. 3 Hours.

Continue clinical preceptorship in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5371 or concurrent enrollment. Good academic standing (GPA 3.0) or Certificate Program Standing.

NURS 5373. PEDIATRIC ACUTE CARE CLINICAL PRACTICE 1. 3 Hours.

Initial clinical preceptorship in selected acute and chronic care health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric acute care nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5467 or concurrent enrollment. NURS 5466 or concurrent enrollment. Good academic standing (GPA 3.0) or Certificate program standing.

NURS 5374. PEDIATRIC ACUTE CARE CLINICAL PRACTICE 2. 3 Hours.

Continue clinical preceptorship in selected acute and chronic care health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5466; NURS 5373 or concurrent enrollment. Good academic standing (GPA 3.0) or Certificate program standing.

NURS 5380. INDEPENDENT STUDY IN RESEARCH. 3 Hours.

Detailed study and participation in a faculty sponsored research project. Topic and mode of study are agreed upon by the student and instructor prior to registration. Permission of instructor. Graded F,R,P,W.

NURS 5382. NURSING AND HEALTH CARE POLICY: ISSUES AND ANALYSIS. 3 Hours.

Analyze historical, current, and predicted national, state, and local health care policy processes. Prerequisite: NURS 5367.

NURS 5388. STATISTICS FOR HEALTH CARE. 3 Hours.

This course provides students with the basic knowledge and skills to effectively use biostatistics in different research design and data analysis, and to understand articles in related professional journals. Topics include choosing correct statistical methods and study designs in nursing research and practice; descriptive statistics; probability and probability distributions; estimation and hypothesis testing, simple linear regression, introduction to analysis of variance and an introduction to the use of statistical software packages. Prerequisite: Undergraduate Statistics.

NURS 5390. TOPICS IN NURSING. 3 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 5392. GENOMICS AND NANOTECHNOLOGY IN HEALTH CARE PRACTICE. 3 Hours.

Genomics and nanotechnology are emerging as principal drivers to improve human diagnosis and treatment modalities. This course is designed to introduce tools used in these fields. Health care outcomes, in relation to innovations produced from these fields, will be described. Prerequisite: Graduate standing.

NURS 5393. ADVANCED CLINICAL NURSING PRACTICE I. 3 Hours.

Development of advanced knowledge base of specialized clinical concepts and the application of this knowledge in selected clinical areas. Prerequisite: Graduate standing.

NURS 5395. HEART FAILURE PATHOPHYSIOLOGY AND EXERCISE REHABILITATION. 3 Hours.

The goal of this course is to provide students with fundamental knowledge related to heart failure (HF) pathophysiology, and the role of evidence based exercise rehabilitation to improve overall health related physical fitness and quality of life. Prerequisite: Graduate Standing or Approval of Instructor.

NURS 5396. CURRENT BIOTECHNOLOGY IN HEALTH CARE. 3 Hours.

The goal of this course is to provide students with fundamental knowledge and current advances of biotechnology in medicine and healthcare, and train them how to apply these new technologies in their pertinent fields. Prerequisite: Graduate Standing. Approval of instructor.

NURS 5397. ETHICAL RESEARCH AND THE PROPOSED IRB/IACUC PROTOCOL. 3 Hours.

Ethical research practices that the learner will be able to demonstrate through a written research protocol using good clinical practice (GCP) to ensure protection of subjects/animals. Related topics include social-behavioral and biomedical research certifications, and issues related to scientific misconduct. Prerequisite: Graduate standing or permission of instructor.

NURS 5398. THESIS. 3 Hours.

Graded F,R.

NURS 5410. INTRODUCTION TO PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP. 4 Hours.

This course provides the neuroscientific foundations for various psychiatric disorders and mental health problems across the lifespan. An analysis of the relationships between the neurobiology, neurophysiology, genetic, and epigenetic aspects of various psychiatric disorders and mental health problems will be explored. Prerequisite: NURS 5315, NURS 5220, NURS 5120, NURS 5130, or Certificate Program Standing.

NURS 5432. FAMILY I. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on pediatric wellness, women's health, men's health, and geriatrics concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 or Certificate Program standing.

NURS 5433. FAMILY II. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of commonly occurring conditions seen in primary care patients across the lifespan. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 or Certificate Program standing.

NURS 5434. FAMILY III. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on adult wellness, psychiatric, and cardiometabolic concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 or Certificate Program standing.

NURS 5447. NEONATAL NURSING III. 4 Hours.

This course focuses on advanced concepts of pharmacological and technological therapies and evidence based knowledge for the management of designated complex acute and chronic health problems affecting infants (birth to 2 years of age) and their families including ethical issues. Prerequisite: NURS 5537 or Certificate Program Standing.

NURS 5450. NEONATAL NP CLINICAL PRACTICE. 4 Hours.

Integration of clinical management of the high-risk neonate through clinical preceptorships in selected health practice sites with application of knowledge, skills and concepts in a guided, progressive context of advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisites: NURS 5334 and NURS 5316 or NURS 5220 and NURS 5110 and NURS 5204 and NURS 5537 or concurrent enrollment and Good academic standing (GPA 3.0) or Certificate Program Standing.

NURS 5461. ADULT GERONTOLOGY MANAGEMENT ACROSS THE CONTINUUM OF CARE. 4 Hours.

Foundations of advanced knowledge of common acute and chronic health problems in adolescents, adults, and elders across health care settings. Prerequisite: NURS 5220; NURS 5120 and NURS 5334, and NURS 5367 or concurrent enrollment, or Certificate Program Standing.

NURS 5462. ADULT GERONTOLOGY PRIMARY CARE. 4 Hours.

Focus on an inter-professional approach and the development of advanced knowledge in the primary care management of adults from adolescence through old age, their families, and communities in a variety of health care settings. Prerequisite: NURS 5461 or Certificate Program Standing.

NURS 5463. ADULT GERONTOLOGY ACUTE CARE. 4 Hours.

Focuses on a collaborative, inter-professional approach in the evaluation, diagnosis, and management of adolescents, adults, and gerontological patients who are experiencing acute, critical, and complex chronic illnesses across the continuum of care. Prerequisite: NURS 5461 or Certificate Program Standing.

NURS 5465. PRIMARY PEDIATRIC CARE. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioners management of designated minor acute, chronic and chronic health problems of pediatric patients and their families in primary care healthcare settings. Prerequisite: NURS 5334; NURS 5220; NURS 5130; NURS 5367 or concurrent enrollment.

NURS 5466. PEDIATRIC ACUTE CARE. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner management of designated critical, acute, chronic and complex health problems of pediatric patients and their families in an acute care facility. Prerequisite: NURS 5465.

NURS 5467. PEDIATRIC COMPLEX CARE. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner management of designated acute, chronic and complex health problems of pediatric patients and their families in multiple healthcare settings. Prerequisite: NURS 5465 or concurrent enrollment or Certificate program standing.

NURS 5470. INDEPENDENT STUDY IN NURSING. 4 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Prerequisite: Permission of instructor. Graded F,R,P,W.

NURS 5537. NEONATAL NURSING II. 5 Hours.

This course focuses on advanced concepts of pharmacological and technological therapies and evidence based knowledge for the management of designated complex, acute health problems affecting infants (birth to 2 years of age). Graded (A,B,C,D,F,I,W). Prerequisite: NURS 5204 and NURS 5334 and NURS 5316 or NURS 5220 and NURS 5110; NURS 5367 or concurrent enrollment or Certificate Program Standing.

NURS 5610. NEONATAL NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of neonatal advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: NURS 5447 and NURS 5450. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5640. ADULT GERONTOLOGY ACUTE CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of adult gerontology acute care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5640: NURS 5354 and NURS 5355. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5640: NURSC 5354 and NURSC 5355. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5645. ADULT GERONTOLOGY PRIMARY CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of adult gerontology primary care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5645: NURS 5352 and NURS 5353. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5645: NURSC 5352 and NURSC 5353. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5650. PSYCHIATRIC MENTAL HEALTH NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of family psychiatric mental health care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: NURS 5324 and NURS 5325. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5660. FAMILY NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of Family Primary Care Advanced Nursing Practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5660: NURS 5337 and NURS 5338. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5660: NURSC 5337 and NURSC 5338. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSG: NURSG 5337 and NURSG 5338. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5670. INDEPENDENT STUDY IN NURSING. 6 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Prereq: Permission of instructor. Graded F,R,P,W.

NURS 5680. PEDIATRIC ACUTE CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of pediatric acute care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5680: NURS 5373 and NURS 5374. Good Academic Standing (GPA 3.0) or Certificate Program standing. For NURSC 5680: NURSC 5373 and NURSC 5374. Good Academic Standing (GPA 3.0) or Certificate Program standing.

NURS 5685. PEDIATRIC PRIMARY CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of pediatric primary care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5685: NURS 5371 and NURS 5372. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5685: NURSC 5371 and NURSC 5372. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5698. THESIS. 6 Hours.

Graded F, R, P.

NURS 6170. INDEPENDENT STUDY IN NURSING. 1 Hour.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F,R, P.

NURS 6190. SPECIAL TOPICS IN NURSING. 1 Hour.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6270. INDEPENDENT STUDY IN NURSING. 2 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, R, P.

NURS 6290. TOPICS IN NURSING. 2 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6301. THEORETICAL EVOLUTION IN SCIENCE. 3 Hours.

Philosophies of science and epistemologies, their influence on knowledge development for nursing practice, and strategies for theory development and analysis. Prerequisite: Graduate standing.

NURS 6302. ISSUES IN STUDYING THE HEALTH OF CULTURALLY DIVERSE AND VULNERABLE POPULATIONS. 3 Hours.

Social and cultural factors affecting health among sub-populations defined by age, education, gender, ethnicity, culture, religion, occupation, vulnerability, income and geography. Prerequisite: Graduate Standing. DNP or PhD program.

NURS 6304. MEASUREMENT IN CULTURALLY DIVERSE AND VULNERABLE POPULATIONS. 3 Hours.

Evaluate measurement tools/instruments for studying culturally diverse and vulnerable populations. Prerequisite: NURS 6301, Theoretical Evolution in Science, or permission of instructor. Course is predicated on prior learning related to concept analysis, basic statistics including correlation.

NURS 6305. QUALITATIVE RESEARCH. 3 Hours.

Philosophical foundation for and methodological issues in using qualitative approaches for scientific and knowledge development. Prerequisite: Graduate standing.

NURS 6306. RESEARCH DESIGN. 3 Hours.

Application of advanced nursing research methods to design studies that improve health outcomes in culturally diverse populations. Prerequisites: NURS 6304 or permission of instructor.

NURS 6307. POPULATION HEALTH. 3 Hours.

This course focuses on analyzing determinants of health, then designing health strategies to improve outcomes of populations. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). 6327 if in DNP Program.

NURS 6308. STATE OF THE SCIENCE: BACKGROUND IN RESEARCH. 3 Hours.

Application of criteria for appraising strengths and weaknesses of published studies; Synthesis of research literature on a selected topic. Prerequisite: Graduate standing.

NURS 6311. MANUSCRIPT DEVELOPMENT FOR PUBLICATION. 3 Hours.

This course provides a frame for which students focus their prose in order to disseminate their work to a broad audience of clinical, education, or research oriented practitioners. This course allows participants to critique peers' work to enhance their own skills as a peer reviewer, to enhance their career, and support other authors' writing efforts. The participants will write and explore the differences between peer reviewing and editing by critiquing sample review comments. Prerequisite: Approval of instructor. Doctoral Graduate standing.

NURS 6318. PARAMETRIC STATISTICS FOR HEALTHCARE RESEARCH. 3 Hours.

Advanced knowledge and skills to use biostatistics effectively in different research designs and data analyses. Use of a statistical software package to manipulate datasets and perform statistical analyses. Emphasis will be placed on parametric statistical methods for complex research questions and designs. Prerequisite: Graduate-level introductory statistics course.

NURS 6319. PSYCHOMETRIC AND NONPARAMETRIC STATISTICS FOR HEALTHCARE RESEARCH. 3 Hours.

Basic knowledge and skills to select the appropriate biostatistical analysis for different research designs, analyze data, interpret statistical results, and understand research articles in professional journals. Emphasis will be placed on reliability and validity of instruments commonly used in healthcare; outcome measurement in health care; common research designs in health care research; nonparametric statistics for dependent samples and independent samples; logistic regression; and survival analysis. Prerequisite: Graduate-level introductory statistics course.

NURS 6320. LEADERSHIP IN HEALTH CARE SYSTEMS. 3 Hours.

This course focuses on the DNP nurse influencing health systems change at any level. Prerequisite: Doctoral Standing. Prerequisite or co-requisite with NURS 6327 if full time.

NURS 6321. EPIDEMIOLOGY. 3 Hours.

Introduces the basic principles and biostatistical methods of epidemiology and demonstrates their applicability to population health. Prerequisite: Graduate Standing.

NURS 6322. TRANSLATIONAL RESEARCH. 3 Hours.

This course provides a review of core research concepts as a foundation for evidence appraisal and translation. New practice-based clinical inquiry methods and strategies are explored to promote translation science for application in the DNP role. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). NURS 6327, NURS 6320.

NURS 6323. EVIDENCE APPRAISAL. 3 Hours.

In this course, students will use analytical methods to critically appraise existing research and literature to select and implement the best evidence for practice. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). NURS 6327, NURS 6320, and NURS 6322.

NURS 6324. CLINICAL INFORMATION SYSTEMS. 3 Hours.

This course focuses on the selection, assessment, and use of information systems, technology, and data to evaluate and monitor outcomes of care, care systems, and quality improvement. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B) NURS 6327, NURS 6320.

NURS 6326. PROJECT PROPOSAL DEVELOPMENT. 3 Hours.

This course provides the student an opportunity to design an evidence-based process and intervention to improve practice and the practice environment. Prerequisite: Doctoral Standing. NURS 6327, NURS 6307, NURS 6382, NURS 6320, NURS 6322, NURS 6323, and NURS 6324.

NURS 6327. CLINICAL SCHOLARSHIP TO IMPROVE HEALTHCARE OUTCOMES. 3 Hours.

This course will develop clinical scholarship and analytical methods to improve healthcare outcomes. Prerequisite: Graduate Standing; Graduate Level Statistics (with minimum of a B).

NURS 6330. LARGE DATABASES. 3 Hours.

This course is designed to educate students on the theoretical framework behind the design, administration, and analysis of population-based health surveys. The focus is on datasets containing health and behavioral variables, but the skills learned are transferable to other areas of research as well. At the conclusion of this course students will be prepared to produce descriptive statistics about a population using data collected under complex survey design. With the collaboration of the instructor, this course culminates in the development, analysis, and reporting of a research conducted using a CDC database.

NURS 6331. DNP PRACTICUM I PRACTICE. 3 Hours.

During this course, students implement evidence-based solutions that influence health outcomes. Prerequisite: NURS 6307, NURS 6320, NURS 6321, NURS 6322, NURS 6323, NURS 6324, NURS 6326, NURS 6382. DNP status and good academic standing (GPA 3.0).

NURS 6333. DNP PRACTICUM II PRACTICE. 3 Hours.

During this course, students implement and evaluate evidence-based solutions that influence health outcomes. Prerequisite: NURS 6307, NURS 6320, NURS 6621, NURS 6322, NURS 6323, NURS 6324, NURS 6326, NURS 6382 NURS 6620. Good academic standing (GPA 3.0).

NURS 6370. INDEPENDENT STUDY IN NURSING. 3 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, R, P.

NURS 6381. RESEARCH PRACTICUM. 3 Hours.

With the active guidance and under the supervision of an active researcher, the student will complete at least 75 hours of research activities, such as designing studies, seeking IRB and organizational approvals, obtaining informed consent, collecting and analyzing data, conducting laboratory experiments, or disseminating findings. This is practical research experience in preparation for the student's dissertation in the PhD Program in Nursing. Prerequisite: Doctoral standing. By permission of Research Advisor.

NURS 6382. HEALTH CARE POLICY. 3 Hours.

Critique policies and processes to provide leadership in developing and implementing policies and/or regulations that influence institutional, local, state, federal, and/or international healthcare outcomes. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). NURS 6327 if in DNP program.

NURS 6390. TOPICS IN NURSING. 3 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6399. DISSERTATION. 3 Hours.

Graded F, R. Prerequisite: Admission to candidacy for the Doctor in Nursing degree.

NURS 6470. INDEPENDENT STUDY IN NURSING. 4 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, R, P.

NURS 6490. TOPICS IN NURSING. 4 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6620. DNP PRACTICUM I. 6 Hours.

During this course, students implement evidence-based solutions that influence health outcomes. Prerequisite: NURS 6307, NURS 6320, NURS 6322, NURS 6323, NURS 6324, NURS 6326, NURS 6327, and NURS 6382. Good academic standing (GPA 3.0).

NURS 6621. DNP PRACTICUM II. 6 Hours.

During this course, students evaluate evidence-based solutions that influence health outcomes. Prerequisite: NURS 6620 and DNP status, Good academic standing (3.0).

NURS 6699. DISSERTATION. 6 Hours.

Graded F, R, P, W. Prerequisite: Admission to candidacy for the Doctor in Nursing degree.

NURS 6999. DISSERTATION. 9 Hours.

Graded F, R, P. Prerequisite: Admission to candidacy for the Doctor in Nursing degree.

NURS 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Department of Graduate Nursing

MSN Programs (Nurse Practitioner, Nurse Educator, Nurse Administrator, Post Master's Certificate)

Our master's specialty degree prepares students for advanced practice, education and management and research endeavors to address a change in health care landscape. Both full-time and part-time study options are available as well as online and classroom-based programs.

ADMISSION REQUIREMENTS

The applicant for the Master of Science in Nursing (MSN) degree must meet the general requirements of Graduate Admissions.

The College of Nursing and Health Innovation admission criteria are detailed in the MSN Graduate Admission table below. The admission status options are described below.

Unconditional Admission

Applicants must meet all criteria for unconditional admission.

Probationary Admission

Criteria for probationary admission status and minimum GRE scores are listed in the MSN Graduate Admission table below. When admitted on probation, a student must maintain a 3.0 GPA in the first two semesters of enrollment in the graduate program. Probationary students are admitted for part-time study only.

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Deferred Status

Deferred decision is granted when a file is incomplete or when a denial decision is not appropriate.

Denial of Admission

An applicant will be denied admission if they have less than satisfactory performance on a majority of admission criteria listed in the MSN Admission Table.

MSN Graduate Admission Table (Nurse Practitioner, Nurse Educator, Nurse Administrator, Post Master's Certificate)

Admission Criteria	Unconditional	Probationary
GPA	3.0 ¹ on last 60 hours of courses of the bachelor's degree program (as calculated by Graduate Admission of UTA) for MSN students. 3.0 GPA in master's degree program for post-master's certificate students.	2.8-2.99 ^{2,3,6} for MSN students
GRE ⁴ Two highest GRE scores will be used in admission process	Not required	Verbal: 430 or 149 ² or Quantitative: 430 or 141 or Analytical Writing: 3.5 Analytical: 430
TOEFL iBT (Test of English as a Foreign Language) or IELTS (International English Language Testing System)	The minimum acceptable scores for the TOEFL iBT and IELTS comply with the graduate admission requirements for The University as stated in the Graduate Catalog.	The minimum acceptable scores for the TOEFL iBT and IELTS comply with the graduate admission requirements for The University as stated in the Graduate Catalog.

Clinical Experience	<p>1. Two years clinical experience as a Registered Nurse (RN) is required for the MSN in Psychiatric Mental Health NP specialty, Nursing Education, and Nursing Administration.</p> <p>2. For all high-acuity MSN NP Programs, (Acute Care Pediatrics and Adult Gerontology Acute Care), two years clinical experience as an RN in an acute care setting within the previous five (5) years is required. (Evaluated by the Associate Dean and/or designee.)</p> <p>3. For the Neonatal NP Program, two (2) years full time clinical experience as an RN in a Level III or IV NICU within the previous five (5) years and current employment (minimum of one shift per week) in a Level III or IV NICU. (Evaluated by the Associate Dean and/or designee).</p> <p>4. For the MSN in Adult Gerontology Primary Care, Family and Primary Care Pediatrics, no experience is required.</p> <p>5. International students are required to have two years RN clinical experience in a healthcare system in the United States (or equivalent).</p> <p>6. Two years clinical experience as an RN in an acute care setting within the previous five (5) years is required for admission to the dual Adult Gerontology Acute and Primary Care Nurse Practitioner track.</p> <p>7. Two years of clinical experience as a RN in an acute care setting within the previous five (5) years is required for admission to the dual Pediatric Acute and Primary Care Nurse Practitioner track.</p>
Current and unencumbered RN License from Texas, a compact state, or other state board of nursing ⁵	Evaluated by Associate Dean or designee
Neonatal Resuscitation Program (NRP)	Required only for the Neonatal Nurse Practitioner Program.
Pediatric Advanced Life Support (PALS)	Required only for the Acute Care Pediatric Nurse Practitioner Program; Neonatal NP applicants may complete the NRP (Neonatal Resuscitation Program).
BSN from ACEN or CCNE Accredited Program	Evaluated by Associate Dean or designee
MSN from an Accredited Program	For post-master's certificate students only. Evaluated by the Associate Dean or designee
Undergraduate Level Statistics	Minimum grade of "C"
Cardiopulmonary Resuscitation	Required for all programs.

- 1 Minimum undergraduate GPA requirement for unconditional admission is a 3.0 on a 4.0 scale as calculated by Graduate Admissions.
- 2 If a person does not meet probationary admission requirements, he or she may request review by a Committee of the Graduate Nursing Faculty. The Committee may request completion of coursework and/or additional information to support the individual's petition for admission.
- 3 If admitted on probation, a student must maintain a 3.0 GPA in the first two semesters of enrollment in the graduate program. Probationary students are admitted for part-time study only.
- 4 Verbal, Quantitative, and Analytical Writing GRE scores will be reviewed and the two highest scores will be considered for the admission process.
- 5 All graduate nursing students must have an unencumbered Registered Nursing License as designated by the Board of Nursing (BON) for clinical courses. It is imperative that any student whose license becomes encumbered by the BON must immediately notify their department chair. The complete policy regarding encumbered RN license is available online at: <http://www.uta.edu/nursing/MSN/unencumbered>

- 6 For applicants with an undergraduate GPA of 2.8-2.99 on the last 60 hours, but have completed a graduate level degree following the BSN, the GRE is not required.
- 7 If a student has master's level coursework, we will consider the information in the review of the applicant.

References or Letters of Recommendation are not required for admission into the MSN Program.

Admission Policy for Individuals Ineligible to Continue Graduate Study

Applicants who are on academic probation or who are ineligible to continue graduate study at another university are ineligible for admission. However, applicants may submit a petition to be reviewed by a Committee of the Graduate Nursing Faculty.

The committee will make a decision regarding admission based on the following: :

1. GPA on the last 60 hours of BSN, graduate GPA, GRE scores (if applicable), and English language score (if applicable);
2. Official transcripts from BSN and all universities attended following completion of BSN;
3. A narrative statement from the potential student providing a rationale for their ineligibility in the previous graduate program;
4. A letter of reference from a graduate faculty in the previous program; and
5. A plan for successful study at UT Arlington.

The admission committee reserves the right to ask for additional materials as needed. The committee will make its recommendation regarding admission to the Associate Dean or their designee of the Graduate Nursing Programs.

Post Master's Certificates

Applicants must meet the admission criteria for the MSN degree program in which they are applying and have a bachelor's degree in nursing from a program accredited by the Accreditation Commission for Education in Nursing (ACEN) or the Commission on Collegiate Nursing Education (CCNE) or proof of equivalent education at a foreign institution.

RN to MSN Program

The RN to MSN program will enable outstanding undergraduate students who are registered nurses to satisfy degree requirements leading to a master's degree (MSN) in Nursing Administration, Nursing Education, or Family Nursing Practice while completing their undergraduate studies through the RN to BSN online program. The RN to MSN online program is designed to encourage outstanding registered nurses to complete a master's degree at UT Arlington. It is also intended to decrease the cost of the combined degree and save time for students seeking the BSN and MSN degrees.

ADMISSION REQUIREMENTS

Registered nurses holding an associate's degree in nursing may apply for the RN to MSN program. All applicants must meet the admission criteria prior to being accepted into the graduate program, including completion of all non-nursing courses required for the BSN with the exception of the 6 hours of electives.

The criteria for unconditional admission to the RN to MSN require that applicants meet the standards for graduate admissions as follows:

- Current licensure as a registered nurse (RN)
- Two-years of experience as an RN for the Nursing Administration and Nursing Education program. No RN experience is required for the Family Nurse Practitioner program
- Undergraduate prerequisite courses completed
- Admission GPA of 3.0 or higher

Students who are not admissible under the conditions specified above shall be denied admission to the Fast Track program. However, they may apply to the RN to BSN program via the regular application process, paying all required fees and meeting all admission criteria. Admission will not be automatic as it will be subject to the normal admission practices of the program to which application is made. Upon completion of the RN to BSN program, the graduate can apply for the master's program in nursing through the regular application process and must meet all admission criteria.

DNP Program

The Doctor of Nursing Practice Program builds on a foundation of previous advanced practice education in nursing and prepares advanced practice nurse providers who demonstrate leadership, clinical expertise and innovation in problem recognition and resolution. The required courses identified for the DNP curriculum meet the American Association of Colleges of Nursing Essentials for Doctoral Education for Advanced Nursing Practice (AACN, August 2006). Our innovative DNP Program prepares clinical and research leaders to advance nursing and improve health care in our local community and around the world. This program is offered with two formats: accelerated online asynchronous and traditional semester online with synchronous online classes.

ADMISSION REQUIREMENTS

The applicant for the Doctor of Nursing Practice (DNP) degree must meet the general requirements of Graduate Admissions. Applicants with an MSN which prepares them for a role in advanced nursing practice as defined in *The Doctor of Nursing Practice: Current Issues and Clarifying Recommendations* paper, Published by AACN in 2015, are eligible for admission.

The UTA Doctor of Nursing Practice (DNP) Program is open to individuals who have completed their program at an institution accredited by the Commission on Collegiate Nursing Education (CCNE), Accreditation Commission for Education in Nursing (ACEN), National League for Nursing Commission for Nursing Education accreditation (NLN-CNEA), or an equivalent accrediting body, including Board certified Advanced Practice Registered Nurses (APRN's), Nurse Practitioners (NP); Nurse Midwives (CNM); Certified Registered Nurse Anesthetist (CRNA); Clinical Nurse Specialists (CNS); and Nurse Administrators who completed a Master's of Science in Nursing with a Nursing Administration specialty (MSN-ADM).

Master Nursing Education Degree is not eligible for the DNP program.

The DNP Program does not accept course transfers from other DNP programs. All required courses must be completed at UTA.

The College of Nursing and Health Innovation admission criteria are detailed in the DNP Graduate Admission Table below. The admission status options are described below.

Unconditional Admission

Applicants must meet all criteria for unconditional admission.

Probationary Admission

3.0 to 3.49 on a 4.0 scale

Provisional Admission

An applicant unable to supply all required documentation prior to the admission deadline but whom otherwise appears to meet admission requirements may be granted provisional admission.

Deferred Status

Deferred decision is granted when a file is incomplete or when a denial decision is not appropriate.

Denial of Admission

An applicant will be denied admission if they have less than satisfactory performance on a majority of admission criteria listed in the DNP Graduate Admission Table.

DNP Graduate Admission Table

Admission Criteria	Unconditional	Probationary
GPA on master's course work or Post-Master's NP or Nursing Administration Certificate.	3.5 on a 4.0 scale	3.0 to 3.49 on a 4.0 scale.
Transcripts	Submission of transcripts from all universities or colleges attended or received a degree.	
GRE	Waived	Not applicable
TOEFL iBT (Test of English as a Foreign Language) or IELTS (International English Language Testing System)	The minimum acceptable scores for the TOEFL iBT and IELTS comply with the graduate admission requirements for The University as stated in the Graduate Catalog.	The minimum acceptable scores for the TOEFL iBT and IELTS comply with the graduate admission requirements for The University as stated in the Graduate Catalog.
Graduate level statistics course.	Students must complete a graduate level statistics course with a grade of B or higher prior to being admitted to the DNP Program. Students can apply before completing the statistics course, but cannot be admitted to the DNP Program until the course has been completed.	
Professional liability insurance.	Evaluated by the Associate Dean or designee.	
Unencumbered RN license in any U.S. State or Territory.	Evaluated by the Associate Dean or designee.	
Proficiency in use of computer for word processing, spreadsheet development, and data and text file creation and manipulation	Evaluated by Admissions Committee.	

APRNs: Current certification by an APRN national certifying board with unencumbered APRN license in any U.S. State or Territory. Students will need to submit a copy of active certification during admission as evidence of clinical hours.

Administrators: Current National certification as a Nurse Administrator preferred. Applicants must submit a completed and signed practice/clinical hour verification form with school seal or a certified letter on university letterhead verifying the number of MSN clinical/practice hours completed during the program of study.

Current NP practice or current Nurse Administrator practice.

Current CPR, ACLS, or PALS if required for their Specialty Area.

Immunizations required by the College of Nursing.

Clear criminal background check, which satisfies the Dallas/Fort Worth Hospital Council and the Texas Board of Nursing.

Negative drug screen prior to clinical and research activities in health care agencies.

Practice Hours: A minimum of 1000 clinical practice hours are required for the UTA Doctor of Nursing Practice program. Up to 500 clinical/practice hours obtained during the student's MSN program may be applied to the 1000 post-bachelors practice hours.

- ¹ All DNP Program NP students must have an unencumbered APRN and RN license as designated by the Board of Nursing (BON) for clinical courses. It is imperative that any student whose license becomes encumbered by the BON must immediately notify the Associate Dean for the Graduate Nursing Programs. The complete policy regarding encumbered RN license is available online at: https://www.uta.edu/conhi/_doc/gnurs/MSN_student_handbook.pdf
- ² GPA of 3.5 or higher in an earned master's degree in nursing (Master of Science, Master of Arts, Master of Science in Nursing) or a postmaster's Nurse Practitioner (NP) or Nursing Administration (Admin) Certificate from a program or school accredited by the National League for Nursing Accrediting Commission (NLNAC), the Commission on Collegiate Nursing Education (CCNE), or equivalent accrediting body.

Admission Policy for Individuals Ineligible to Continue Graduate Study at Another University:

If potential students are ineligible to continue graduate study at another university and apply to The University of Texas at Arlington DNP Program, they may request to be reviewed by an admission committee. The admissions committee will be composed of (at a minimum);

1. Two representative faculty, and
2. DNP Graduate Advisor

The Admissions Committee will make their recommendation for admission or denial based on the following:

1. Admission materials (GPA on the Master in Nursing or Post-Master's certificate, grade of B or higher in graduate statistics, current vita, and English language score if applicable);
2. A narrative statement from the potential student providing a rationale for their ineligibility at another university; and
3. A plan for successful study at UT Arlington.

The committee reserves the right to ask for additional materials as needed. The admissions committee will make its recommendation of admission or denial to the Graduate Office for the University.

PhD Program

The Doctor of Philosophy in Nursing Program is built on a foundation of prior nursing education and prepares the student for original research and theory development. The PhD in Nursing Program is designed to prepare nurse scientists to meet the health needs of a rapidly changing and culturally diverse

society. The central focus of the PhD in Nursing Program is to prepare researchers and teachers who understand how communities evolve, interact, and change and how they prescribe, understand, and sanction health, illness, and health seeking behaviors.

The PhD in Nursing Program offers two routes of entry: BSN-PhD or MSN-PhD. Potential students should refer to admission criteria below.

ADMISSION REQUIREMENTS

The applicant for the Doctor of Philosophy in Nursing (PhD) degree must meet the general requirements of Graduate Admissions and have a Bachelor's degree in Nursing (BSN-PhD entry) or a Master of Science in Nursing degree (MSN-PhD entry) from a program accredited by the Accreditation Commission for Education in Nursing (ACEN) or the Commission on Collegiate Nursing Education (CCNE) or proof of equivalent education at a foreign institution. Applicants must submit to the Office of Graduate Admissions official transcripts from each college or university attended.

PhD Admission Status Options

The College of Nursing admission criteria are detailed in the PhD Program Requirements table below. The admission status options are described below.

Unconditional Admission

Applicants must meet all criteria for unconditional admission.

Probationary Admission

Criteria for probationary admission status are designated in the PhD Program Requirements table below. When on probation, a student must maintain a 3.0 GPA in the first two semesters of enrollment in the graduate program.

Provisional Admission

Applicants who are unable to supply all required documentation prior to the admission deadline but who otherwise appear to meet admission requirements may be admitted provisionally.

Deferred Status

Deferred decision is granted when a file is incomplete or when a denied decision is not appropriate.

Denial of Admission

An applicant will be denied admission if he/she has less than satisfactory performance on a majority of admission criteria listed in the table below. The PhD Admissions Committee will make a recommendation for denial.

PhD Program in Nursing Admission Requirements

Admission Criteria	Unconditional	Probationary
Bachelor's Degree in Nursing (BSN-PhD entry) or Master's Degree in Nursing (MSN-PhD entry) from a National League for Nursing Accrediting Commission (NLNAC) or American Association of Colleges of Nursing (AACN) or Commission on Collegiate Nursing Education (CCNE) or accredited College of Nursing or equivalent.	Evaluated by Admissions Committee	Evaluated by Admissions Committee ¹
GPA on all bachelor's coursework (BSN-PhD) or on master's coursework (MSN-PhD).	3.5 GPA on a 4.0 scale as calculated by Graduate Admissions	3.0-3.49 GPA on a 4.0 scale as calculated by Graduate Admissions ¹
GRE for BSN-PhD entry; GRE waived for MSN-PhD entry	GRE with a total minimum score of: 500 or 153 on verbal; 500 or 144 on quantitative; 500/4 on analytical/analytical writing scores	Verbal: 400-490 or 146-152; Quantitative: 400-490 or 140-143; Analytical Writing: 3.0-3.5; Analytical: 400-490; (Based on GPA/GRE ratio) ¹
TOEFL iBT (Test of English as a Foreign Language) or IELTS (International English Language Testing System)	The minimum acceptable scores for the TOEFL iBT and IELTS comply with the graduate admission requirements for The University as stated in the Graduate Catalog.	The minimum acceptable scores for the TOEFL iBT and IELTS comply with the graduate admission requirements for The University as stated in the Graduate Catalog.
Graduate level statistics course from an accredited college or university of 3 or more credit hours with a minimum grade of B.	Implement as stated	Implement as stated
Interview ²	75th percentile or higher on rating scale. Evaluated by Admissions Committee	70th percentile or higher on rating scale. Evaluated by Admissions Committee ¹
Written statement of goals ²	75th percentile or higher on rating scale. Evaluated by Admissions Committee	70th percentile on rating scale. Evaluated by Admissions Committee ¹

Match of student's research interest with a faculty advisor/chair.	A faculty member agrees to be the student's advisor and future dissertation chair.	A faculty member agrees to be the student's advisor and future dissertation chair.
Professional liability insurance.	Evaluated by Associate Dean or designee	Evaluated by Associate Dean or designee
Evidence of current professional nursing licensure/registration in at least one political jurisdiction. Licensure/registration must be maintained throughout the program. If a PhD student is going to perform direct patient care activities or supervise students in clinical agencies, he or she will be required to obtain an RN license in Texas or a compact state.	Evaluated by Associate Dean or designee	Evaluated by Associate Dean or designee
Two years of clinical experience recommended (BSN-PhD entry)	Evaluated by Admissions Committee	Evaluated by Admissions Committee
Immunizations required by the College of Nursing.	Evaluated by Associate Dean or designee	Evaluated by Associate Dean or designee
Criminal background check prior to clinical and research activities in health care agencies, which satisfies the Dallas/Fort Worth Hospital Council and the Texas Board of Nurse Examiners.	Evaluated by Associate Dean or designee	Evaluated by Associate Dean or designee
Drug screen prior to clinical and research activities in health care agencies, which satisfies the Dallas/Fort Worth Hospital Council and the Texas Board of Nurse Examiners.	Evaluated by Associate Dean or designee	Evaluated by Associate Dean or designee

¹ A student on probation must maintain a 3.0 GPA in the first two semesters of enrollment in the graduate program.

² A new goal statement and a new interview are required with every application.

Health Insurance Coverage

All UT Arlington nursing students enrolled in clinical course(s) will be required to provide verification of medical insurance coverage that includes Emergency Department evaluation and follow-up treatment for needle-stick and blood borne disease exposure. This mandatory clinical requirement has been authorized by The University of Texas System Board of Regents.

As such, UT Arlington will not cover initial and follow up treatment for needle-stick injuries and/or exposure to blood borne diseases which may occur while students are enrolled in clinical courses.

While the UT Arlington College of Nursing and Health Innovation recognizes the financial impact this clinical requirement presents for students, we also support the need for students to have health coverage for sudden illness, accidents, emergencies and exposure treatments that may occur in the clinical setting in a variety of clinical agencies.

Fees

Course fee information is available at www.uta.edu/fees. Additional costs beyond tuition, fees and books that may be incurred by a nursing student will include those items listed on the CON website. In addition, some clinical agencies charge a nominal fee for parking passes.

E-mail Accounts

Each student will be provided a UT Arlington e-mail address. Official communications from the College of Nursing will be distributed to this e-mail address and learning management system accounts required by many courses. Students will be held responsible for information distributed in this manner.

MSN Degree Requirements

A degree plan is developed for the student upon admission to the MSN Program. Students are required to have any changes in degree plan approved by a Graduate Academic Advisor prior to registration. A minimum of 36 semester hours, thesis or non-thesis option, is required for the degree. Elective coursework that supports the selected nursing study area must be approved by a Graduate Academic Advisor prior to registration. Students electing the thesis option do not have elective course requirements.

MSN students must complete hours in required courses, nursing specialty area, functional role, and elective(s) depending on specific plan.

MSN Required Courses - All Programs Including Dual Degree Programs

NURS 5327	EXPLORATION OF SCIENCE AND THEORIES FOR NURSING	3
NURS 5366	PRINCIPLES OF RESEARCH IN NURSING	3

NURS 5367	EVIDENCE BASED PRACTICE	3
Total Hours		9

MSN Nursing Specialty Areas

Each student must complete the required courses in at least one nursing specialty area and functional role.

Nursing Administration

Specialty Requirements

NURS 5308	NURSING INFORMATICS	3
NURS 5311	NURSING MANAGEMENT IN THE HEALTH CARE ENVIRONMENT	3
NURS 5340	MANAGEMENT SEMINAR AND PRACTICE	3
NURS 5341	FINANCIAL MANAGEMENT IN NURSING	3
NURS 5342	MANAGEMENT OF NURSING OPERATIONS	3
NURS 5343	NURSING LEADERSHIP AND COMPLEX HEALTH CARE SYSTEMS	3
NURS 5382	NURSING AND HEALTH CARE POLICY: ISSUES AND ANALYSIS	3

Required Elective		3
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Functional Role

NURS 5339	ROLES AND FUNCTIONS OF THE NURSE ADMINISTRATOR	3
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Total Hours		27
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Nursing Education

Specialty Requirements

NURS 5302	CURRICULUM DEVELOPMENT IN NURSING EDUCATION	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5308	NURSING INFORMATICS	3
NURS 5310	TEACHING AND LEARNING THEORIES AND STRATEGIES IN NURSING EDUCATION	3
NURS 5312	ASSESSMENT AND EVALUATION STRATEGIES IN NURSING EDUCATION	3
NURS 5318	ADVANCED PATHOPHYSIOLOGY FOR NURSE EDUCATORS	3
NURS 5319	ADVANCED PHARMACOLOGY FOR NURSE EDUCATORS	3
NURS 5360	SIMULATION APPLICATION IN NURSING	3
NURS 5362	TEACHING PRACTICUM	3

Functional Role

NURS 5329	ROLE OF THE NURSE EDUCATOR	3
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Total Hours		31
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Nurse Practitioner Adult Gerontology Acute Care Program

Specialty Requirements

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5461	ADULT GERONTOLOGY MANAGEMENT ACROSS THE CONTINUUM OF CARE	4
NURS 5463	ADULT GERONTOLOGY ACUTE CARE	4
NURS 5354	ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 1	3
NURS 5355	ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 2	3
NURS 5640	ADULT GERONTOLOGY ACUTE CARE NP ADVANCED PRACTICUM	6

Functional Role

NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
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Total Hours		32
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Nurse Practitioner Acute Care Pediatric Program**Specialty Requirements**

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5465	PRIMARY PEDIATRIC CARE	4
NURS 5467	PEDIATRIC COMPLEX CARE	4
NURS 5466	PEDIATRIC ACUTE CARE	4
NURS 5373	PEDIATRIC ACUTE CARE CLINICAL PRACTICE 1	3
NURS 5374	PEDIATRIC ACUTE CARE CLINICAL PRACTICE 2	3
NURS 5680	PEDIATRIC ACUTE CARE NP ADVANCED PRACTICUM	6

Functional Role

NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		36

Nurse Practitioner Adult Gerontology Primary Care Program**Specialty Requirements**

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5461	ADULT GERONTOLOGY MANAGEMENT ACROSS THE CONTINUUM OF CARE	4
NURS 5462	ADULT GERONTOLOGY PRIMARY CARE	4
NURS 5352	ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 1	3
NURS 5353	ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 2	3
NURS 5645	ADULT GERONTOLOGY PRIMARY CARE NP ADVANCED PRACTICUM	6

Functional Role

NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		32

Nurse Practitioner Family Program**Specialty Requirements**

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5432	FAMILY I	4
NURS 5433	FAMILY II	4
NURS 5434	FAMILY III	4
NURS 5337	FAMILY CLINICAL PRACTICE 1	3
NURS 5338	FAMILY CLINICAL PRACTICE 2	3
NURS 5660	FAMILY NP ADVANCED PRACTICUM	6

Functional Role

NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		37

Nurse Practitioner Neonatal Nursing Program**Specialty Requirements**

NURS 5204	NEONATAL NURSING I	2
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2

NURS 5110	NEONATAL ASSESSMENT LAB	1
NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5450	NEONATAL NP CLINICAL PRACTICE	4
NURS 5537	NEONATAL NURSING II	5
NURS 5447	NEONATAL NURSING III	4
NURS 5610	NEONATAL NP ADVANCED PRACTICUM	6
Functional Role		
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		33

Nurse Practitioner Primary Care Pediatric Program

Specialty Requirements

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5465	PRIMARY PEDIATRIC CARE	4
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5467	PEDIATRIC COMPLEX CARE	4
NURS 5371	PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 1	3
NURS 5372	PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 2	3
NURS 5685	PEDIATRIC PRIMARY CARE NP ADVANCED PRACTICUM	6

Functional Role

NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		32

Nurse Practitioner Family Psychiatric Mental Health Program

Specialty Requirements

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5410	INTRODUCTION TO PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP	4
NURS 5140	PSYCHIATRIC ASSESSMENT LAB FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER	1
NURS 5112	THERAPY CONCEPTS FOR PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONERS	1
NURS 5213	PSYCHOPHARMACOLOGY FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER	2
NURS 5222	CHILD, ADOLESCENT, AND SPECIAL POPULATIONS PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP	2
NURS 5223	ADULT AND GERIATRIC PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP	2
NURS 5324	PSYCHIATRIC MENTAL CLINICAL PRACTICE I	3
NURS 5325	PSYCHIATRIC MENTAL HEALTH CLINICAL PRACTICE II	3
NURS 5650	PSYCHIATRIC MENTAL HEALTH NP ADVANCED PRACTICUM	6

Functional Role

NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		37

RN to MSN (p. 1038)

Students who have successfully met the criteria for the RN-MSN undergraduate portion of the program, will be allowed to take two designated graduate courses that can be used to replace 6 hours of upper-division electives in the BSN program. The 6 hours of graduate courses will be counted toward both degrees.

Continuing in the RN to MSN program requires a 3.3 GPA on the three indicator courses. Students who make a 3.3 GPA in the indicator courses and maintain 3.0 each semester are eligible to take the graduate courses when the student is within 12 hours of completing BSN courses. The student completes a short form to indicate the desire to continue in the RN to MSN program and take the graduate courses. There is no need to apply for graduate admission; the graduate application fee and essay are not required. The hours required for them to complete their BSN degree will be adjusted to include the two MSN courses that are replacing upper division electives.

When students complete their undergraduate degree requirements, they may apply for conferral of the BSN degree, while continuing in the RN to MSN program. They will subject to the usual fees for graduation and diplomas. When the student has applied for conferral of his/her undergraduate degree, the responsibility for advising the student will be transferred to a graduate advisor within the College.

Dual Degree Programs

Nurse Practitioner Dual Adult Gerontology Acute and Primary Care Program

The Adult Gerontology Dual Nurse Practitioner Program prepares students to the acute and primary care nurse practitioner roles. This program provides one with an expanded scope of practice and upon graduation students are eligible for national certification and licensure in both roles.

Applicants must meet the admission criteria for the Master of Science in Nursing, including a minimum of 2 years of RN experience, within the last 5 years, in an acute care setting. Students may not transfer into this program without having the required RN experience.

Specialty Requirements

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5461	ADULT GERONTOLOGY MANAGEMENT ACROSS THE CONTINUUM OF CARE	4
NURS 5462	ADULT GERONTOLOGY PRIMARY CARE	4
NURS 5463	ADULT GERONTOLOGY ACUTE CARE	4
NURS 5353	ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 2	3
NURS 5354	ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 1	3
NURS 5355	ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 2	3
NURS 5640	ADULT GERONTOLOGY ACUTE CARE NP ADVANCED PRACTICUM	6
NURS 5645	ADULT GERONTOLOGY PRIMARY CARE NP ADVANCED PRACTICUM	6
Functional Role		
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		45

Nurse Practitioner Dual Pediatric Acute and Primary Care Program

The Pediatric Dual Nurse Practitioner Program prepares students in the acute and primary care nurse practitioner roles. This program provides one with an expanded scope of practice and upon graduation students are eligible for national certification and licensure in both roles.

Applicants must meet the admission criteria for the Master of Science in Nursing, including a minimum of 2 years of RN experience, within the last 5 years, in an acute care setting. Students may not transfer into this program without having the required RN experience.

Specialty Requirements

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5465	PRIMARY PEDIATRIC CARE	4
NURS 5466	PEDIATRIC ACUTE CARE	4
NURS 5467	PEDIATRIC COMPLEX CARE	4
NURS 5372	PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 2	3
NURS 5373	PEDIATRIC ACUTE CARE CLINICAL PRACTICE 1	3
NURS 5374	PEDIATRIC ACUTE CARE CLINICAL PRACTICE 2	3
NURS 5680	PEDIATRIC ACUTE CARE NP ADVANCED PRACTICUM	6
NURS 5685	PEDIATRIC PRIMARY CARE NP ADVANCED PRACTICUM	6

Functional Role

NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
Total Hours		45

Electives/Independent Study

Elective courses may be taken in Nursing or other departments of the University. Electives can also be transferred from other universities with the approval of a Graduate Advisor. Independent study offers the student the opportunity to explore topics of special interest.

DNP Degree Requirements

A degree plan is developed for the student upon admission to the DNP Program. Students are required to have any changes in planned program approved by the DNP Graduate Advisor prior to registration. The DNP Program includes 36 semester hours of required courses. Students will complete a Scholarly Project and Clinical Practica.

DNP Required courses

NURS 6327	CLINICAL SCHOLARSHIP TO IMPROVE HEALTHCARE OUTCOMES	3
NURS 6320	LEADERSHIP IN HEALTH CARE SYSTEMS	3
NURS 6307	POPULATION HEALTH	3
NURS 6322	TRANSLATIONAL RESEARCH	3
NURS 6324	CLINICAL INFORMATION SYSTEMS	3
NURS 6323	EVIDENCE APPRAISAL	3
NURS 6326	PROJECT PROPOSAL DEVELOPMENT	3
NURS 6382	HEALTH CARE POLICY	3
NURS 6620	DNP PRACTICUM I	6
NURS 6621	DNP PRACTICUM II	6
Total Hours		36

DNP Project Proposal:

This applies to students who have passed NURS 6326. To ensure timely completion of the degree program, a student unable to implement their planned project will be enrolled in DNP Practicum 6331 to have faculty supervision for developing a new project proposal. Students will be able to start earning practicum hours up to a maximum of 180 hours and will complete a project proposal to be implemented in NURS 6620. It is the student's responsibility to notify the DNP program director and Academic Adviser if they have lost their job or otherwise are unable to complete the project at their work site.

PhD Degree Requirements

Students are required to have each semester's planned program approved by the Graduate Advisor prior to registration. A minimum of 45 semester hours is required for the degree.

BSN-to-PhD Students will complete all PhD requirements.

PHD REQUIRED COURSES (CORE)

NURS 6301	THEORETICAL EVOLUTION IN SCIENCE	3
NURS 6302	ISSUES IN STUDYING THE HEALTH OF CULTURALLY DIVERSE AND VULNERABLE POPULATIONS	3
NURS 6304	MEASUREMENT IN CULTURALLY DIVERSE AND VULNERABLE POPULATIONS	3
NURS 6305	QUALITATIVE RESEARCH	3
NURS 6306	RESEARCH DESIGN	3
NURS 6308	STATE OF THE SCIENCE: BACKGROUND IN RESEARCH	3
NURS 6318	PARAMETRIC STATISTICS FOR HEALTHCARE RESEARCH	3
NURS 6319	PSYCHOMETRIC AND NONPARAMETRIC STATISTICS FOR HEALTHCARE RESEARCH	3
NURS 6381	RESEARCH PRACTICUM	3
NURS 6382	HEALTH CARE POLICY	3
Individual Area of Study by independent study or other selected graduate level courses		6
Dissertation		9
Total Hours		45

Dissertation

NURS 6399	DISSERTATION ¹	3
NURS 6699	DISSERTATION ²	6
NURS 6999	DISSERTATION ²	9
NURS 7399	DOCTORAL DEGREE COMPLETION ²	3

¹ Graded R/F

² Graded R/F/P

ELECTIVES / INDEPENDENT STUDY

Elective courses may be taken in an area of concentration in other departments.

NURS 6170 & NURS 6270 & NURS 6370 & NURS 6470	INDEPENDENT STUDY IN NURSING and INDEPENDENT STUDY IN NURSING and INDEPENDENT STUDY IN NURSING and INDEPENDENT STUDY IN NURSING ¹	10
NURS 6190 & NURS 6290 & NURS 6390 & NURS 6490	SPECIAL TOPICS IN NURSING and TOPICS IN NURSING and TOPICS IN NURSING and TOPICS IN NURSING	10

¹ Graded P/R/F

ACADEMIC STANDING

To graduate from the PhD program, the student must have a 3.0 GPA.

1. Student who does not earn at least a B in a course or independent study is required to submit to graduate advisor an evaluation of his or her engagement in the course, reason for less than satisfactory performance, and plan to acquire knowledge and skills to continue.
2. Student who earns a second course or independent study grade that is C or lower will be dismissed from the program

PROGRAM MILESTONES

Diagnostic Evaluation

Before the completion of the first 18 hours beyond appropriate master's level coursework to assess progress and potential for completion

Comprehensive Examination

Examination scheduled no earlier than during the last nine hours of coursework. It may also be scheduled after all coursework and research tools are completed. Guidelines for the comprehensive examination are available in the PhD Student Handbook.

Proposal Defense

Dissertation Committee reviews the study proposal and meets with the student privately to approve or not approve the proposal.

Dissertation Defense

Open meeting during which student presents study findings and responds to questions posed by the dissertation committee and other attendees. Successful defense of the dissertation is the final step toward completion of the doctoral degree.

BSN-to-PhD Master's Level Courses

Students accepted into the BSN-to-PhD entry option will work with an advisor to develop individualized degree plans based on their career goals and research interests. Students will complete 12 hours of core master's courses and an additional 10-18 hours of master's coursework based on their area of focus.

CORE MASTER'S COURSES TAKEN BY ALL BSN-TO-PHD STUDENTS

NURS 5327	EXPLORATION OF SCIENCE AND THEORIES FOR NURSING	3
NURS 5370	INDEPENDENT STUDY IN NURSING	3
NURS 5367	EVIDENCE BASED PRACTICE	3
NURS 5366	PRINCIPLES OF RESEARCH IN NURSING	3

10-18 additional hours of Master's coursework in focus area

Total Hours

12

Post-Master's Certificate Requirements

Post-Master's Certificate applicants must meet the admission criteria for the MSN degree program in which they are applying and must complete the required courses for the nursing specialty area and functional role.

Post-Master's Nursing Administration Certificate

Post-Master's Certificate applicants must complete the required courses included in the Master of Nursing Administration graduate degree program. The Post Master's Nursing Administration Certificate enables individuals with a master's degree in Nursing to advance in professional roles of nursing administration as well as provide a pathway toward doctoral programs in nursing practice.

The MSN Administration core courses may be taken in the Accelerated Online format only, or an equivalency course with credit hours transferred to UTA. Required courses will be determined by a Gap Analysis completed by the program director.

Nursing Administration Courses

NURS 5308	NURSING INFORMATICS	3
NURS 5311	NURSING MANAGEMENT IN THE HEALTH CARE ENVIRONMENT	3
NURS 5339	ROLES AND FUNCTIONS OF THE NURSE ADMINISTRATOR	3
NURS 5340	MANAGEMENT SEMINAR AND PRACTICE	3
NURS 5341	FINANCIAL MANAGEMENT IN NURSING	3
NURS 5342	MANAGEMENT OF NURSING OPERATIONS	3
NURS 5343	NURSING LEADERSHIP AND COMPLEX HEALTH CARE SYSTEMS	3
NURS 5382	NURSING AND HEALTH CARE POLICY: ISSUES AND ANALYSIS	3
Total Hours		24

Post-Master's Nurse Practitioner Certificate

The nurse practitioner certificate enables individuals with a Master's Degree in Nursing to take a national certification exam in their area of specialization and to be recognized by the Board of Nursing as an Advanced Practice Registered Nurse. Required courses will be determined by a Gap Analysis completed by the program director.

Adult Gerontology Acute Care Nurse Practitioner Courses

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
NURS 5461	ADULT GERONTOLOGY MANAGEMENT ACROSS THE CONTINUUM OF CARE	4
NURS 5463	ADULT GERONTOLOGY ACUTE CARE	4
NURS 5354	ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 1	3
NURS 5355	ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 2	3
NURS 5640	ADULT GERONTOLOGY ACUTE CARE NP ADVANCED PRACTICUM	6
Total Hours		32

Acute Care Pediatric Nurse Practitioner Courses

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
NURS 5465	PRIMARY PEDIATRIC CARE	4
NURS 5467	PEDIATRIC COMPLEX CARE	4
NURS 5466	PEDIATRIC ACUTE CARE	4
NURS 5373	PEDIATRIC ACUTE CARE CLINICAL PRACTICE 1	3
NURS 5374	PEDIATRIC ACUTE CARE CLINICAL PRACTICE 2	3

NURS 5680	PEDIATRIC ACUTE CARE NP ADVANCED PRACTICUM	6
Total Hours		36

Adult Gerontology Primary Care Nurse Practitioner Courses

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
NURS 5461	ADULT GERONTOLOGY MANAGEMENT ACROSS THE CONTINUUM OF CARE	4
NURS 5462	ADULT GERONTOLOGY PRIMARY CARE	4
NURS 5352	ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 1	3
NURS 5353	ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 2	3
NURS 5645	ADULT GERONTOLOGY PRIMARY CARE NP ADVANCED PRACTICUM	6
Total Hours		32

Family Nurse Practitioner Courses

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
NURS 5432	FAMILY I	4
NURS 5433	FAMILY II	4
NURS 5434	FAMILY III	4
NURS 5337	FAMILY CLINICAL PRACTICE 1	3
NURS 5338	FAMILY CLINICAL PRACTICE 2	3
NURS 5660	FAMILY NP ADVANCED PRACTICUM	6
Total Hours		37

Neonatal Nurse Practitioner Courses

NURS 5204	NEONATAL NURSING I	2
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5110	NEONATAL ASSESSMENT LAB	1
NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
NURS 5450	NEONATAL NP CLINICAL PRACTICE	4
NURS 5537	NEONATAL NURSING II	5
NURS 5447	NEONATAL NURSING III	4
NURS 5610	NEONATAL NP ADVANCED PRACTICUM	6
Total Hours		33

Primary Care Pediatric Nurse Practitioner Courses

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5465	PRIMARY PEDIATRIC CARE	4
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
NURS 5467	PEDIATRIC COMPLEX CARE	4

NURS 5371	PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 1	3
NURS 5372	PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 2	3
NURS 5685	PEDIATRIC PRIMARY CARE NP ADVANCED PRACTICUM	6
Total Hours		32

Family Psychiatric Mental Health Nurse Practitioner Courses

NURS 5315	ADVANCED PATHOPHYSIOLOGY	3
NURS 5334	ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS	3
NURS 5220	ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING	2
NURS 5120	ADULT-GERONTOLOGY ASSESSMENT LAB	1
NURS 5130	PEDIATRIC ASSESSMENT LAB	1
NURS 5350	ROLE OF THE NURSE IN ADVANCED PRACTICE	3
NURS 5410	INTRODUCTION TO PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP	4
NURS 5140	PSYCHIATRIC ASSESSMENT LAB FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER	1
NURS 5112	THERAPY CONCEPTS FOR PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONERS	1
NURS 5213	PSYCHOPHARMACOLOGY FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER	2
NURS 5222	CHILD, ADOLESCENT, AND SPECIAL POPULATIONS PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP	2
NURS 5223	ADULT AND GERIATRIC PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP	2
NURS 5324	PSYCHIATRIC MENTAL CLINICAL PRACTICE I	3
NURS 5325	PSYCHIATRIC MENTAL HEALTH CLINICAL PRACTICE II	3
NURS 5650	PSYCHIATRIC MENTAL HEALTH NP ADVANCED PRACTICUM	6
Total Hours		37

Post Baccalaureate Certificate Requirements

Gerontology Healthcare Certificate Courses

Choose 4 of the listed courses:		12
NURS 5356	GLOBAL HEALTH POLICY, HEALTH LITERACY, AND MODELS OF CARE FOR OLDER ADULTS	
NURS 6321	EPIDEMIOLOGY	
NURS 5395	HEART FAILURE PATHOPHYSIOLOGY AND EXERCISE REHABILITATION	
NURS 5357	ADVANCED CLINICAL MANAGEMENT OF OLDER ADULTS WITH COMPLEX MULTIMORBIDITY	
NURS 5358	ADVANCED CLIN MGMT OF OLDER ADULTS W/COMPLEX MULTIMORBIDITY DURING ACUTE ILLNESS CRISIS	
NURS 5348	NURSING CARE AT THE END OF LIFE	
SOCW 5318	DEATH & DYING	
SOCW 5333	AGING AND SOCIAL POLICY	
KINE 5390	SPECIAL TOPICS IN KINESIOLOGY (Healthy Aging)	
SOCW 5335	AGING IN AMERICAN SOCIETY	
SOCW 5334	FAMILY CAREGIVING & AGING	
Total Hours		12

Nurse Educator Certificate Courses

NURS 5302	CURRICULUM DEVELOPMENT IN NURSING EDUCATION	3
NURS 5310	TEACHING AND LEARNING THEORIES AND STRATEGIES IN NURSING EDUCATION	3
NURS 5312	ASSESSMENT AND EVALUATION STRATEGIES IN NURSING EDUCATION	3
NURS 5329	ROLE OF THE NURSE EDUCATOR	3
Total Hours		12

Nursing Administration Certificate Courses

NURS 5311	NURSING MANAGEMENT IN THE HEALTH CARE ENVIRONMENT	3
NURS 5341	FINANCIAL MANAGEMENT IN NURSING	3

NURS 5343	NURSING LEADERSHIP AND COMPLEX HEALTH CARE SYSTEMS	3
NURS 5339	ROLES AND FUNCTIONS OF THE NURSE ADMINISTRATOR	3
Total Hours		12

Department of Undergraduate Nursing

Bachelor of Science in Nursing Degree

The undergraduate nursing degree consists of two programs: **pre-licensure BSN** and **post-licensure RN to BSN or RN to MSN**. We offer two delivery options: traditional **Campus Based (CB) Program** and **Accelerated Online (AO) Program**. The Accelerated Online Program (AO BSN and AO RN-BSN) is an online format developed by UT Arlington's College of Nursing to serve nurses in Texas and beyond by offering high quality, affordable, and convenient nursing programs. AO outside of Texas is for the RN to BSN or RN to MSN students only. As there are some differences in policies between the programs, there may also be differences between the **CB program** and the **AO Program**; those will be noted throughout the catalog.

The faculty of the College of Nursing takes academic honesty and ethical behavior very seriously. Nurses are entrusted with the health, safety and well-being of the public. Students found guilty of academic dishonesty will be punished to the full extent permitted by the rules and regulations of UT Arlington.

BSN (PRELICENSURE) PROGRAM

This is a program consisting of nursing courses, university core courses and other required prerequisite courses. Upon successful completion of the program, the student is awarded the Bachelor of Science in Nursing degree and is eligible to take the National Council Licensure Examination (NCLEX) for licensure as a Registered Nurse. This program is offered as a campus based or accelerated online option.

RN TO BSN PROGRAM

This program is designed for Registered Nurses who have completed an accredited Associate Degree or Diploma nursing program. Full-time students may complete the Upper-Division nursing courses in one academic year. Upon successful completion of the program, the student is awarded the Bachelor of Science in Nursing degree. This is offered as a campus based or accelerated online option.

RN TO MSN PROGRAM (NURSING ADMINISTRATION, NURSING EDUCATION OR NURSE PRACTITIONER)

The RN to MSN program is an option for RNs who want to move seamlessly between the RN to BSN program and the MSN program. The university calls this a Fast-Track program. The Fast-Track RN to MSN program will enable outstanding undergraduate students who are registered nurses to satisfy degree requirements leading to a Bachelor of Science in Nursing (BSN) and master's degree (MSN) in Nursing Administration, Nursing Education or Nurse Practitioner.

UNDERGRADUATE OUTCOMES - FOR THE BSN DEGREE

The University of Texas at Arlington Undergraduate Nursing Program prepares graduates to provide professional nursing care to persons/clients (individuals, families, groups, and communities) in diverse settings through the roles of provider of care, coordinator of care, and member of the profession.

On completion, the graduate will be able to:

- Apply the art and science of nursing using current evidence in the delivery of competent, culturally sensitive, developmentally appropriate holistic care.
- Utilize analytical, systematic, and critical reasoning for clinical judgment and nursing decision-making.
- Demonstrate accountability and responsibility for: optimal nursing care, legal and ethical standards, lifelong learning, professional development, promoting the nursing profession, and participating as a citizen in society.
- Collaborate and communicate respectfully and effectively with persons/clients and interdisciplinary teams using oral, nonverbal, written and electronic communication to promote and maintain optimal health outcomes to persons/clients.
- Demonstrate ethical behaviors and conflict management skills that inspire others and create effective working relationships to shape and implement change.
- Coordinate human and material resources in providing comprehensive, efficient, and cost-effective care to persons/clients.
- Articulate the importance of active and intentional life-long learning that includes self-reflection and awareness.
- Utilize standards of practice to provide safe nursing care in all patient care settings with an awareness of one's role in preventing errors and promoting quality improvement.
- Access and utilize information and computer sciences to perform nursing functions.

BSN Prelicensure Program

CORE PERFORMANCE STANDARDS FOR ADMISSION AND PROGRESSION IN THE COLLEGE OF NURSING

It is the philosophy of the University of Texas at Arlington College of Nursing (UTACON) that the baccalaureate program is designed to prepare a competent, self-directed, general practitioner of nursing who can assume increasing responsibility and leadership in the delivery of nursing care. In

consideration of the preparation of a general practitioner, all individuals who apply for admission and are enrolled in the undergraduate program must be able to perform the essential functions of a student of nursing.

The College of Nursing has identified essential nursing skills: communication, cognitive, motor and sensory, observation, tactile, hearing, smell, psychomotor and ethical and professional integrity. The student enrolled in the program must demonstrate mastery of these components. Because providing direct patient care is physically demanding, students need to meet the physical requirements of a staff nurse in the same setting in which they are completing a clinical rotation. Upon BSN program acceptance, students must attest to their ability to meet these standards with or without an accommodation. If at that time a student requests an accommodation, the OSD and the CON must determine if the accommodation is reasonable PRIOR to the student beginning Upper-Division coursework.

If a student requires an accommodation to meet these standards, then within five (5) business days of being accepted into the BSN program, and in order to prevent a delay in the start of the programs, the student must contact OSD to initiate the review process.

Qualified applicants are admitted without discrimination with regard to race, color, national origin or ancestry, gender, age, religion, sexual orientation, veteran status or disability (reasonable accommodations will be made within the Americans with Disabilities Act guidelines).

More detailed information is available in the UG Nursing Policy Library <http://www.uta.edu/conhi/students/policy/index.php> (<https://na01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fconhi%2Fstudents%2Fpolicy%2Findex.php&data=02%7C01%7Chwoods%40uta.edu%7Ca22f4ae411c944090a3408d6982d924d%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C636863718822037407&sdata=R5nEuXM%2BIsDT%2Fpy4ZcxHjX9nnhDvhdHiJmHEQj2qhvc%3D&reserved=0>)

ADMISSION REQUIREMENTS

Students may be admitted to UT Arlington upon meeting the admission requirements established by the University. Students who designate themselves as nursing majors will be advised by the College of Nursing in the Office of Enrollment and Student Services. Official transcripts must be submitted to the UT Arlington Office of Admissions, Records and Registration.

NOTE: All freshmen are advised by University College. A designated College of Nursing advisor will advise students in the Freshman Nursing Scholars Program.

BSN students desiring admission to the sequence of upper-division nursing courses leading to the degree of Bachelor of Science in Nursing must:

- Submit College of Nursing application and official transcripts by January 15 for following fall semester or June 1 for following spring semester.
- Complete with a C or better all specified nursing prerequisites and prenursing courses (N2300 Introduction to Professional and Clinical Concepts in Nursing or N2200 Concepts in Professional Nursing; N3366 Pathophysiologic Processes: Implications for Nursing, and N3365 Pharmacology in Nursing Practice) prior to starting Junior I nursing courses. (See lower-division course list for details.) Both N3365 and N3366 must be taken within 3 years of starting the nursing program.
- Complete all 4 Natural Sciences.
- Have 2 GPAs calculated: science and overall prerequisite.
- Have minimum science and prerequisite GPAs of 2.75.
- Completion of designated sections of the Test of Essential Academic Skills (TEAS) with a score in the proficient range (58.7 - 77.3) for each of the following sections:
 - Reading
 - Math
 - Science
 - English and Language Usages

Admission to Junior level (upper-division course work) is by ranking order based on space availability. A student who accepts their spot, but decides not to start will get 2 (two) times to do this before they must wait 1 year (two application cycles) to reapply.

Additional consideration will be given to applicants who complete the following by the application deadline:

- Thirty (30) or more required College of Nursing prerequisite lower division credit hours earned at UT Arlington
- Twelve (12) or more required College of Nursing prerequisite lower-division natural science credit hours earned at UT Arlington.
- Nine (9) hours of UT Arlington ROTC courses (Must be active in ROTC) (Campus Based only)
- Previous baccalaureate, masters or doctorate degree earned in the United States or international degree approved by UTA Office of Admissions.
- Veteran, including Reservist and National Guard
- First-time full-time freshman if all four Natural Sciences and all three prenursing courses are completed at UTA. N2300 Intro to Professional Nursing/ N2200 and N1131 Concepts in Professional Nursing and N3366 Pathophysiologic Processes: Implication for Nursing must be completed by application deadline and N3365 Pharmacology in Nursing Practice in the semester following the application.

- Complete N3365 or N3366 with a B or higher on first attempt prior to the application deadline. Note: If both courses are completed with a grade of B or higher of the first attempt prior to the application deadline, students will receive priority rather than the additional consideration.

NOTE: Students entering the AO BSN program must complete all prerequisites including the Upper-Division elective prior to beginning the program. Priority will be given to off-campus AO applicants employed by partner hospital systems offering clinical sites during that semester of admission. Partner hospital clinical sites vary each semester. To receive AO priority, an applicant must be employed at the time of application through the first day of class. For consideration, applicants must submit documentation of employment at time of application. Employment at a partner hospital is not a guarantee of admission into the upper-division nursing program. Students that complete both N3365 and N3366 prior to the application deadline with a grade of B or better of the first attempt will also receive priority in the application for either the campus-based or accelerated online program.

TOEFL REQUIREMENT

Applicants must receive a minimum score, as defined by the University, on the Test of English as a Foreign Language (TOEFL) if the applicant's native/first language is not English and if he or she does not hold a bachelor's or higher degree from an accredited U.S. institution. The exam is required for admission to the College of Nursing even if the student has met one of the stated University exemptions for the TOEFL.

Applicants who have graduated from secondary schools or colleges in the following countries are exempt from the TOEFL: Anguilla, Antigua, Australia, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Canada (except Quebec), Cayman Islands, Dominica, Grenada, Grand Cayman, Guyana, Ireland, Jamaica, Kenya, Liberia, Montserrat, New Zealand, Nigeria, Sierra Leone, St. Kitts and Nevis, St. Lucia, St. Vincent, Trinidad/Tobago, Turks and Caicos Islands, and United Kingdom.

Students who are not exempt based on the countries listed above, but who can provide documentation of attendance and graduation from a secondary English-speaking school in their native country or the US, will be exempt from the requirement.

LOWER-DIVISION COURSES

Students must successfully complete prerequisite courses as indicated on the Admission Brochure (<http://www.uta.edu/conhi/academics/nursing-undergrad/bsn/bsn.php>). Specific courses are subject to the Two Attempt and Grade Improvement policies. Under the Two-Attempt Policy each course taken at UT Arlington and/or any other approved institution may be attempted a maximum of two times to earn a passing grade. By the second attempt a grade of "C" or better must be earned.

- Withdrawals (W) are exempt from this policy.
- Any non-passing grade is valid for a three-year period. At the conclusion of three years, a non-passing grade is no longer considered an attempt.

The Grade Improvement Policy is unique to the CON and is used for the College selection process only. This policy differs from the CON Two Attempt Policy and from the University's Grade Replacement, Exclusion, and Forgiveness policies. Grades of C or above may be replaced to improve GPAs for the College selection process with the following limitations:

- A limit of four courses may be retaken. The three prenursing courses (N2300/N2200 Intro to Professional and Clinical Concepts in Nursing, N3366 Pathophysiologic Processes: Implication for Nursing, and N3365 Pharmacology in Nursing Practice) are not eligible for the Grade Improvement Policy.
- All earned grades of C or higher are valid indefinitely.
- The first four courses retaken are the grades used in the selection process. Any courses retaken thereafter are not used in the selection process.
- The higher of the two grades is used in the selection process.
- Withdrawals (W) are exempt from this policy.

UPPER-DIVISION COURSES

Upper-Division prenursing courses include N3366 Pathophysiologic Processes: Implication for Nursing, and N3365 Pharmacology in Nursing Practice and are subject to the Failure of Pre-nursing Course Policy.

One failed grade = probationary status with the CON indefinitely

Conditions of Probationary Status

- A student who earned a failed grade (D or F) in the term prior to BSN application deadline **must** re-take the course, pass with a C or better and have not violated the UT Arlington or College policies to be considered a viable applicant.
- A student who earned a failed grade (D or F) in the term directly following the BSN application deadline may **not** start the program, even if the course is retaken and passed during the subsequent term. A student is eligible to re-apply for the following application period; however, the failed grade will be used in the selection process.

Two failed grades = inability to continue with CON for a period of three years. Upon return, a student is eligible to apply under the conditions of the CON's Re-entry policy.

- Re-entry policy refers to a student who is ineligible to continue a nursing program due to academic failure. This includes a student who was accepted into a pre-licensure program and has not completed an Associate Degree in Nursing (ADN) or Bachelor of Science in Nursing (BSN)

program. During this three-year timeframe, a student may not enroll in the University as a pre-nursing major or apply to the upper-division nursing program under another major for three years.

Conditions of Re-entry

- A student must provide a letter from previous nursing school stating program dismissal was for academic reasons.
- Must meet the eligibility requirements of the application requirements and submit a new application by the desired start date application deadline
- Pathophysiologic Processes: Implication for Nursing, and Pharmacology in Nursing Practice must be re-taken

CRITERIA FOR READMISSION OF UPPER-DIVISION STUDENTS

Students who withdraw from the UT Arlington College of Nursing Program for more than one semester in good standing who wish to return to complete the program must submit a written request for readmission to the Office of Enrollment and Student Services by the following deadlines:

Returning spring – September 1st

Returning summer - March 1st

Returning fall - June 1st

- Readmission is dependent upon space availability.
- A student is eligible for readmission to the program only once.
- If a clinical course is to be repeated, the student must repeat both the theory and clinical components of the course.
- Student must repeat the drug screening process.

Time out of the Program:

One semester:

- All of requirements listed above plus:
- Completion of a clinical skills assessment. This assessment will be completed no later than three weeks prior to the start of the semester in which the student is planning to return. The assessment will focus on the skills associated with the last clinical course completed. Input related to skills to be assessed may be sought from faculty in the previous course(s) completed. Should clinical deficiencies be identified, faculty will remediate clinical skill areas that are questionable or inadequate and provide the results to the lead teacher of the course the student is scheduled to enter. Failing to demonstrate adequate clinical skills after three attempts will result in the student being required to retake the last clinical course taken to re-establish clinical competency.
- If the student is in the AO BSN program, he/she will be required to come to the UT Arlington campus to complete the special skills assessment.

Two Long Semesters CB or Two Semesters AO (based on course availability):

- All of requirements listed above plus:
- Repeat criminal background check.

More than two long semesters CB or Two Semesters AO:

- Not eligible for readmission. Student must apply for admission as a beginning student.

TRANSFER FROM ANOTHER NURSING PROGRAM

Nursing transfer students are defined as those students who have successfully completed prerequisite courses with a C or above and Junior I courses for the BSN Program: Holistic Health Assessment and Clinical Nursing Foundations at another college or university. Students who have not completed the required courses will be ranked with the incoming junior class. Admission as a transfer student to the College of Nursing is contingent upon available space. Transfer students must attend orientation. Transfer students ready to start as a Junior 2 can be admitted in either the CB or AO programs.

- Transfer students must transfer all nursing courses and the grade received from those courses.
- No D's or F's in nursing courses.

Students must:

- Meet minimum requirements as stated on the admission brochure (<http://www.uta.edu/conhi/academics/nursing-undergrad/bsn/bsn.php>).
- Submit a course syllabus and a content outline of the course(s) to the Office of Enrollment and Student Services. If the course is a clinical course, a list of nursing skills learned in the course(s) must also be submitted.
 - The lead teacher in the course, using the Field of Study Criteria Guidelines and other criteria related to the course, will review courses provided by the student for substitution of UT Arlington courses. Faculty may request additional information to clarify their decision. The course is then accepted as a substitution for a core nursing course, as an elective, or denied.

- Submit a letter from previous school stating that the student is in good standing.
- Meet minimum 2.75 GPA in the prerequisite natural science and prerequisite lower-division courses.
- Meet application deadlines of:
 - March 1 - Fall Semester
 - September 1 - Spring Semester

Processing of the transfer procedure will not be initiated until the student has applied to the College of Nursing and Health Innovation.

ORIENTATIONS

All Junior I BSN students and transferring students are required to complete the general online orientation in the Learning Management System and attend the mandatory in-person orientation held prior to the fall and spring semesters.

Clinical orientation is mandatory for all BSN students, as established by the Dallas/Fort Worth Hospital Council. BSN students are required to complete the Standard Hospital Student Orientation annually. Clinical requirements must be valid through the entire semester. If the annual orientation will expire during the current semester, it must be updated.

SPECIAL PARAPHERNALIA/EQUIPMENT REQUIREMENTS

All students enrolled in the College of Nursing must have internet access and a laptop computer meeting minimum computing recommendations. A list of computer specifications is outlined on the College of Nursing website, <https://www.uta.edu/conhi/>. Students may be asked to purchase and download software to meet course and/or program requirements.

Smart Phone or similar device highly recommended.

IMMUNIZATIONS

The UT Arlington College of Nursing standards **require** that all students in BSN programs **complete** the following immunizations by the time of **acceptance**.

If you know you will be applying to our Nursing Program **within the next year**, you will need to **start these now** because some will take up to 6 months to complete.

In order to be eligible to start the program, you will need to **submit valid documentation** that you have completed the following by Friday of the 2nd full week in March for Fall starts or Friday of the 2nd full week in September for Spring starts.

- Measles, Mumps, Rubella (MMR): 2 doses required (minimum of 28 days between doses) or positive/immune antibody titer
- Varicella (Chicken Pox): 2 doses required (minimum of 28 days between doses) or positive/immune antibody titer
- Tdap: within past 10 years
- Hepatitis B: a positive antibody titer or 2 full series (5-6 vaccines) and negative titer
- Hepatitis A: 2 doses required (minimum of 6 months between doses) or positive/immune antibody titer
- Current seasonal flu vaccine

View the website (<https://na01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fconhi%2Fstudents%2Fimm-prelic%2Findex.php&data=02%7C01%7Chwoods%40uta.edu%7C24d15f45992841752c3708d6605814f0%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636802328753838757&sdata=RrfP6ezM2%2B0xhUucl9>)

for more information on the vaccines, titers and valid documentation options.

CERTIFICATION-CARDIOPULMONARY RESUSCITATION

Undergraduate nursing students are required to obtain American Heart Association Basic Life Support (BLSC) CPR for Healthcare Providers.

Evidence of current CPR certification is required during clinical course enrollment from admission to graduation. The CPR must be valid throughout an entire semester with a clinical. If the current card will expire during the semester, the student must retake the course and have a card that will not expire during the semester.

HEALTH INSURANCE COVERAGE

All UT Arlington nursing students enrolled in clinical course(s) will be required to provide verification of medical insurance coverage that includes Emergency Department evaluation and follow-up treatment for needle-stick and blood borne disease exposure. This mandatory clinical requirement has been authorized by The University of Texas System Board of Regents.

As such, UT Arlington will not cover initial and/or follow up treatment for needle-stick injuries and/or exposure to blood borne diseases which may occur while students are enrolled in clinical courses.

While the UT Arlington College of Nursing recognizes the financial impact this clinical requirement presents for students, we also support the need for students to have health coverage for sudden illness, accidents, emergencies and exposure treatments that may occur in the clinical setting in a variety of clinical agencies.

DRUG SCREEN POLICY

All students accepted to the BSN AO or CB programs will complete a drug screen.

At any time if there is a confirmation of a positive drug screening, the student will be removed from clinical courses for a period of one calendar year. Upon returning to the program, random drug screenings will be conducted throughout the program. A second positive test will result in immediate dismissal from the nursing program.

Random and / or for cause drug screens are at the student's expense and must be completed as required. Failure/refusal to undergo a drug screen on the designated day will result in immediate dismissal from the nursing program. Full Policy (<https://www.uta.edu/conhi/students/policy/drug.php>)

CRIMINAL BACKGROUND SCREEN

Accepted students complete two criminal background checks (CBC): Texas Board of Nursing (BON) and a 3rd party provider as designated by CON.

Students should complete the Texas BON CBC prior to program application. Students who have completed NURS 2300, Introduction to Professional Nursing/NURS 2200 Concepts in Professional Nursing, or are currently enrolled in NURS 2300/NURS 2200, should submit their BON CBC during that course. Students, who have not taken NURS 2300/NURS 2200 by the application deadline, should contact CONHladmin@uta.edu, provide the necessary information, give permission to send the information to the BON, and schedule the fingerprinting appointment within one month of the application deadline. Full Policy (https://www.uta.edu/conhi/_doc/unurs/CBCDeclaratoryOrderPolicyGuidelines.pdf)

The second CBC is completed after program acceptance.

A student with a positive criminal background screen will not be admitted into the program without a Declaratory Order from the Texas Board of Nursing stating that the individual has been granted permission to sit for the National Council Licensure Examination for Registered Nurses (NCLEX-RN Examination) upon completion of the requirements for graduation and payment of any required fees. Eligibility to take the NCLEX-RN Examination may be affected by any inaccuracies in the petition, and any subsequent violations of the Nursing Practice Act that may affect eligibility to sit for the examination or the later revocation of a license obtained through misrepresentation.

ELIGIBILITY TO WRITE THE NATIONAL COUNCIL LICENSURE EXAMINATION FOR REGISTERED NURSES (NCLEX RN) - DECLARATORY ORDERS

The Texas Board of Nursing (BON) has set out guidelines and criteria on the eligibility of persons with criminal convictions to obtain a license as a registered nurse. The BON may refuse to admit persons to its licensure examinations, may refuse to issue a license or certificate of registration, or may refuse to issue a temporary permit to any individual who has any criminal offense. Detailed information related to determining eligibility and required processes to determine eligibility for your specific circumstances is available from the Texas Board of Nursing and on their Web site (www.bon.state.tx.us (<http://www.bon.state.tx.us>)). Students who are unable to obtain clearance from the BON will not be allowed to begin the nursing program.

Once admitted to the nursing program, any student that commits an offense that would require a Declaratory Order will be removed from current and future clinical courses until the Declaratory Order is obtained from the Texas BON and submitted to the College of Nursing Director of Student Support.

Professional Liability Insurance

Nursing students are required to have evidence of professional liability insurance coverage for a minimum of \$1,000,000 limit each claim and \$3,000,000 limit aggregate. The charge for coverage will be assessed as a mandatory fee at the time of registration.

FEES

Course fee information is available at www.uta.edu/fees (<http://www.uta.edu/fees/>). Additional costs beyond tuition, fees and books that may be incurred by a nursing student will include those items listed on the CONHI website. In addition, some clinical agencies charge a nominal fee for parking passes and utilizing their scrubs.

ORAL COMMUNICATION PROFICIENCY REQUIREMENT

Oral proficiency is recognized to be a critical component of providing safe nursing care. In addition to content-specific presentations in various nursing courses, all nursing students are required to communicate effectively with clients, members of the health care team, and faculty. Contact the Associate Chair of Undergraduate Programs for more information.

E-MAIL ACCOUNTS

Each student will be provided a UT Arlington e-mail address. Official communications from the College of Nursing will be distributed to this e-mail address and Learning Management System accounts required by many courses. Students will be held responsible for information distributed in this manner.

NURSING COURSE WITHDRAWAL POLICY

Students within the pre-licensure BSN program, enrolled in an Upper-Division NURS course are permitted to drop the course one time. Students cannot drop the course again for academic reasons. Upon attempting the course for the second time, the earned grade is retained. Students who retake a course after earning a grade of W and who are unable to meet the course requirements will receive a non-passing grade. Students may drop no more than three Upper-Division NURS courses during their undergraduate career.

Elective and prenursing courses are exempt from this policy but may be affected by other CON policies.

Exceptions to this policy may be entertained because of extraordinary non-academic circumstances.

MOVEMENT BETWEEN PROGRAMS

Movement between the AO and CB BSN programs is at the discretion of program administration. Students will be required to sign a Program Transfer Agreement.

BSN STUDENTS WHO DROP OR FAIL A COURSE

Pre-Licensure BSN students who withdraw or fail a course can repeat the course the next available time the course is offered.

AO Students:

- Students who seek readmission after failing or withdrawing for any reason must meet with an academic advisor to discuss clinical and course options.
- If no sites are available, the student will be delayed until a seat is available at a future admission date. See the student handbook for full policy <http://www.uta.edu/conhi/students/policy/index.php> (<http://www.uta.edu/conhi/students/policy/>)

*If there are more students than seats available, the students will be placed in the order in which they request the move (first come, first placed).

CLINICAL COURSES

To pass a clinical course, the student must pass both the didactic and the clinical components of that course. Clinical attendance expectations, Clinical Performance Requirements and Evidence of Clinical Competence information can be found in the UG Student Handbook at: <http://www.uta.edu/conhi/students/policy/index.php> (<http://www.uta.edu/conhi/students/policy/>)

CLINICAL ATTENDANCE DURING SCHEDULED UNIVERSITY CLOSINGS

Some programs in the College of Nursing, such as the AO BSN Program, may require students to attend clinical on evenings, nights, weekends, or holidays. Students are expected to attend their assigned clinical rotation as scheduled, even when the University is otherwise scheduled for closure, i.e. Spring Break.

PROGRESSION IN THE NURSING PROGRAM

Students in the Prelicensure BSN Program will not be permitted to continue in the nursing program nor to enroll for additional courses if they:

- receive a grade of D or F in more than one required nursing or prenursing course, or
- receive any combination of grades of D or F on two attempts of the same course
- score less than 70% on weighted exam or assignment average
- do not meet requirements of the Comprehensive Assessment and Preparation Program (https://www.uta.edu/conhi/_doc/unurs/capp_procedure.pdf)
- do not achieve minimum score requirements on Medication Administration Competency Assessment (p.)
- receive a Clinical Failure (more information in the BSN Handbook (<https://www.uta.edu/conhi/students/policy/>))

If a student fails a course they must take NURS2232 if they have not already taken it.

HONORS DEGREE IN NURSING

Nursing students who wish to graduate with an Honors Degree in Nursing must be members of the Honors College in good standing. Students must complete the Nursing degree requirements and the requirements of the Honors College. Contact the College of Nursing Honors Coordinator for further information. Due to the accelerated nature of the AO program the Honors Degree is limited to students in the Campus Based program.

RN to BSN Program

CORE PERFORMANCE STANDARDS FOR ADMISSION AND PROGRESSION IN THE COLLEGE OF NURSING

It is the philosophy of the University of Texas at Arlington College of Nursing (UTACON) that the baccalaureate program is designed to prepare a competent, self-directed, general practitioner of nursing who can assume increasing responsibility and leadership in the delivery of nursing care. In consideration of the preparation of a general practitioner, all individuals who apply for admission and are enrolled in the undergraduate program must be able to perform the essential functions of a student of nursing.

The College of Nursing has identified essential nursing skills: communication, cognitive, motor and sensory, observation, tactile, hearing, smell, psychomotor and ethical and professional integrity. The student enrolled in the program must demonstrate mastery of these components. Because providing direct patient care is physically demanding, students need to meet the physical requirements of a staff nurse in the same setting in which they are completing a clinical rotation. Upon BSN program acceptance, students must attest to their ability to meet these standards with or without an accommodation. If at that time a student requests an accommodation, the OSD and the CON must determine if the accommodation is reasonable PRIOR to the student beginning Upper-Division coursework.

If a student requires an accommodation to meet these standards, then within five (5) business days of being accepted into the BSN program, and in order to prevent a delay in the start of the programs, the student must contact OSD to initiate the review process.

Qualified applicants are admitted without discrimination with regard to race, color, national origin or ancestry, gender, age, religion, sexual orientation, veteran status or disability (reasonable accommodations will be made within the Americans with Disabilities Act guidelines).

More detailed information is available in the UG Nursing Policy Library (<http://www.uta.edu/conhi/students/policy/>) <http://www.uta.edu/conhi/students/policy/index.php> (<https://na01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fconhi%2Fstudents%2Fpolicy%2Findex.php&data=02%7C01%7Chwoods%40uta.edu%7Ca22f4ae411c944090a3408d6982d924d%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636863718822037407&sdata=R5nEuXM%2BIsDT%2Fpy4ZcxHjX9nnhDvhdHjJmHEQj2qhvc%3D&reserved=0>)

ADMISSION REQUIREMENTS

Students may be admitted to UT Arlington upon meeting the admission requirements established by the university which are described in the university catalog and website. Official transcripts must be submitted to the university Office of Admissions.

Registered nurses desiring admission to this program must:

- Apply for admission to the University of Texas at Arlington
- Meet the University of Texas at Arlington transfer student admission requirements
- Have a current, unencumbered license as an RN in the U.S.A.
- Be complete in Texas Success Initiative (TSI) requirements
- Meet the University of Texas at Arlington English proficiency requirement, TOEFL, if applicable

CREDIT BY RN LICENSURE

Transcripts of RN students are evaluated with consideration of the Coordinating Board Field of Study Curriculum guidelines. Credit is given for all courses listed in the Field of Study Curriculum as transferable as well as any additional courses that may be applicable for transfer for a total of 29 hours.

Certain other conditions apply:

- If the student earned one D or F in a nursing course at another college or school of nursing, they will be admitted unconditionally. If the student earns a subsequent D or F at UT Arlington, he/she will be placed on probation. The student must earn a C or above in all subsequent courses in order to remain in the program.
- If the student has earned more than one D or F, but no more than two, in nursing courses at another college or school of nursing, the student will enter UT Arlington on a probationary basis. The student must earn a C or above in all subsequent courses at UT Arlington in order to remain in the program.

ORIENTATION

All Campus Based Junior RN-BSN students and transferring RN-BSN students are required to attend the general orientation held prior to entering their Junior semester.

PROGRESSION IN THE NURSING PROGRAM

The University grade replacement/exclusion policy is limited by the College of Nursing and is not applicable to nursing courses.

- A student in the RN to BSN Program who earns a second D or F will be placed on probation. The student must earn a C or above in all subsequent courses in order to remain in the program.

ORAL COMMUNICATION PROFICIENCY REQUIREMENT

Oral proficiency is recognized to be a critical component of providing safe nursing care. In addition to content-specific presentations in various nursing courses, all nursing students are required to communicate effectively with clients, members of the health care team, and faculty. Contact RN-BSN Program Director for more information.

E-MAIL ACCOUNTS

Each student will be provided a UT Arlington e-mail address. Official communications from the College of Nursing will be distributed to this e-mail address and Learning Management System accounts required by many courses. Students will be held responsible for information distributed in this manner.

MOVEMENT BETWEEN PROGRAMS

Movement between AO and CB RN-BSN program is at the discretion of program administration.

Telehealth Certificate

ADMISSIONS REQUIREMENTS

Students may be admitted to UT Arlington upon meeting the admission requirements established by the University. Students will be advised by the College of Nursing in the Office of Enrollment and Student Services. Official transcripts must be submitted to the UT Arlington Office of Admissions, Records and Registration.

BSN Prelicensure Program

PRIOR TO ENROLLMENT

The following semester hours must be completed prior to enrollment in upper-division nursing courses except as noted:

Natural Sciences

Human Anatomy and Physiology I and II ^{1,2,3,4,7}	8
Microbiology ^{2,4,7}	4
General Chemistry and Biological Chemistry ^{2,4,7}	4

Behavioral Sciences

Introduction to Psychology ^{4,7}	3
Public Health: Principles and Populations, Sociology or Anthropology ^{3,4,5}	3
Developmental Psychology (Lifespan) ^{4,7}	3

Nursing

NURS 2300	INTRODUCTION TO PROFESSIONAL AND CLINICAL CONCEPTS IN NURSING ⁷	3
NURS 3365	PHARMACOLOGY IN NURSING PRACTICE ^{4,7}	3
NURS 3366	PATHOPHYSIOLOGIC PROCESSES: IMPLICATIONS FOR NURSING ^{4,7}	3

Other

Creative Arts (architecture, art, dance, music or theatre arts) ^{3,5}	3
Upper Division Elective ⁵	3

Math

MATH 1301	CONTEMPORARY MATHEMATICS (An applicant taking math at UT Arlington is encouraged to complete Contemporary Mathematics (MATH 1301)) ³	3
Statistics ^{3,4,7}		3

History and Government

U.S. History I and II ^{3,5,6}	6
U.S. and Texas Government ^{3,5,6}	6

English

English Composition I and II ³	6
English Literature ^{3,5}	3
Technical Writing ^{4,7}	3

Total Hours	70
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- 1 If part of a two-semester sequence, both courses are required.
- 2 Must contain a lab component.
- 3 Degree Plan Core Curriculum courses.
- 4 Degree Plan Program Specific courses.
- 5 CB students may complete after enrollment in junior nursing courses.
- 6 House Bill 935, passed by the Sixtieth Legislature, provides that no person may receive an undergraduate degree unless she/he has taken and passed six semester hours in American political science and six semester hours in United States history.
- 7 Must be passed with a grade of C or better and is subject to the Two-Attempt policy

Note: AO BSN students must complete all courses, including the upper division elective, prior to enrollment in junior nursing courses.

SUGGESTED COURSE SEQUENCE

The following semester hours must be completed for graduation. These courses are prescriptive. A student may not move to the next semester without successfully completing the previous semester.

Third Year			
First Semester	Hours	Second Semester	Hours
NURS 3320		3 NURS 3381	3
NURS 3333		3 NURS 3661	6
NURS 3632		6 NURS 3321	3
		NURS 3261	2
		12	14
Fourth Year			
First Semester	Hours	Second Semester	Hours
NURS 4331		3 NURS 4350	3
NURS 4341		3 NURS 4462	4
NURS 4581		5 NURS 4351	3
NURS 4199		1 NURS 4323	3
		12	13

Total Hours: 51

RN to BSN Program

PRIOR TO ENROLLMENT

Natural Sciences

Human Anatomy and Physiology I and II ^{1,2,3,4,5}	8
Microbiology or Bacteriology ^{2,4,5}	4

English

Composition I and II ³	6
Literature ^{3,5}	3
Technical Writing or Equivalent ^{4,6,7}	3

History and Government

American History I and II ^{3,5,8}	6
U.S. Government and Texas State and Local Government ^{3,5,8}	6

Behavioral Sciences

Introduction to Psychology ^{4,5}	3
Sociology or Anthropology ^{3,4,5}	3
Development Psychology (Lifespan) ^{4,5}	3

Other

Fine Arts (architecture, art, dance, music or theatre arts) ^{3,5}		3
MATH 1301	CONTEMPORARY MATHEMATICS (An applicant taking math at UT Arlington is encouraged to complete Contemporary Mathematics (MATH 1301)) ³	3
Statistics ^{3,4,6}		3
Upper division elective ^{5,9}		3

- 1 If part of a two-semester sequence, both courses are required.
- 2 Must contain a laboratory component.

- 3 Degree Plan Core Curriculum courses.
- 4 Degree Plan Program Specific courses.
- 5 May be completed after enrollment in nursing program.
- 6 Course must be completed with a grade of C or above prior to enrolling in the nursing program.
- 7 Technical Writing is preferred. Equivalents include Literature, Speech, or Philosophy, as long as the courses are sophomore-level or higher, have a writing component, and are approved by an advisor.
- 8 House Bill 935, passed by Sixtieth Legislature, provides that no person may receive an undergraduate degree unless she/he has taken and passed six semester hours in American political science and six semester hours in United States history.
- 9 The upper division elective course is in addition to the 3 credit hour upper division nursing elective requirement included in the 35 credit RN to BSN Nursing Course listing. This general 3 credit requirement can be met by taking any upper division elective course (including a second nursing elective), or by providing documentation of being certified through a nationally recognized nursing certification examination, or by completing a work-based project in the Nursing Cooperative Education (Co-Op) Program

COURSE SEQUENCE

Third Year	Hours
NURS 3325	3
NURS 3345	3
NURS 3315	3
NURS 3375	3
NURS 3335	3
Upper-division nursing electives ¹	3
	18
Fourth Year	Hours
NURS 4325	3
NURS 4455	4
NURS 4465	4
NURS 4685	6
	17
Total Hours: 35	

¹ Elective credit may be awarded for national certifications. Electives may be taken as a junior or as a senior.

New Will accept up to 29 credit hours transferred from a diploma or Associate Degree in nursing.
Footnote

TELEHEALTH AND HEALTH INFORMATICS CERTIFICATE

Certificate Advisor: telehealthadvising@uta.edu

Associate Dean for Academic Affairs, Nursing: Kathy Daniel, PhD

This 9-semester credit hour certificate will prepare upper division undergraduate students from any related discipline to have fundamental skills needed for telehealth and health informatics. Telehealth is the distribution of health-related services via electronic and telecommunication technology. Health Informatics is the storage and use of health care information to foster better collaboration among various health-related providers.

The courses for this certificate are offered all online, but are campus based. They are not available in the accelerated online format. Students may enroll in the certificate alone or include the certificate as part of an undergraduate degree plan from any related major. There are 3 required courses in the certificate.

Required:

NURS-HI 3359	INTRODUCTION TO HEALTH INFORMATICS	3
NURS-HI 3360	INTERPROFESSIONAL COLLABORATIVE PRACTICE	3
NURS-HI 3358	FUNDAMENTAL TELEHEALTH SKILLS	3
Total Hours		9

Department of Kinesiology

Undergraduate Degrees

- Bachelor of Arts in Physical Education Teacher Education (PETE) (p. 1082)
- Bachelor of Arts in Kinesiology - Sports Leadership and Management (SLAM) (p. 1082)
- Bachelor of Science in Exercise Science - Clinical & Applied Physiology (CAP) (p. 1082)
- Bachelor of Science in Exercise Science - Health, Fitness, & Wellness (HFW) (p. 1082)
- Bachelor of Science in Exercise Science - Motor & Rehabilitation Services (MRS) (p. 1082)
- Bachelor of Science in Public Health (BSPH) (p. 1082)

Graduate Degrees

- Master of Science in Athletic Training (p. 1068)
- Master of Science in Exercise Science (p. 1068)
- Doctor of Philosophy in Kinesiology (<http://catalog.uta.edu/nursing/kinesiology/graduate/#doctoraltext>)
- Graduate Certificate in Public Health (<http://catalog.uta.edu/nursing/kinesiology/graduate/#certificatetext>)
- Master of Public Health (<https://catalog.uta.edu/nursing/kinesiology/graduate/>)

COURSES

KINE 1100. LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE. 1 Hour.

The course is designed to provide basic lab measurement and testing experiences for Kinesiology and Exercise Science students. Prerequisite: or Co-requisite: KINE 1300.

KINE 1230. FIRST AID / CPR / AED TRAINING. 2 Hours.

This course is designed to cover the components of Standard First Aid, Cardio-Pulmonary Resuscitation (CPR) for the Professional Rescuer, and Automated External Defibrillator (AED) training. Certification is possible upon successful course completion. Offered as HEED 1230 and KINE 1230. Students seeking credit in HEED should enroll in HEED 1230 and students seeking credit in KINE should enroll in KINE 1230. Credit will not be granted for both courses.

KINE 1300. INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE. 3 Hours.

Introduction to key concepts concerning the anatomical, motor, biomechanical, and physiological basis of exercise science. The student is introduced to cardiovascular responses to training, analysis of human and motor behavior, and basic principles of exercise prescription.

KINE 1315. INTRODUCTION TO PHYSICAL EDUCATION AND SPORT. 3 Hours.

This course is an introduction to, and observation of, practices in pedagogical kinesiology and sports leadership.

KINE 1400. INTRODUCTION TO EXERCISE SCIENCE. 4 Hours.

Introduction to key concepts concerning the anatomical, biomechanical, and physiological basis of exercise science. Through lecture and laboratory experiences, the student is introduced to cardiovascular responses to training, analysis of human movement, and basic principles of exercise prescription. Credit cannot be given for both KINE 1400 and the combination of courses it replaces: KINE 1124 and KINE 1314.

KINE 2130. ATHLETIC TRAINING CLINICAL PRACTICUM I. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Clinical Proficiencies with an instructional emphasis on preventive and protective taping and wrapping procedures. This course requires the completion of 120 clinical hours under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI).

KINE 2230. INTRODUCTION TO MUSCULOSKELETAL INJURIES. 2 Hours.

This course is designed to introduce students to the mechanisms of musculoskeletal injury and their associated signs, symptoms, and tissue responses. Students will also be introduced to the basic principles of musculoskeletal assessment. This course is a prerequisite for admission to the Athletic Training Education Program. Prerequisite: KINE 2120, KINE 2320; must be concurrently enrolled in KINE 2130.

KINE 2301. TEACHING GAMES FOR UNDERSTANDING. 3 Hours.

The course will provide students with theoretical concepts with which they can design and analyze various short- and long-term plans related to the Teaching Games for Understanding theoretical model. Students will learn various tactical strategies and modification principles for applying learned concepts in instructional settings. The instructor will use expertise from given sports to help students transfer the common themes across the spectrum of the model's category of games. KINE 1315 is a co-requisite for this course. Prerequisite: Co-requisite KINE 1315.

KINE 2302. DANCE AND MOVEMENT ACTIVITIES. 3 Hours.

This course is designed to enhance the students performance knowledge of skills and strategies in dance and movement activities to acquaint them with effective teaching behaviors appropriate for these activities. Co-requisite KINE 1315. Prerequisite: Co-requisite KINE 1315.

KINE 2307. SPORTS AND SOCIETY. 3 Hours.

This course will examine the bidirectional impact of sport and societal institutions. The class will explore the co-dependent nature of sport and society and attempt to separate fact from fiction to aid in the understanding of the true role of sport as it fits into society. Topics to be addressed include the potentially controversial areas of race, gender, disability, institutional rule violations, and ethics in the contemporary sports arena. This is a lower level elective. Credit cannot be received for this course and KINE 3307.

KINE 2330. CARE AND PREVENTION OF ATHLETIC INJURIES. 3 Hours.

An introduction to the profession of Athletic Training. Common sports-related injuries and illnesses will be discussed with an emphasis on the proper methods for prevention, recognition, and immediate care. Offered as HEED 2330 and KINE 2330. Kinesiology majors must take KINE 2330.

KINE 2350. PUBLIC HEALTH: PRINCIPLES AND POPULATIONS. 3 Hours.

This course will provide students with an overview of Public Health: what it is, how it works, and why it is important. Topics include current health issues, global health, health disparities and how Public Health impacts community settings. Class requirement includes participation in community-based, experiential-learning activities. Examination of public health concepts, values and functions. Exploration of the underlying science of human health and disease as that is impacted by socioeconomic, behavioral, biological, environmental and other factors that impact human health and contribute to health disparities. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

KINE 2351. HEALTH ISSUES IN DIVERSE & VULNERABLE POPULATIONS. 3 Hours.

Cultural competence is attracting increased attention across the spectrum of public health. However, many vulnerable populations continue to be "invisible," resulting in a lack of awareness and knowledge in public health and healthcare workers. This course provides students with information related to the multi-faceted disparities that exist beyond ethnic differences to investigate the many other facets of cultural diversity and health issues.

KINE 2420. INTRODUCTION TO ATHLETIC TRAINING. 4 Hours.

Classroom and laboratory experiences that provide an introduction to the profession of Athletic Training with an emphasis on prevention and immediate care of sports related injuries. Specific topics will include injury prevention techniques; emergency first aid and acute care; superficial application of therapeutic modalities; proper use and fitting of protective equipment; and environmental considerations. Credit cannot be given for KINE 2420 and the combination of courses it replaces: KINE 2320 and KINE 2120.

KINE 3130. ATHLETIC TRAINING CLINICAL PRACTICUM II. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. This course requires the completion of 250 hours of clinical experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisites: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3320.

KINE 3131. ATHLETIC TRAINING CLINICAL PRACTICUM III. 1 Hour.

Laboratory and clinical experiences that provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. This course requires the completion of 250 hours of clinical education experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisite: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3324.

KINE 3300. FUNCTIONAL ANATOMY. 3 Hours.

A study of the musculoskeletal anatomy to include bony landmarks, muscle origin, insertion and action, as well as nerve innervation. Knowledge of the functional anatomy is crucial to the understanding of sports performance, the design of strength training programs, and injury prevention. Prerequisite: KINE 1300, KINE 1100 and BIOL 2457.

KINE 3302. SPORT AND EXERCISE PSYCHOLOGY. 3 Hours.

Analysis of exercise and sport activities in terms of psychological skills and strategies. Topics include motivation, arousal regulation, focus, concentration, group cohesion & imagery.

KINE 3303. ORGANIZATIONAL PRINCIPLES OF EXERCISE AND SPORT ACTIVITIES. 3 Hours.

An organizational analysis of exercise and sport in terms of participation rules, regulations, and responsibilities. Emphasis on knowledge and understanding of the principles governing the organization and conduct of exercise and sport activities.

KINE 3304. ADAPTED PHYSICAL EDUCATION & SPORT. 3 Hours.

Analysis of conditions that impact individuals with special needs. Emphasis on adapted physical education and sport strategies that facilitate the learning of this population. KINE 3388 is a co-requisite for this course. Prerequisite: KINE 1100, KINE 1300 and KINE 1315. Co-requisite KINE 3388.

KINE 3306. MOTOR INTEGRATION. 3 Hours.

Principles of motor skill acquisition, performance, and control. Topics include practice strategies, memory, neuromotor functioning, attention, and learning (assessment, transfer & stages). Prerequisite: KINE 1315, and KINE 1400, or permission of instructor.

KINE 3307. SPORT AND SOCIETY: ISSUES AND DEBATES. 3 Hours.

This course will examine the bidirectional impact of sport and societal institutions. The class will explore the co-dependent nature of sport and society and attempt to separate fact from fiction to aid in the understanding of the true role of sport as it fits into society. Topics to be addressed include the potentially controversial areas of race, gender, disability, institutional rule violations, and ethics in the contemporary sports arena. This is an upper level elective. Credit cannot be received for this course and KINE 2307.

KINE 3309. FOUNDATIONS OF RECREATION. 3 Hours.

Leisure time in our social structure and the agencies which have developed to provide leisure time activities. Program development and leadership skills in the recreation profession.

KINE 3311. RECREATION AND LEISURE SERVICE. 3 Hours.

Application of management and organizational principles, objectives, and procedures involved in implementing recreational and leisure service programs.

KINE 3312. COACHING INVASION GAME PRINCIPLES. 3 Hours.

The course will provide students with theoretical concepts with which they can design and analyze various short and long-term plans related to invasion games. Students will learn various tactical strategies and modification principles for applying learned concepts in instructional settings. The instructor will use expertise from given sports to help students transfer the common themes across the spectrum of invasion games.

KINE 3313. COACHING OF NET/WALL GAME PRINCIPLES. 3 Hours.

The course will provide students with theoretical concepts with which they can design and analyze various short and long-term plans related to net/wall games. Students will learn various tactical strategies and modification principles for applying learned concepts in instructional settings. The instructor will use expertise from given sports to help students transfer the common themes across the spectrum of net/wall games.

KINE 3320. LOWER EXTREMITY EVALUATION. 3 Hours.

A study of the common orthopedic and musculoskeletal injuries involving the lower extremities and lumbar spine, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisite: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3130.

KINE 3324. UPPER EXTREMITY EVALUATION. 3 Hours.

A study of the common orthopedic and musculoskeletal injuries involving the upper extremities, spine, head, face, abdomen, and thorax, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisite: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3131.

KINE 3325. UNDERGRADUATE RESEARCH METHODS. 3 Hours.

Current practices in the conduct of quantitative research, measurement, and evaluation processes applied to programs related to exercise science, pedagogical kinesiology, athletic training and related fields will be examined. Enrolled students will develop and conduct a research project based on their declared discipline. Prerequisite: KINE 1300, KINE 1100, MATH 1302, MATH 1308.

KINE 3330. PATHOLOGY AND PHARMACOLOGY. 3 Hours.

Study of acute and chronic illness and their response to, and impact on, physical activity. Discussion of pharmacological agents used in the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: BIOL 2458, acceptance into the Athletic Training Education Program or permission of instructor.

KINE 3333. THERAPEUTIC INTERVENTION II. 3 Hours.

This course is designed to provide the student with an understanding of upper extremity and low back rehabilitation protocols and the use of electric therapeutic modalities like ultrasound, diathermy, laser, and electric stimulation. Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of electrical therapeutic modalities and how they can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common upper extremity and low back injuries. Both surgical and non-surgical rehabilitation models for the upper extremity and low back will be discussed with a special emphasis on the use of functional progressions. Prerequisites: BIOL 2457 and BIOL 2458. Concurrent enrollment in KINE 4131 is required for all Athletic Training Education Program students.

KINE 3342. SOCIOLOGY OF THE HUMAN BODY. 3 Hours.

Drawing from the social sciences, cultural and gender studies, and exercise physiology, this course in body sociology addresses several contemporary issues relating to diet, nutrition and exercise. Specific topics include eating disorders, factory farming, and "body industries" involving weight-loss diets, gyms, fashion, and cosmetic and bariatric surgery. The medical model of bodies is also examined. Also listed as SOCI 3342; credit will not be granted for both KINE 3342 and SOCI 3342.

KINE 3350. URBANIZATION AND VULNERABLE POPULATIONS. 3 Hours.

Investigation of diversity of individuals and populations in a community, including how diversity may influence policies, programs, services, and the health of a community, and the importance for a diverse public health workforce.

KINE 3351. PUBLIC HEALTH INFORMATICS. 3 Hours.

Explain and apply ethical principles that apply to the use of information technology as those pertain to accessing, collecting, analyzing, using, maintaining, and disseminating data and information. Prerequisite: KINE 2350 and KINE 3350.

KINE 3352. INTRODUCTION TO PUBLIC HEALTH EPIDEMIOLOGY. 3 Hours.

Analysis of factors that affect the health of a community, including how disease spreads, legal aspects of epidemics, and how data is used to drive public health decision making. Overview of how public health practice and science come together to protect the health of the public, or of a specific population. Prerequisite: MATH 1301 or MATH 1302 or MATH 1303 or MATH 1426 and MATH 1308 and KINE 2350 required.

KINE 3353. HEALTH AND THE HUMAN CONDITION IN THE GLOBAL COMMUNITY. 3 Hours.

Study of the history, philosophy and contemporary issues of public health as those apply to public health in both urban and global societies.

KINE 3354. EMERGENCY PREPAREDNESS & MANAGEMENT. 3 Hours.

Inquiry into the structures, functions, and authorizations of governmental public health programs. Identification of tools, processes, and activities related to both practice and policy used to support community responses to public health emergencies and other disasters. Prerequisite: KINE 2350.

KINE 3355. ADDICTIVE BEHAVIORS. 3 Hours.

Students will examine substance abuse including alcohol, drugs (illegal and prescription), smoking, vaping, and gaming from a population-based approach. There will also be a focus on compulsive behaviors including topics such as food over- and undereating, gambling, shopping and internet/technology addictions. While the course emphasis is on addictive behaviors, material and learning activities will also address how diverse and vulnerable populations are impacted by addictive behaviors as those relate to injury and illness prevention.

KINE 3356. PUBLIC HEALTH IN ACADEMIC SETTINGS. 3 Hours.

Public Health in Academic Settings This course addresses common health issues found throughout educational settings. Topics include chronic stress, health and well-being, school violence and the roles of hunger and obesity as concerns in the school environment. A focus on school climate, the role of school-based healthcare and preventing dropout from public health perspectives will be included.

KINE 3357. PHYSICAL ACTIVITY IN PUBLIC HEALTH. 3 Hours.

Designed for public health and health/fitness/wellness professionals who are interested in the promotion of physical activity in a variety of areas of public health. Emphasis on advocating for the importance of integration of physical activity in community health. This course prepares students to sit for the American College of Sports Medicine/National Physical Activity Society Physical Activity in Public Health Specialist certification examination.

KINE 3388. THEORY AND APPLICATION IN MOTOR DEVELOPMENT. 3 Hours.

A study of motor skill development from infancy to adolescence with emphasis upon motor development theory and aspects that effect motor competence, underlie movement control, and influence change in the acquisition of motor skills. Prerequisite: KINE 1100 and KINE 1300.

KINE 3401. BIOMECHANICS OF HUMAN MOVEMENT. 4 Hours.

Quantitative and qualitative analyses of human movement. Emphasis is on the application of the principles of human movement, with consideration of functional anatomy, kinesiology and mechanical concepts to exercise, sport, and activities of daily living. Course credit may not be granted for both KINE 3301 and KINE 3401. Prerequisite: KINE 1300, KINE 1100, BIOL 2457 and Math 1302.

KINE 3415. PHYSIOLOGY OF EXERCISE. 4 Hours.

Provides the physiology background necessary for an understanding of the acute and chronic effects of exercise on the body. Physiological concepts and their relationship to exercise, sport, and health programs are examined. Laboratory experiences are designed for evaluating physiological responses to exercise. Course credit may not be granted for both KINE 3315 and KINE 3415. Prerequisite: Restricted to Kinesiology, Athletic Training and Exercise Science Majors. KINE 1300, KINE 1100, BIOL 2457, BIOL 2458, and MATH 1302 required.

KINE 4130. ATHLETIC TRAINING CLINICAL PRACTICUM IV. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. The instructional emphasis is the development of functional rehabilitation programs for musculoskeletal injuries and common orthopedic surgeries. This course requires the completion of 250 hours of clinical experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisite: BIOL 2457 and BIOL 2458; Athletic Training Majors only or permission of instructor. Corequisite: KINE 4336.

KINE 4131. ATHLETIC TRAINING CLINICAL PRACTICUM V. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. Instructional emphasis is on the selection and clinical application of therapeutic modalities. This course requires the completion of 250 hours of clinical experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisite: BIOL 2457 and BIOL 2458; Athletic Training Majors only or permission of instructor. Corequisite: KINE 3333.

KINE 4132. ATHLETIC TRAINING CLINICAL PRACTICUM VI. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. This course requires the completion of 200 hours of clinical experience performed under the supervision of an Approved Clinical Instructor. Prerequisite: KINE 3130, KINE 3131, KINE 3320, KINE 3324, KINE 3330, KINE 3333, KINE 4130, KINE 4131, KINE 4336, and acceptance into the Athletic Training Education Program or approval of instructor. Must be concurrently enrolled in KINE 4233.

KINE 4188. CLINICAL HEALTH PROFESSIONS INTERNSHIP. 1 Hour.

Individualized academic training in an internal or external clinical health professions setting (e.g. university, hospital, physical therapy clinic, or physician's office) under the direct supervision of a health care professional (MD, PT, OT, PA). Prerequisite: Corequisite: KINE 4315 or successful completion of KINE 4315 and proof of sufficient professional liability insurance.

KINE 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

KINE 4193. PHYSICAL EDUCATION TEACHER CERTIFICATION PRACTICUM. 1 Hour.

In this course students will be prepared for the TExES PE-EC-12 and PPR- EC-12 exams and prepared for the professional dispositions associated with being a Physical Educator with an emphasis on ethics, interviewing, and role modeling. The students will take and review the PE Content and Pedagogy and Professional Responsibilities practice teaching licensure exams. Through this process teacher candidates will be cleared for official TExES registration. This course is to be taken the semester immediately prior to the student teaching semester.

KINE 4201. ADVANCED TECHNIQUES AND TACTICS OF BASEBALL. 2 Hours.

Development and analysis of skills, offensive and defensive strategies used in the sport of baseball.

KINE 4202. ADVANCED TECHNIQUES AND TACTICS OF BASKETBALL. 2 Hours.

Development and analysis of skills, offensive/defensive strategies used in the sport of basketball.

KINE 4203. ADVANCED TECHNIQUES AND TACTICS OF FOOTBALL. 2 Hours.

Development and analysis of skills, offensive and defensive strategies used in the sport of football.

KINE 4204. ADVANCED TECHNIQUES AND TACTICS OF TRACK AND FIELD. 2 Hours.

Development and analysis of track and field event techniques and strategies.

KINE 4205. ADVANCED TECHNIQUES AND TACTICS OF VOLLEYBALL. 2 Hours.

Development and analysis of skills, offensive and defensive strategies used in the sport of volleyball.

KINE 4233. ATHLETIC TRAINING ORGANIZATION & ADMINISTRATION. 2 Hours.

A study of the administrative issues and management theories that may be encountered in athletic training. Special emphasis is placed on the practical application of concepts related to legal liability, facility design and maintenance, documentation, financial management, health insurance, and general day-to-day operations. Prerequisite: KINE 3130, KINE 3131, KINE 3320, KINE 3324, KINE 3330, KINE 3333, KINE 4130, KINE 4131, KINE 4336, and acceptance into the Athletic Training Education Program or approval of instructor.

KINE 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

KINE 4293. SEMINAR IN ATHLETIC TRAINING. 2 Hours.

Synthesis of theories and concepts in athletic training. Review of the competencies and proficiencies in athletic training with special emphasis on professional development and the refinement of clinical decision-making. Prerequisite: KINE 3320, KINE 3324, KINE 3330, KINE 3333, KINE 4233, KINE 4336; Athletic Training Majors only.

KINE 4296. SPECIAL TOPICS IN EXERCISE AND SPORT. 2 Hours.

Designed to meet the current needs of students. May be repeated for credit when the topic changes.

KINE 4316. FITNESS PROGRAMMING. 3 Hours.

This course will provide students with practical and theoretical applications of fitness programming. The successful student will acquire a level of proficiency in the development of fitness programs and plans based upon client specific fitness assessment characteristics. Fitness programs shall include, but not be limited to: musculoskeletal symmetry, strength, and flexibility; body composition; cardiovascular endurance, and nutritional recommendations. Additionally, successful students will become proficient in the application of client related historical, nutritional, medical, psychological, and psychosocial factors that impact the development of a properly designed exercise program. Prerequisite: Current CPR certification, MATH 1302, KINE 3300, KINE 3315, and KINE 4315, or permission of instructor.

KINE 4317. EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS. 3 Hours.

This course will discuss the pathophysiology of prevalent cardiovascular, metabolic and pulmonary diseases. Methods of exercise prescription and issues of concern will also be presented for these populations, as well as, low back pain, pregnancy, osteoporosis, cancer, children, older adults, fibromyalgia, multiple sclerosis and cardiac disease. Prerequisite: MATH 1302, MATH 1308, BIOL 2457, BIOL 2458, KINE 3300, KINE 3415 and KINE 3325.

KINE 4319. FITNESS, HEALTH AND OUTDOOR ADVENTURE ACTIVITIES EDUCATION. 3 Hours.

The course will provide students with theoretical health-related concepts with which they can design and apply fitness learning into various physical education settings. In addition, this course is designed to introduce students to outdoor and adventure education activities and adventure-based learning. Time will be spent on low element group initiatives and high element adventure activities. Prerequisite: KINE 2301 and KINE 2302.

KINE 4320. TEACHING SECONDARY PHYSICAL EDUCATION. 3 Hours.

Designed to enhance teacher candidates' understanding of curriculum development as it applies to theory of motor learning and the sciences of kinesiology. These progressions are synthesized into a collaborative service-learning project with secondary public school partner(s). Candidates take responsibility for creating, coordinating, and facilitating learning experiences that are developmentally appropriate, motivating, and based on research. Prerequisite: KINE 3304, KINE 3388.

KINE 4321. TEACHING ELEM PHYSICAL EDUCATION. 3 Hours.

This course is designed to synthesize the sciences of anatomy and physiology, biomechanics, motor integration and motor control with sound pedagogical knowledge into an applied elementary physical education setting. Criminal background check required. Prerequisite: KINE 3304 and KINE 3388.

KINE 4323. MOTOR CONTROL AND LEARNING. 3 Hours.

This course will expose students to the theoretical perspectives and current principles associated with the control and learning of movement skills. Specifically, the neural and mechanical mechanisms underlying motor behavior and the variables influencing motor learning will be addressed. Throughout the course, application of theoretical concepts to instructional and clinical settings will be emphasized. Prerequisite: KINE 1300, KINE 1100, MATH 1308, and KINE 3325.

KINE 4329. STRENGTH & CONDITIONING IN SPORT AND PERFORMANCE. 3 Hours.

This course covers the physiology and biomechanics of strength training and conditioning. Additional topics include: testing and evaluation of athletes, resistance training techniques, training program design, and organization administration of a strength training facility. This course is designed to prepare students to take the CSCS, Certified Strength and Conditioning Specialist, certification examination. Prerequisite: MATH 1302, MATH 1308, BIOL 2457, BIOL 2458, KINE 3300, KINE 3415, KINE 3325.

KINE 4330. PROGRAM DESIGN & ADMINISTRATION. 3 Hours.

The development and operation of health/wellness programs and facilities will be presented, including: program design and administration, facility design, organizational development, management theory, marketing, financial management, legal issues, strategic planning, and evaluation models. The student will participate in all phases of program and facility development, such as budget development, recruiting and retaining employees and clients, market niche, and conflict resolution. Prerequisite: KINE 3415 and KINE 3325.

KINE 4331. OBESITY & WEIGHT MANAGEMENT. 3 Hours.

This course is a review of the scientific literature on the causes and consequences of obesity. Topics include: techniques for assessing body composition, metabolic factors promoting obesity, the role of obesity in metabolic and cardiovascular disease, traditional and non-traditional weight loss programs, economic consequences and contributors of obesity, and psychosocial consequences and contributors of obesity. Prerequisite: KINE 3415 and KINE 3325.

KINE 4335. GRADED EXERCISE TESTING & PRESCRIPTION. 3 Hours.

The knowledge and skills necessary for assessment of health history and appraisal, blood pressure, electrocardiogram, cardiovascular fitness and function will be acquired in lecture and laboratory sessions. Various test modalities and protocols will be discussed for health and diseased populations. Prerequisite: BIOL 2457, BIOL 2458, and KINE 3315, KINE 4315, or permission of instructor.

KINE 4336. THERAPEUTIC INTERVENTION I. 3 Hours.

This course is designed to provide the student with an understanding of the scientific theory and the basic principles of musculoskeletal rehabilitation and therapeutic modalities. Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of superficial heating and cooling therapeutic modalities and how manual treatments (e.g., traction, muscle energy and massage) can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common lower extremity injuries. Both surgical and non-surgical rehabilitation models for the lower extremity will be discussed with a special emphasis on the use of functional progressions. Prerequisites: BIOL 2457 and BIOL 2458. Concurrent enrollment in KINE 4130 is required for all Athletic Training Education Program students.

KINE 4337. STRENGTH AND CONDITIONING IN GENERAL POPULATIONS: HEALTH AND DISEASE. 3 Hours.

This course covers the physiology and biomechanics of strength training and conditioning as it applies to the general populations across the spectrum of health and disease. This includes: testing, evaluation, resistance training techniques and training program design for individuals with orthopedic injuries and rehabilitation concerns, metabolic conditions (e.g., diabetes), youth, elderly, and pregnant or post-prenatal women. This course is designed to prepare students to take the NSCA-CPT, and apply the skills needed to be a leader within the personal training and physical therapy career paths. Prerequisite: KINE 3415 and KINE 3325.

KINE 4339. SPORTS LEADERSHIP AND MANAGEMENT INTERNSHIP. 3 Hours.

Individualized training and experience in a youth, college, professional or other sport-based organization. Students will work with a mentor and university supervisor in a community-based setting to better understand, explore, and apply principles of coaching and operations. Prerequisite: KINE majors and Senior standing.

KINE 4350. SPORTS PSYCHOLOGY. 3 Hours.

The course will provide an overview of the growing field of Sports Psychology, which involves applying psychological science to sports. Topics such as maximizing sports performance, elite performance and personality, motivation techniques in sports, leadership skills in sports, etc., will be covered.

KINE 4351. ETHICAL PRACTICES IN HEALTH PROFESSIONS. 3 Hours.

Study of ethical standards and how those are incorporated into practice and decision-making that relate to interactions with individuals, organizations, and communities. Exploration of strategies for public health, health care, and other allied healthcare organizations to work together or individually to impact the health of a community. Prerequisite: Junior status, KINE 2350 and KINE 3350.

KINE 4352. PUBLIC HEALTH SCIENCES AND METHODS. 3 Hours.

Identify scientific concepts and research methods of population health, along with the basic processes, approaches, and interventions that identify and address the major health-related needs and concerns of populations. Analysis of project implementation such as planning, assessment and evaluation. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, and KINE 3354.

KINE 4354. PUBLIC HEALTH ADVOCACY AND LEADERSHIP. 3 Hours.

Appraisal of leadership philosophies and actions that reflect and model effective strategies for protecting and promoting the public's health. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354, MANA 4326, KINE 4352, KINE 4355, KINE 4357, HEED 4311. Concurrent enrollment in KINE 4353 recommended.

KINE 4355. COMMUNICATION FOR HEALTH PROFESSIONALS. 3 Hours.

Information and experiences that identify the health literacy of populations, including addressment of barriers and unique situations for vulnerable populations. Communication of information through appropriate, culturally competent methodologies. Integration of basic concepts of public health-specific communication into technical and professional writing. The use of mass media and electronic technology. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353 and KINE 3354.

KINE 4356. PUBLIC HEALTH PROJECT DESIGN & ADMINISTRATION. 3 Hours.

This course includes content designed to develop the knowledge, skills and competencies necessary for public health project management. The course includes experiential learning activities and case studies that integrate practice-based learning on topics such as project design, team dynamics, project evaluation and quality improvement measures. Prerequisite: KINE 2350 and junior status.

KINE 4357. PREPARATION FOR THE PUBLIC HEALTH WORKFORCE. 3 Hours.

The development and operational systems and processes in public health programs and facilities will be presented, including: concepts and experiences necessary for success in the workplace, community dynamics, independent work and development of a personal work ethic, networking and professional communication, and teamwork. The student will participate in multiple career readiness learning experiences through a co-curricular collaboration with UTA Career Services. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354 and MANA 4326.

KINE 4358. APPLIED APPROACHES TO DIVERSITY AND CULTURAL AWARENESS IN PUBLIC HEALTH ORGANIZATIONS. 3 Hours.

Applied Approaches to Diversity and Cultural Awareness in Public Health Organizations This course examines the changing demographics of the public health workforce and organizations, presenting students with varied perspectives, approaches and competencies required for understanding and appreciation of greater diversity across the public health and healthcare systems.

KINE 4359. PUBLIC HEALTH CUMULATIVE EXPERIENCE. 3 Hours.

Individualized learning opportunity to integrate, synthesize and apply knowledge through cumulative and experiential activities. All students complete a cumulative, integrative and scholarly or applied experience or inquiry project that serves as an optimum point to the education experience. These experiences may include, but are not limited to, internships, service-learning projects, senior seminars, portfolio projects, research papers or honors theses. Students are encouraged to gain exposure to local-level public health professionals and/or agencies that engage in public health practice. To be taken during the final semester prior to graduation. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354, KINE 4352, KINE 4355, KINE 4357 and MANA 4326 required. Corequisite: KINE 4354.

KINE 4387. EXERCISE SCIENCE PRACTICUM. 3 Hours.

Academic training within the internal setting of U.T. Arlington's exercise science laboratories. Each student will receive 135 hours of professional practicum experience in a variety of exercise science settings including wellness, physical fitness activity classes, physical fitness theory classes, the physical fitness center, and/or other exercise science settings. Prerequisite: Current CPR certification, KINE 4315, KINE 4316, and permission of instructor.

KINE 4388. EXERCISE SCIENCE INTERNSHIP. 3 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 135 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4389. FITNESS MANAGEMENT INTERNSHIP. 3 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 135 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4390. PRACTICUM IN SPORT PERFORMANCE. 3 Hours.

Designed on an individual basis as a field experience in the observation of sport performance, and the application of performance principles to sport participation. Students must make application for enrollment prior to October 1 for Spring Semester and prior to April 1 for Fall Semester.

KINE 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

KINE 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

KINE 4395. INDIVIDUAL STUDY IN EXERCISE AND SPORT. 3 Hours.

The completion of an existing course on an individual basis as contracted with an approved faculty member. This procedure is limited to emergency situations, and must be identified through the departmental advising process.

KINE 4396. SPECIAL TOPICS IN EXERCISE AND SPORT. 3 Hours.

Designed to meet the current needs of students. May be repeated for credit when the topic changes.

KINE 4400. APPLIED EXERCISE PHYSIOLOGY. 4 Hours.

Application of physiological principles of training of physical fitness and sport; examination of factors influencing anaerobic and aerobic training methods and their effect on fitness. Physiological responses studied include cardiovascular, bioenergetics, and extreme environments. Site visits, laboratory experiences and a research project enhance the student's understanding of physiological changes and career paths in exercise science. Prerequisite: KINE 3315, KINE 3325, KINE 4315, MATH 1302 and MATH 1308.

KINE 4415. FITNESS ASSESSMENT/PROGRAMMING. 4 Hours.

Classroom and laboratory experiences provide the student with an opportunity to become familiar with the assessment of physical fitness including graded exercise testing, metabolic studies, basic ECG interpretation, and body composition. The student will also learn risk factor identification and exercise prescription. Course credit may not be granted for both KINE 4315 and KINE 4415. Prerequisite: KINE 3415 and KINE 3325.

KINE 4420. APPLIED MOTOR BEHAVIOR. 4 Hours.

Application of motor behavior and biomechanical principles as well as factors influencing learning, re-learning and enhancing motor skills will be examined. Students will craft a research project to enhance their understanding of principles of motor behavior and will be involved in several case studies that can help understand how to apply motor behavior in their career paths. Prerequisite: KINE 3325; KINE 3388; KINE 4323.

KINE 4490. EXERCISE SCIENCE INTERNSHIP. 4 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 180 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4491. MRS INTERNSHIP. 4 Hours.

Individualized academic training in an external professional movement or rehabilitation setting (e.g., hospital, OT clinic, SLP clinic, school, recreation center, therapy setting, etc) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 180 hours in the field is required for completion of the course. Prerequisite: KINE 3388; KINE 3415.

KINE 4589. EXERCISE SCIENCE INTERNSHIP. 5 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 225 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4639. SPORTS LEADERSHIP AND MANAGEMENT INTERNSHIP II. 6 Hours.

Individualized training and experience in a youth, college, professional or other sport-based organization. Students will work with a mentor and university supervisor in a community-based setting to better understand, explore, and apply principles of coaching and operations. Prerequisite: KINE majors and Senior standing.

KINE 4647. CLINICAL TEACHING PHYSICAL EDUCATION EC-12. 6 Hours.

This supervised course is designed as a culminating field experience of pre-service professional preparation giving an opportunity to practically apply theoretical and pedagogical knowledge in real school settings. Applied experience will be attained in both Elementary and Secondary settings. Criminal background check required. Prerequisite: KINE 1315, KINE 2301, KINE 3304, KINE 3306, KINE 3325, KINE 3388, KINE 4193, KINE 4319, KINE 4320, KINE 4321, LIST 4343, and EDUC 4340.

KINE 4659. PUBLIC HEALTH EXTENDED CUMULATIVE EXPERIENCE. 6 Hours.

Individualized practice-based public health work experience in a professional public health-related setting (e.g., public health agency, nonprofit organization, legislative representative office, hospital) under the direct supervision of a public health professional. To be taken during the final semester prior to graduation. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354, KINE 4352, KINE 4355, KINE 4357 and MANA 4326 required. Corequisite: KINE 4354.

KINE 4689. FITNESS MANAGEMENT INTERNSHIP. 6 Hours.

Designed on an individual basis to allow the student to apply academic training in a professional fitness center under the direct supervision of a fitness specialist. Prerequisite: Current CPR certification, KINE 4315, KINE 4316, KINE 4387 (or concurrent enrollment), proof of sufficient professional liability insurance, and permission of instructor.

KINE 4988. EXERCISE SCIENCE INTERNSHIP. 9 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, university laboratory) under the direct supervision of an exercise science professional. Prerequisite: KINE 4315, KINE 4316, KINE 4387 (or concurrent enrollment), current CPR certification, proof of sufficient professional liability insurance, and permission of instructor.

KINE 4989. FITNESS MANAGEMENT INTERNSHIP. 9 Hours.

Designed on an individual basis to allow the student to apply academic training in a professional fitness center under the direct supervision of a fitness specialist. Prerequisite: Current CPR certification, KINE 4315, KINE 4316, KINE 4387 (or concurrent enrollment), proof of sufficient professional liability insurance, and permission of instructor.

KINE 5120. ATHLETIC TRAINING CLINICAL I. 1 Hour.

Clinical experiences performed in an athletic training setting or other health care facility under the supervision of a program approved health care provider. Course will also focus on professional development and evidence based practice topics. Prerequisite: Admission to the MSAT Program.

KINE 5125. IMMUNOLOGY. 1 Hour.

This course will include a brief review of the immune system and factors that affect immune function with emphasis on the effect of exercise and stress on muscle and overall immune function. The effect of nutrition and over-training on the immune system and associated syndromes/diseases will also be presented.

KINE 5128. CLINICAL DIAGNOSTIC PROCEDURES. 1 Hour.

This course provides fundamental clinical knowledge of commonly utilized diagnostic procedures and tests in medical practice. Emphasis will be placed on understanding of indications, contraindications, and clinical implications of diagnostic tests and understanding of normal and diseased states. Correlation and integration of test results into clinical examination findings and clinical plan of care will be addressed. Prerequisite: Admission to MSAT Program.

KINE 5130. Clinical Athletic Training II. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisites: KINE 5420, KINE 5220, KINE 5120.

KINE 5140. Clinical Athletic Training III. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisite: KINE 5130.

KINE 5150. Clinical Athletic Training IV. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisite: KINE 5140.

KINE 5160. Clinical Athletic Training V. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisite: KINE 5150.

KINE 5170. JOURNAL CLUB IN PHYSIOLOGY. 1 Hour.

This course is designed to provide the students an opportunity to learn the art of critically reading and interpreting research articles. There will be emphasis on identifying strengths and weakness of research studies. There will also be an opportunity for the students to present their research study ideas and / or their preliminary findings of their research to the class. This will provide an opportunity for students to interact and receive / provide feedback regarding methodological approaches and interpretation of findings. Lastly, the student will learn how to prepare and deliver presentations to an audience.

KINE 5190. SPECIAL TOPICS IN KINESIOLOGY. 1 Hour.

In-depth study of selected topics in physical education and exercise science. May be repeated when topics vary. Prerequisite: consent of instructor.

KINE 5191. INTERNSHIP IN CARDIOPULMONARY REHABILITATION. 1 Hour.

The student will complete 400 internship hours in an approved Cardiopulmonary rehabilitation setting. The student may take two semesters of KINE 5191 at 200 hours each. The student will be involved in patient/client assessment, training, rehabilitation, risk factor identification and lifestyle management services provided for individuals with or at risk for cardiovascular, pulmonary, and metabolic diseases. In addition the student will observe common cardiac surgeries and diagnostic procedures to better understand the pathophysiology and treatment of cardiovascular, pulmonary and metabolic disease.

KINE 5192. INTERNSHIP IN GRADED EXERCISE TESTING FOR HIGH RISK POPULATIONS. 1 Hour.

The student will complete 200 hours of graded exercise testing in an approved hospital or outpatient clinical setting which conducts exercise tests for high risk populations, including clients with suspected cardiopulmonary and metabolic diseases. The student will be exposed to noninvasive (echocardiography and graded exercise testing) and invasive methods used to diagnose cardiopulmonary and metabolic disease, including procedures conducted in cath and nuclear testing laboratories.

KINE 5193. PHYSIOLOGY OF EXERCISE INTERNSHIP. 1 Hour.

Individualized academic training in an external professional exercise physiology setting (e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5194. RESEARCH IN KINESIOLOGY. 1 Hour.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5195. INTERNSHIP IN GRADED EXERCISE TESTING FOR HIGH RISK POPULATIONS. 1 Hour.

The student will complete 200 hours of graded exercise testing in an approved hospital or outpatient clinical setting which conducts exercise tests for high risk populations, including clients with suspected cardiopulmonary and metabolic diseases. The student will be exposed to noninvasive (echocardiography and graded exercise testing) and invasive methods used to diagnose cardiopulmonary and metabolic disease, including procedures conducted in cath and nuclear testing laboratories.

KINE 5196. LABORATORY TECHNIQUES IN EXERCISE SCIENCE. 1 Hour.

A primary objective of this course is to further your understanding of exercise physiology. A second but equally important objective is to enhance your ability for critical thinking on exercise physiology through the scientific process. This includes formation of a research question, hypothesis, designing an experiment, and inferring conclusions from data. Secondary objectives include improving technology skills to assist collecting and analyzing data, and writing and oral communication skills for demonstrating understanding of the physiological principles.

KINE 5198. THESIS. 1 Hour.**KINE 5220. PREVENTATIVE AND ACUTE CARE TECHNIQUES IN ATHLETIC TRAINING. 2 Hours.**

Classroom and laboratory experiences designed to provide students with formal instruction and evaluation in the prevention and acute care of activity related injuries and illnesses.

KINE 5221. CLINICAL ATHLETIC TRAINING II. 2 Hours.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will also provide instruction in taping, bandaging, orthotics, casting, and durable medical equipment. Prerequisite: KINE 5120, KINE 5230, KINE 5231.

KINE 5222. CLINICAL ATHLETIC TRAINING III. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will also include content related to psychosocial aspects of athletic training. Prerequisite: KINE 5221, KINE 5232, KINE 5348.

KINE 5223. CLINICAL ATHLETIC TRAINING IV. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of clinical hours of experience under the supervision of a program approved clinical preceptor. The course will also focus on professional development and cultural competence for the athletic trainer. Prerequisite: KINE 5222, KINE 5233, KINE 5354, KINE 5355.

KINE 5224. CLINICAL ATHLETIC TRAINING V. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will include review of major content and steps to prepare for professional exams. Prerequisite: KINE 5223, KINE 5234, KINE 5341, KINE 5356.

KINE 5225. CLINICAL ATHLETIC TRAINING VI. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will also include topics related to effective transition to practice upon graduation. Prerequisite: KINE 5333, KINE 5227, KINE 5224.

KINE 5226. PATHOPHYSIOLOGY AND PHARMACOLOGY II. 2 Hours.

Further study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological agents used in the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5348.

KINE 5227. LITERATURE AND RESEARCH FOR THE ATHLETIC TRAINER. 2 Hours.

This course is an overview of concepts and procedures necessary for designing, conducting, and critically appraising research in Athletic Training from multiple research paradigms. The course will focus on the steps involved in the administration of a research project, including literature review, design, data collection and analysis. Prerequisite: KINE 5223, KINE 5234, KINE 5341, KINE 5356.

KINE 5228. SEMINAR IN ATHLETIC TRAINING. 2 Hours.

A capstone course designed to provide students the opportunity to synthesize and integrate the athletic training theories and concepts taught in the previous courses. Class discussions and projects will emphasize health care administration, professional development, cultural competence, transition to practice, inter-professional education and skills required of the entry-level athletic trainer. Prerequisite: KINE 5333, KINE 5227, KINE 5224.

KINE 5229. FUNCTIONAL ANATOMY AND BIOMECHANICS FOR THE ATHLETIC TRAINER. 2 Hours.

This course builds on prerequisite knowledge of human musculoskeletal anatomy to describe human movement. Principles of biomechanics and kinesiology will guide the understanding of mechanical and physiologic interactions between muscles and joints to form the basis of understanding normal and pathological movement. Prerequisite: Admission to MSAT Program.

KINE 5230. FOUNDATIONS OF ORTHOPEDIC ASSESSMENT AND THERAPEUTIC INTERVENTIONS. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to develop fundamental skills in orthopedic injury assessment and an understanding of the theory and the basic principles of therapeutic interventions including planning, implementing, documenting, and evaluating intervention programs for the rehabilitation and reconditioning of injuries and illnesses of those involved with physical activity. Prerequisite: Admission to MSAT Program.

KINE 5231. FUNDAMENTALS OF ATHLETIC TRAINING I. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to provide an introduction to the profession and the role of athletic trainers in the overall health care environment. Emphasis will be placed on the epidemiology of orthopedic injuries, orthopedic trauma, emergency planning and care, cold and hot therapeutic modalities, and prevention of sudden death. Prerequisite: Admission to MSAT Program.

KINE 5232. FUNDAMENTALS OF ATHLETIC TRAINING II. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to further their development as an athletic trainer in a dynamic health care system. Emphasis will be placed on interprofessional practice, prevention of sudden death, nutrition for the physically active, ergonomics, body composition assessment, and fitness assessment/programming. Prerequisite: Admission to MSAT Program.

KINE 5233. THERAPEUTIC MODALITIES. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to provide an understanding of the theory and application of common therapeutic modalities for the treatment of musculoskeletal injuries. Emphasis will be placed on using the disablement model to plan, implement, and document the use of therapeutic modalities for the treatment and rehabilitation of injuries and illnesses of those involved with physical activity. Critical appraisal of research studies regarding the effectiveness and efficacy of therapeutic modalities will also be emphasized. Prerequisite: Admission to MSAT Program.

KINE 5234. CLINICAL REASONING AND DECISION MAKING. 2 Hours.

This course is designed to provide an understanding and application of theories and frameworks to clinical decision making. Students will work toward becoming an effective practitioner, able to make clinical decisions by studying clinical situations and how health care professionals make clinical decisions. Emphasis will be placed on problem solving strategies, decision making and evidence based rationale. Clinical reasoning will be developed while integrating knowledge and skills in management of complex clinical conditions using scientific and contemporary evidence-based clinical knowledge. Prerequisite: Admission into MSAT Program.

KINE 5235. ADVANCED FUNCTIONAL ASSESSMENT AND CORRECTIVE EXERCISE. 2 Hours.

This course will provide classroom and laboratory experiences that introduce functional assessment and corrective exercises. Specific topics will include advanced manual therapy techniques designed to restore body symmetry and theories of functional movement. Evidence-based application of functional assessment, evaluation and assignment of corrective exercises will be emphasized along with the critical appraisal of research studies regarding the effectiveness and efficacy of a variety of advanced therapeutic interventions. Prerequisite: Admission to MSAT Program.

KINE 5290. SPECIAL TOPICS IN KINESIOLOGY. 2 Hours.

In-depth study of selected topics in physical education and exercise science. May be repeated when topics vary. Prerequisite: consent of instructor.

KINE 5291. INTERNSHIP IN CARDIOPULMONARY REHABILITATION. 2 Hours.

The student will complete 400 internship hours in an approved Cardiopulmonary rehabilitation setting. The student may take two semesters of KINE 5191 at 200 hours each. The student will be involved in patient/client assessment, training, rehabilitation, risk factor identification and lifestyle management services provided for individuals with or at risk for cardiovascular, pulmonary, and metabolic diseases. In addition the student will observe common cardiac surgeries and diagnostic procedures to better understand the pathophysiology and treatment of cardiovascular, pulmonary and metabolic disease.

KINE 5292. SPECIAL TOPICS IN KINESIOLOGY. 2 Hours.**KINE 5293. PHYSIOLOGY OF EXERCISE INTERNSHIP. 2 Hours.**

Individualized academic training in an external professional exercise physiology setting (e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5294. RESEARCH IN KINESIOLOGY. 2 Hours.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5298. THESIS. 2 Hours.**KINE 5300. RESEARCH METHODS IN KINESIOLOGY. 3 Hours.**

This course is an overview of concepts and procedures necessary for designing, conducting, and analyzing research in Kinesiology from multiple research paradigms. The course will focus on the steps involved in the administration of a research project, including literature review, design, data collection and analysis.

KINE 5305. APPLIED STATISTICAL PRINCIPLES IN KINESIOLOGY. 3 Hours.

The course covers descriptive statistics, elementary probability, one- and two-population mean and variance comparisons, ANOVA, simple linear regression, and correlations. In addition, more advanced principles in parametric and non-parametric statistics will be emphasized.

KINE 5320. ADVANCED PHYSIOLOGY OF EXERCISE. 3 Hours.

Lecture and laboratory sessions are designed to investigate concepts of energy metabolism, lactate production and accumulation, energy expenditure, excess post exercise oxygen consumption, cardiovascular and temperature regulation, neuromuscular control, aerobic and anaerobic adaptations and ergonomics.

KINE 5322. METABOLISM & EXERCISE BIOCHEMISTRY. 3 Hours.

This course will address the regulation of exercise metabolism as well as the distinct biochemical pathways through which energy transduction occurs. This will allow the student to appreciate not only the end result of metabolism, ultimately the production and maintenance of cellular ATP levels, but also the pathways that biological machines use to achieve ATP homeostasis. Calorimetry, respiratory exchange ratio, and substrate utilization during exercise will be assessed as part of the laboratory section of this course.

KINE 5323. MOTOR CONTROL AND LEARNING. 3 Hours.

This course advances on fundamental concepts of motor behavior and performance combining theoretical principles to a variety of realistic contexts to provide the basis of skilled behavior. Contemporary research in human motor behavior models is used to identify effective solutions to practical problems and to spark ideas for optimizing development, learning, and control of motor skills.

KINE 5326. CARDIOCIRCULATORY PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of the cardiovascular and circulatory system will be studied, as well as, cardiac control, the cardiac cycle, cardiac output, hemodynamics, vascular resistance, arterial-venous oxygen difference and oxygen delivery and consumption. Heat production and thermal control during exercise will also be addressed in lecture and laboratory sessions.

KINE 5327. PULMONARY PHYSIOLOGY OF EXERCISE. 3 Hours.

Examines the structure and function of the pulmonary system including mechanics of breathing, lung capacity tests, pulmonary circulation, lung diseases, gas exchange, ventilation, diffusing capacity, acid/base balance, neural and chemical regulation of breathing, and blood flow with respect to rest and exercise values in healthy and diseased populations. Prerequisite: KINE 5320.

KINE 5328. NEUROMUSCULAR PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of muscle, including the motor unit, control and integration, central and peripheral modifiers of neuromuscular control and biochemical characteristics of fibers will be studied. These concepts will also be applied to concepts in strength and power development.

KINE 5329. STRENGTH & CONDITIONING IN SPORT AND PERFORMANCE. 3 Hours.

The course covers the physiology and biomechanics of strength training and conditioning. Additional topics include: testing and evaluation of athletes, resistance training techniques, training program design, and organization administration of a strength training facility. This course is designed to prepare students to take the CSCS certification examination. Prerequisite: current CPR certification, KINE 3300, KINE 3301, KINE 3315, or permission of the instructor.

KINE 5330. ENVIRONMENTAL PHYSIOLOGY OF EXERCISE. 3 Hours.

This course will address the impact of environmental stress (e.g., thermal, gravitational, microgravity, etc.) on the cardiovascular system. Related focus will be given to cardiac function, blood pressure regulation and thermoregulation. Topics will be addressed in lecture and laboratory sessions. *Doctoral students will be required to complete an additional research-related assignment.

KINE 5331. OBESITY & WEIGHT MANAGEMENT. 3 Hours.

This course is a review of the scientific literature on the causes and consequences of obesity. Topics include techniques for assessing body composition, factors promoting fat metabolism and deposition, traditional and non-traditional weight-loss programs, and adherence to weight-loss programs. Offered as KINE 4331 and KINE 5331. Credit will be granted only once. Prerequisite: KINE 5320 or permission of department.

KINE 5333. HEALTH CARE ADMINISTRATION. 3 Hours.

A study of the administrative issues and management theories that may be encountered in overseeing an athletic training/sports medicine program. Special emphasis is placed on the practical application of concepts related to legal liability, facility design and maintenance, financial and budget management, common health insurance models, insurance contract negotiation, strategic planning as a means to assess and promote organizational improvement, the impact of organizational structure on the daily operations of a healthcare facility, components of developing and implementing a basic business plan, medical record and documentation systems, federal and state infection control regulations and guidelines, risk management plan development, emergency action planning, and general day to day operations. Prerequisites: KINE 5223, KINE 5234, KINE 5341, KINE 5356.

KINE 5334. Seminar in Athletic Training. 3 Hours.

Synthesis of theories and concepts in athletic training. Review of the competencies and proficiencies in athletic training with special emphasis on professional development and the refinement of clinical decision-making.

KINE 5335. GRADED EXERCISE TESTING AND PRESCRIPTION. 3 Hours.

The knowledge and skills necessary for assessment of health history and appraisal, blood pressure, electrocardiogram, cardiovascular fitness and function will be acquired in lecture and laboratory sessions. Various test modalities and protocols will be discussed for health and diseased populations.

KINE 5336. ECG INTERPRETATION. 3 Hours.

Principles of electrocardiography will be explored, with emphasis on interpretation of resting and stress ECGs. Interpretation of dynamic rhythm strips will prepare students to work in cardiac rehabilitation and other allied health professions.

KINE 5337. STRENGTH AND CONDITIONING IN GENERAL POPULATIONS: HEALTH AND DISEASE. 3 Hours.

This course covers the physiology and biomechanics of strength training and conditioning as it applies to the general populations across the spectrum of health and disease. This includes: testing, evaluation, resistance training techniques and training program design for individuals with orthopedic injuries and rehabilitation concerns, metabolic conditions (e.g., diabetes), youth, elderly, and pregnant or post-prenatal women. This course is designed to prepare students to take the NSCA-CPT, and apply the skills needed to be a leader within the personal training and physical therapy career paths. Prerequisite: KINE 3300, KINE 3315, and KINE 3325.

KINE 5338. EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS. 3 Hours.

This course will discuss the pathophysiology of prevalent cardiovascular, metabolic and pulmonary diseases. Methods of exercise prescription and issues of concern will also be presented for these populations, as well as, low back pain, pregnancy, osteoporosis, cancer, children, older adults, fibromyalgia, multiple sclerosis and cardiac disease.

KINE 5340. ENVIRONMENTAL PHYSIOLOGY. 3 Hours.

This course will address the impact of environmental stress (e.g., thermal, gravitational, microgravity, etc.) on the cardiovascular system. Related focus will be given to cardiac function, blood pressure regulation and thermoregulation. Topics will be addressed in lecture and laboratory sessions.

KINE 5341. ADVANCED IMMEDIATE AND EMERGENCY CARE. 3 Hours.

This course is designed to provide knowledge and skills related to the immediate and emergent care of injuries/conditions in work settings of athletic trainers. Prerequisite: KINE 5231.

KINE 5342. IMMEDIATE AND EMERGENCY CARE 2. 3 Hours.

This course is designed to build off of Immediate and Emergency Care 1 and include didactic and clinical experiences surrounding best practices in general emergency care and acute management of injuries and illness. Students will also be required to complete a scholarship project concerning general emergency care and acute management of injuries and illnesses. Clinical hours will be required in an emergency medicine environment.

KINE 5343. LITERATURE AND RESEARCH FOR THE ATHLETIC TRAINER. 3 Hours.

This course is an overview of concepts and procedures necessary for designing, conducting, and critically appraising research in Athletic Training from multiple research paradigms. The course will focus on the steps involved in the administration of a research project, including literature review, design, data collection and analysis. Prerequisite: KINE 5432.

KINE 5344. SCHOLARSHIP IN ATHLETIC TRAINING PRACTICE. 3 Hours.

This course is designed to build off of the foundations of Literature and Research for the Athletic Trainer with further study of data collection and analysis as well as evidence-based practice principles. Students will be expected to complete a scholarship project related to athletic training practice. Prerequisite: KINE 5227.

KINE 5345. SPORT NUTRITION. 3 Hours.

Overview of nutrients necessary for healthful living and nutritional impact on reducing risk factors of lifestyle diseases. Application of nutrient recommendations for sports and exercise activities, including fluid replacement, sports supplements, and ergogenic aids. In addition, students will construct plans for dietary intake of athletes during training and competition for both endurance and resistance training. Offered as KINE 5345 and KINE 3301. Credit will be granted only once.

KINE 5346. ADVANCED FUNCTIONAL ASSESSMENT AND CORRECTIVE EXERCISE. 3 Hours.

Classroom and laboratory experiences that provide an introduction to functional assessment and corrective exercises. Specific topics will include an analysis of common biomechanics of movement and the evidence-based application of functional assessment and assignment of corrective exercises. Prerequisite: KINE 5420, KINE 5430, KINE 5431, KINE 5433, KINE 5434.

KINE 5347. ADVANCED FUNCTIONAL ASSESSMENT AND CORRECTIVE EXERCISE. 3 Hours.

Classroom and laboratory experiences that provide an introduction to functional assessment and corrective exercises. Specific topics will include an analysis of common biomechanics of movement and the evidence-based application of functional assessment and assignment of corrective exercises. Prerequisite: KINE 5420, KINE 5430, KINE 5431, KINE 5433, KINE 5434.

KINE 5348. PATHOPHYSIOLOGY AND PHARMACOLOGY I. 3 Hours.

This course provides an introduction to the study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological principles will be incorporated as it relates to the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5120, KINE 5231.

KINE 5350. APPLIED BIOMECHANICS. 3 Hours.

Application of Newtonian mechanics to human movement analysis. Biomechanical models using three-dimensional video and force plate data will be used to analyze human movement.

KINE 5353. LOWER EXTREMITY ASSESSMENT AND REHABILITATION. 3 Hours.

This course will focus on common orthopedic injuries involving the lower extremities, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Additionally, students will learn to implement rehabilitation programs and therapeutic techniques for lower extremity injuries. Prerequisite: Admission to MSAT Program.

KINE 5354. UPPER EXTREMITY ASSESSMENT AND REHABILITATION. 3 Hours.

This course will focus on common orthopedic injuries involving the upper extremities, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Additionally, students will learn to implement rehabilitation programs and therapeutic techniques for upper extremity injuries. Prerequisite: Admission to MSAT Program.

KINE 5355. PATHOPHYSIOLOGY & PHARMACOLOGY II. 3 Hours.

This course provides further study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological principles will be incorporated as it relates to the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5348.

KINE 5356. HEAD AND SPINE ASSESSMENT AND REHABILITATION. 3 Hours.

This course will focus on common orthopedic injuries involving the head and spine, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Additionally, students will learn to implement rehabilitation programs and therapeutic techniques for head and spine injuries. Prerequisite: KINE 5353, KINE 5354.

KINE 5357. PREVENTATIVE MEDICINE AND POPULATION HEALTH. 3 Hours.

This course will highlight the athletic trainer's role in promoting and maintaining the health and well-being of individuals and populations. Development, implementation, and assessment of preventative measures to reduce injury risk and long-term health conditions across the lifespan will be addressed. Emphasis will also be placed on population-level problems, including health risks and determinants as well as individual and behavioral factors that affect health outcomes. Prerequisite: Admission to MSAT Program.

KINE 5360. FUNDAMENTAL PRINCIPLES OF INTEGRATIVE PHYSIOLOGY. 3 Hours.

This course is designed to provide a fundamental understanding of human physiology. Physiological function is a complex process that involves a complex interaction among the various physiological systems. As such there will be an emphasis on the integration of cellular, cardiovascular, renal, autonomic, respiratory, and endocrine physiology.

KINE 5362. PRINCIPLES OF MOVEMENT NEUROSCIENCE. 3 Hours.

This course focuses on principles of movement that have emerged from the computational study of motor control. The principles and application to processes such as motor planning, control, estimation, prediction and learning are explored.

KINE 5363. CONDITIONS OF THE MOTOR SYSTEM IN CHILDHOOD. 3 Hours.

This course explores a prevalent dysfunction of the motor system in childhood, known as Developmental Coordination Disorder (DCD). This class explores potential causes of DCD, common mechanisms and impairments, intervention methods and their effectiveness, and associated co-morbidities. In addition, students will understand the current state of research in the field and understand future avenues for research.

KINE 5364. CURRENT PERSPECTIVES IN MOTOR LEARNING AND CONTROL. 3 Hours.

This course explores five aspects of the new directions in research in the Motor Learning and Control field: Perception-Action mechanisms, Dynamical systems, Motor disorders, Learning and intervention for motor behavior, and neural mechanisms.

KINE 5365. ADVANCED MOTOR DEVELOPMENT. 3 Hours.

This course explores the current field of research in Motor Development applied to typical and special populations. More specifically, it discusses issues related to motor skill learning in childhood, the development of motor control, the relationship between motor competence and general health, and how lack of appropriate motor skills affect several domains of development (Developmental Coordination Disorder). To that, we use current research articles that discuss each one of these topics from different perspectives.

KINE 5370. GLOBAL HEALTH. 3 Hours.

Today's public health practice requires an awareness of health threats beyond U.S. borders. "Global health" implies health concerns and solutions that are shared worldwide. In this course, students will study global health priorities among different populations, cultures, and health systems. Students will examine health challenges and disease threats faced in resource-constrained countries, and the roles of health determinants, socioeconomics and health equity in improving health outcomes. In addition, students will learn about the foundational elements of global health, including globalization and health, water, sanitation, the burden of infectious and chronic diseases, human rights and global health partnerships.

KINE 5371. PUBLIC HEALTH PROGRAM PLANNING AND EVALUATION. 3 Hours.

Before we can effectively receive funding and implement programs that benefit our communities, we have to answer many questions. Who is the target audience? What are the program's goals? What are the intended outcomes of the program? How can we measure program effectiveness? Program evaluation is the methodology to developing scientifically sound answers to these questions. This course will teach you how evaluators work with stakeholders and project teams to tailor an intervention to a target audience, and document program activities, outcomes and impact on a community health issue. This course will allow you to have hands-on experience designing and conducting program evaluation.

KINE 5372. INTRODUCTION TO EPIDEMIOLOGY. 3 Hours.

By participating in this course students will learn the critical role that epidemiology plays in preventing and controlling disease. This course provides students with a foundation of the methods and concepts used in epidemiology. Students will learn the measures used in epidemiology and apply principles of causality, study design, disease surveillance, and outbreak investigations. In addition, students will be introduced to sources of data used in epidemiologic studies. The major course project will provide students with hands-on experience using skills sought by employers in public health agencies.

KINE 5373. INTRODUCTION TO ENVIRONMENTAL AND OCCUPATIONAL HEALTH. 3 Hours.

This course provides an overview of the critical environmental health problems in industrialized and developing countries, discusses their causes and solutions, and emphasizes the role of science in environmental policy decisions. Topics include climate change, water and air contaminants, injury risk and prevention in the workplace, food and water-borne disease, toxic metals, and how the body reacts to environmental pollutants.

KINE 5374. RACE, ETHNICITY AND HEALTH. 3 Hours.

Despite advances in medicine and health policies, racial and ethnic health disparities persist. Americans of color have higher mortality rates and an unequal burden of many health concerns compared to their white counterparts. Such health inequities compromise the cultural and economic fabric of our country. This course will discuss the complex relationship between socioeconomic status, race/ethnicity, and health. In addition, this course will examine the economic and societal threats that health disparities pose to our communities and nation, as well as policies and approaches to addressing such disparities.

KINE 5375. COMMUNITY HEALTH. 3 Hours.

This course explores population health, providing students with learning experiences that facilitate an understanding of what public health is and why it is important. Course activities guide students in exploring their role in population health dynamics of their communities. The course will provide students an investigation of theoretical and evidence-based strategies designed to improve community health from population-based approaches. Students will then narrow those areas of foci to contemplate real-world, practice-based learning experiences.

KINE 5376. INTRODUCTION TO BIOSTATISTICS. 3 Hours.

The course will introduce students to analysis skills applied in the public health sciences. Students will learn how to apply descriptive statistics, t-tests, ANOVA, correlation, multiple regression, and non-parametric statistics to public health problems.

KINE 5377. INTRODUCTION TO HEALTH SYSTEMS AND POLICY. 3 Hours.

What is "population health" and why does it matter? Why are U.S. health care costs so high? How is the U.S. health system financed? What are the basic principles of health insurance? Who are the uninsured? It is critical that public health professionals be able to answer these questions and understand the basic functions that comprise the U.S. health care system. This course will help students answer these questions through an introduction to health systems and policy, including the delivery, quality and costs of health care for individuals and populations. The course will also examine the structure, processes and outcomes of health services, financing, organization, outcomes and accessibility of care.

KINE 5378. FOUNDATIONS OF PUBLIC HEALTH. 3 Hours.

This course teaches students what public health is and how it works. The mission of public health is to assure conditions in which people can be healthy. This course will present the history, frameworks, values, and goals of public health which support this mission. Students will study the principles and core responsibilities of public health from a multidisciplinary perspective, with emphasis on the public health core functions of assessment, policy development, and assurance. This course will provide the foundation for further studies in public health practice through developing public health problem solving and decision-making skills through case studies and applied coursework.

KINE 5379. FUNDAMENTALS OF POPULATION HEALTH. 3 Hours.

Public health is charged with advancing health while reducing health care costs. This requires us to move away from a reactionary model of health care delivery and towards models of disease prevention and health promotion. Students will consider how collaborations among organizations within and outside the health care system, and the integration of public health into clinical care, impacts population health. The course will use case studies and applied learning to discuss the role of incentives, financing, data, measurement, structure of health care delivery, and policy in advancing population health.

KINE 5380. URBAN COMMUNITY HEALTH ASSESSMENT. 3 Hours.

We must learn the health needs in a community before we can address those needs to improve the health of the community. Assessment skills allow us to learn what health needs exist in a community by using sound scientific methods to collect evidence about gaps in health. In this course, students will apply quantitative and qualitative methods, data analysis, community mobilization, and capacity building to assess community health needs and strategies for health improvement.

KINE 5381. SOCIAL AND BEHAVIORAL EPIDEMIOLOGY. 3 Hours.

Social epidemiology considers how social determinants impact population health. Behavioral epidemiology studies how lifestyle and behaviors affect health conditions. The class will explore how social, political, cultural and economic forces influence our health and health behaviors. The course will focus on social and health inequities, and resulting health behaviors. Theory from social science is integrated with epidemiological methods to learn how social circumstances influence behavior and health, and determine how we can target interventions to reduce health inequities in our community, nation and world. Prerequisite: KINE 5372 Introduction to Epidemiology.

KINE 5382. CHRONIC DISEASE EPIDEMIOLOGY. 3 Hours.

Chronic diseases are the leading causes of death in the United States and globally. Chronic diseases, such as cardiovascular disease, cancer, diabetes, HIV/AIDS, respiratory conditions, and neurologic disorders have devastating consequences for population health. This class will explore and apply epidemiologic methods which help identify strategies to prevent and treat chronic diseases, emphasizing modifiable risk factors. Coursework will aim to increase student understanding of how epidemiologic methods are used to identify determinants of chronic diseases, and how to identify and target interventions to reduce the burden of chronic disease locally, nationally, and across the globe. Prerequisite: KINE 5372.

KINE 5383. COMMUNITY-BASED INTERNSHIP. 3 Hours.

This course is a required 200-hour service learning experience for Master of Public Health (MPH) students which combines specific learning objectives with reflection. The student will apply skills learned in the MPH program in a "real-life" environment. The student will complete a defined project, mutually agreed upon between the MPH Graduate Advisor and the partner organization, which benefit both the student and the partner organization. Students will keep a log of hours, work performed, and competencies addressed throughout the internship experience, and comply with specified reporting periods. Prerequisite: KINE 5372, KINE 5373, KINE 5376, KINE 5305, KINE 5377, KINE 5375, KINE 5371, and KINE 5378.

KINE 5384. PUBLIC HEALTH CAPSTONE EXPERIENCE. 3 Hours.

This course is the culmination of all previous coursework for Master of Public Health (MPH) students, requiring the student to complete a final paper, poster and oral presentation about the project completed as part of the Community-Based Internship. In addition, the student will complete a professional portfolio comprised of work illustrating the competencies learned during the MPH program and applied during the Internship. Prerequisite: KINE 5372, KINE 5373, KINE 5376, KINE 5305, KINE 5377, KINE 5375, KINE 5371, KINE 5378, and KINE 5383, and completion of all MPH coursework required for graduation, or concurrent enrollment in final courses needed for graduation.

KINE 5385. COMMUNICATION AND HEALTH. 3 Hours.

Students will learn how interpersonal, organizational and mass media communications influence health behaviors and health outcomes. Students will study theories and applied techniques of interpersonal communication in health care and health education settings, as well as the theory and practice of media in achieving desired effects from public health messages.

KINE 5386. BIG DATA FOR EPIDEMIOLOGY. 3 Hours.

Big Data have revolutionized science, including the future of public health. This course prepares future public health practitioners to integrate knowledge of epidemiology methods with the data analytics savvy. Students will gain competence in conducting analysis using large, commonly used health-related databases. Learn how to use large datasets to advance your practice of epidemiology by enrolling in this course. Prerequisite: KINE 5376 or KINE 5305. Prior completion or concurrent enrollment in KINE 5372.

KINE 5387. INFECTIOUS DISEASE EPIDEMIOLOGY. 3 Hours.

From Ebola to COVID-19, tuberculosis to hepatitis A--every outbreak has a team of behind-the-scenes disease detectives tracking its source and pathways. Students will learn the methods of infectious disease epidemiology, studying outbreak investigations, disease surveillance, study designs, laboratory diagnosis, and dynamics of transmission. Students must have completed KINE 5372 Introduction to Epidemiology to enroll in this course. Prerequisite: Prior or concurrent enrollment in KINE 5372.

KINE 5388. GLOBAL HEALTH ON-SITE EXPERIENCE ABROAD. 3 Hours.

Students will study the factors impacting health for populations in a selected country outside of the U.S. Then, students will travel to that country at the end of the course for a real life experience learning from people who are impacted by, and/or who help address the health factors in that region. Prerequisite: MPH student or Instructor Permission.

KINE 5389. RESEARCH MANUSCRIPT SUBMISSION. 3 Hours.

The student will collect scientific data in the Physiology of Exercise laboratories or in a work-related environment under the supervision of a faculty member. The student will analyze the data, write a manuscript, and submit a manuscript for publication in a peer-reviewed journal. This course must be taken in the final semester of graduate work and requires approval of the Graduate Advisor.

KINE 5390. SPECIAL TOPICS IN KINESIOLOGY. 3 Hours.

In-depth study of selected topics in physical education and exercise science. May be repeated when topics vary. Prerequisite: consent of instructor.

KINE 5392. SPECIAL TOPICS IN KINESIOLOGY. 3 Hours.**KINE 5393. PHYSIOLOGY OF EXERCISE INTERNSHIP. 3 Hours.**

Individualized academic training in an external professional exercise physiology setting(e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5394. RESEARCH IN KINESIOLOGY. 3 Hours.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5396. RESEARCH IN ATHLETIC TRAINING. 3 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Prerequisite: consent of the instructor.

KINE 5397. INTERNSHIP ATHLETIC TRAINING. 3 Hours.

Individualized clinical experience in an external athletic training or other medical setting (e.g., physician's office, rehabilitation clinic, professional sports teams) under the direct supervision of a health care professional.

KINE 5398. THESIS. 3 Hours.**KINE 5420. CONCEPTS IN ATHLETIC TRAINING. 4 Hours.**

Classroom and laboratory experiences that provide an introduction to the profession of Athletic Training with an emphasis on prevention and acute care of activity related injuries and illnesses. Specific topics will include injury prevention strategies; emergency first aid and acute care; superficial application of therapeutic modalities; nutritional considerations; and environmental considerations.

KINE 5430. ORTHOPEDIC ASSESSMENT I. 4 Hours.

A study of the common orthopedic injuries involving the lower extremities, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisites: KINE 5120, KINE 5220, and KINE 5420.

KINE 5431. Orthopedic Assessment II. 4 Hours.

A study of the common orthopedic injuries involving the upper extremities, spine, head, and face with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisite: KINE 5430.

KINE 5432. PATHOPHYSIOLOGY AND PHARMACOLOGY. 4 Hours.

A study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological agents used in the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5430, KINE 5433, KINE 5130.

KINE 5433. THERAPEUTIC INTERVENTIONS I. 4 Hours.

A study of the scientific theory and basic principles of musculoskeletal rehabilitation and therapeutic modalities. Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of superficial heating and cooling therapeutic modalities and how manual treatments (e.g., traction, muscle energy and massage) can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common lower extremity injuries. Both surgical and non-surgical rehabilitation models for the lower extremity will be discussed with a special emphasis on the use of functional progressions. Prerequisites: KINE 5420, KINE 5220, KINE 5120.

KINE 5434. THERAPEUTIC INTERVENTIONS II. 4 Hours.

A study of the upper extremity and low back rehabilitation protocols and the use of electric therapeutic modalities (e.g., ultrasound, diathermy, laser, and electric stimulation). Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of electrical therapeutic modalities and how they can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common upper extremity and low back injuries. Both surgical and non-surgical rehabilitation models for the upper extremity and low back will be discussed with a special emphasis on the use of functional progressions. Prerequisite: KINE 5433.

KINE 5498. THESIS. 4 Hours.**KINE 5598. THESIS. 5 Hours.****KINE 5647. CLINICAL TEACHING PHYSICAL EDUCATION EC-12. 6 Hours.**

This supervised course is designed as a culminating field experience of pre-service professional preparation giving an opportunity to practically apply theoretical and pedagogical knowledge in school settings with a mentor teacher. Applied experience will be attained in both Elementary and Secondary settings. Additionally, a field-research project will be required to be arranged with course supervisor. Criminal background check required. Prerequisite: KINE 1315, KINE 2301, KINE 2302, KINE 3304, KINE 3388, KINE 4319, KINE 4320, KINE 4321, EDUC 5310, EDUC 5314, and LIST 5345.

KINE 5693. PHYSIOLOGY OF EXERCISE INTERNSHIP. 6 Hours.

Individualized academic training in an external professional exercise physiology setting (e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5694. RESEARCH IN KINESIOLOGY. 6 Hours.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5698. THESIS. 6 Hours.**KINE 5994. RESEARCH IN KINESIOLOGY. 9 Hours.**

Individually approved research projects selected from the various areas of Kinesiology.

KINE 6100. SEMINAR IN KINESIOLOGY. 1 Hour.

Implements the research process with faculty guidance. Students will attend regularly scheduled lectures from internal and external faculty members. Learning activities based on student and faculty interest.

KINE 6103. PROFESSIONAL DEVELOPMENT. 1 Hour.

The philosophy and methods of conducting a university class for undergraduates are examined. Specific tips and suggestions for managing course materials, lectures, audiovisual aids, grading, etc. will be presented. The role of the university instructor as a researcher as well as a teacher will be elaborated. Specific topics will include the ethics and regulation of research, service as a journal referee, corresponding with peers, participating in a research team, manuscript preparation, presentation at professional conferences, and submitting material for publication.

KINE 6105. LABORATORY TECHNIQUE ROTATIONS IN KINESIOLOGY I. 1 Hour.

A primary objective of this course is to further your understanding of lab work in Kinesiology. A second objective is to enhance your ability for critical thinking in Kinesiology through the scientific process. This includes formation of a research question, hypothesis, designing an experiment, and inferring conclusions from data. Secondary objectives include improving technology skills to assist collecting and analyzing data, and writing and oral communication skills for demonstrating understanding of the kinesiology principles. Prerequisite: Consent of faculty.

KINE 6106. LABORATORY TECHNIQUE ROTATIONS IN KINESIOLOGY II. 1 Hour.

A primary objective of this course is to further your understanding of lab work in Kinesiology. A second objective is to enhance your ability for critical thinking in Kinesiology through the scientific process. This includes formation of a research question, hypothesis, designing an experiment, and inferring conclusions from data. Secondary objectives include improving technology skills to assist collecting and analyzing data, and writing and oral communication skills for demonstrating understanding of the kinesiology principles. This section must occur in a different laboratory than KINE 6105. Prerequisite: KINE 6105 and consent of faculty.

KINE 6126. JOURNAL CLUB IN EX PHYSIOL. 1 Hour.

This course is designed to provide doctoral students an opportunity to learn the art of critically reading and interpreting research articles. There will be emphasis on identifying strengths and weakness of research studies. There will also be an opportunity for the students to present their research study ideas and/or their preliminary findings of their research to the class. This will provide an opportunity for students to interact and receive/provide feedback regarding methodological approaches and interpretation of findings. Lastly, the student will learn how to prepare and deliver presentations to an audience. Prerequisite: Instructor Approval.

KINE 6194. RESEARCH IN KINESIOLOGY. 1 Hour.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of Instructor.

KINE 6293. GRANT WRITING. 2 Hours.

Students will learn strategies associated with grant applications. Students will prepare an individual proposal associated with a research grant application. Although submission for funding (e.g., pre-doctoral fellowship) is not required for the course, students will develop and complete a grant application.

KINE 6294. RESEARCH IN KINESIOLOGY. 2 Hours.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of the instructor.

KINE 6320. ADVANCED PHYSIOLOGY OF EXERCISE. 3 Hours.

Lecture and laboratory sessions are designed to investigate concepts of energy metabolism, lactate production and accumulation, energy expenditure, excess post exercise oxygen consumption, cardiovascular and temperature regulation, neuromuscular control, aerobic and anaerobic adaptations and ergonomics. *Doctoral students will be required to complete an additional research related topic. Prerequisite: Instructor Approval.

KINE 6322. METABOLISM & EXERCISE BIOCHEMISTRY. 3 Hours.

This course will address the regulation of exercise metabolism as well as the distinct biochemical pathways through which energy transduction occurs. This will allow the student to appreciate not only the end result of metabolism, ultimately the production and maintenance of cellular ATP levels, but also the pathways that biological machines use to achieve ATP homeostasis. Calorimetry, respiratory exchange ratio, and substrate utilization during exercise will be assessed as part of the laboratory section of this course. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6323. MOTOR CONTROL AND LEARNING. 3 Hours.

This course advances on fundamental concepts of motor behavior and performance combining theoretical principles to a variety of realistic contexts to provide the basis of skilled behavior. Contemporary research in human motor behavior models is used to identify effective solutions to practical problems and to spark ideas for optimizing development, learning, and control of motor skills. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6326. CARDIOCIRCULATORY PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of the cardiovascular and circulatory system will be studied, as well as, cardiac control, the cardiac cycle, cardiac output, hemodynamics, vascular resistance, arterial-venous oxygen difference and oxygen delivery and consumption. Heat production and thermal control during exercise will also be addressed in lecture and laboratory sessions. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6327. PULMONARY PHYSIOLOGY OF EXERCISE. 3 Hours.

Examines the structure and function of the pulmonary system including mechanics of breathing, lung capacity tests, pulmonary circulation, lung diseases, gas exchange, ventilation, diffusing capacity, acid/base balance, neural and chemical regulation of breathing, and blood flow with respect to rest and exercise values in healthy and diseased populations. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6328. NEUROMUSCULAR PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of muscle, including the motor unit, control and integration, central and peripheral modifiers of neuromuscular control and biochemical characteristics of fibers will be studied. These concepts will also be applied to concepts in strength and power development. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6330. ENVIRONMENTAL PHYSIOLOGY OF EXERCISE. 3 Hours.

This course will address the impact of environmental stress (e.g., thermal, gravitational, microgravity, etc.) on the cardiovascular system. Related focus will be given to cardiac function, blood pressure regulation and thermoregulation. Topics will be addressed in lecture and laboratory sessions. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6338. EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS. 3 Hours.

This course will discuss the pathophysiology of cardiovascular, metabolic and pulmonary diseases. Methods of exercise prescription and issues of concern will also be presented for these populations, as well as, low back pain, pregnancy, osteoporosis, cancer, children, older adults, fibromyalgia, multiple sclerosis, and cardiac disease. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5338 and KINE 6338. Prerequisite: Instructor Approval.

KINE 6350. APPLIED BIOMECHANICS. 3 Hours.

Application of Newtonian mechanics to human movement analysis. Biomechanical models using three-dimensional video and force plate data will be used to analyze human movement. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6360. FUNDAMENTAL PRINCIPLES OF INTEGRATIVE PHYSIOLOGY. 3 Hours.

This course is designed to provide a fundamental understanding of human physiology. Physiological function is a complex process that involves a complex interaction among the various physiological systems. As such there will be an emphasis on the integration of cellular, cardiovascular, renal, autonomic, respiratory, and endocrine physiology. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6362. PRINCIPLES OF MOVEMENT NEUROSCIENCE. 3 Hours.

This course focuses on principles of movement that have emerged from the computational study of motor control. The principles and application to processes such as motor planning, control, estimation, prediction and learning are explored. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5362 and KINE 6362.

KINE 6363. CONDITIONS OF THE MOTOR SYSTEM IN CHILDHOOD. 3 Hours.

This course explores a prevalent dysfunction of the motor system in childhood, known as Developmental Coordination Disorder (DCD). This class explores potential causes of DCD, common mechanisms and impairments, intervention methods and their effectiveness, and associated co-morbidities. In addition, students will understand the current state of research in the field and understand future avenues for research. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5363 and KINE 6363.

KINE 6364. CURRENT PERSPECTIVES IN MOTOR LEARNING AND CONTROL. 3 Hours.

This course explores five aspects of the new directions in research in the Motor Learning and Control field: Perception-Action mechanisms, Dynamical systems, Motor disorders, Learning and intervention for motor behavior, and neural mechanisms. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5364 and KINE 6364.

KINE 6365. ADVANCED MOTOR DEVELOPMENT. 3 Hours.

This course explores the current field of research in Motor Development applied to typical and special populations. More specifically, it discusses issues related to motor skill learning in childhood, the development of motor control, the relationship between motor competence and general health, and how lack of appropriate motor skills affect several domains of development (Developmental Coordination Disorder). To that, we use current research articles that discuss each one of these topics from different perspectives. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5365 and KINE 6365.

KINE 6389. RESEARCH MANUSCRIPT SUBMISSION. 3 Hours.

The student will collect scientific data in the Physiology of Exercise laboratories or in a work-related environment under the supervision of a faculty member. The student will analyze the data, write a manuscript, and submit a manuscript for publication in a peer-reviewed journal. This course must be taken in the final semester of graduate work and requires approval of the Graduate Advisor. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6394. RESEARCH IN KINESIOLOGY. 3 Hours.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of the instructor.

KINE 6399. DISSERTATION. 3 Hours.

Preparation and submission of a doctoral dissertation in an area of kinesiology. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Kinesiology.

KINE 6694. RESEARCH IN KINESIOLOGY. 6 Hours.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of the instructor.

KINE 6699. DISSERTATION. 6 Hours.

Preparation and submission of a doctoral dissertation in an area of kinesiology. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Kinesiology.

KINE 6999. DISSERTATION. 9 Hours.

Preparation and submission of a doctoral dissertation in an area of kinesiology. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Kinesiology.

KINE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Kinesiology - Graduate Programs

Master of Science in Athletic Training - Mission and Goals

PROGRAM MISSION

The Master of Science in Athletic Training Program at the University of Texas at Arlington is committed to providing educational advancement and excellence to students pursuing a career in athletic training. The program emphasizes critical inquiry, scientific theory, skill acquisition and application, and professional behaviors that advance health and the human condition across diverse populations of patients. Faculty and preceptor mentoring produce graduates that are competent, creative, and caring clinicians who enhance best-practice patient-centered healthcare, exercise sound judgement, and value lifelong learning.

The Master of Science in Athletic Training (MSAT) is guided by program goals and student outcomes:

Program Goal #1

Provide didactic and clinical educational experiences that provide students with the knowledge, skills, and abilities needed to practice in a variety of practice settings and with a diverse population of patients.

- 1.1: Provide quality didactic education that incorporates the knowledge, skills, and abilities needed to practice as an athletic trainer.
- 1.2: Provide quality clinical education that supports students' development of the knowledge, skills, and abilities needed to practice as an athletic trainer.
- 1.3: Provide clinical learning environments that support student development.
- 1.4: Students will gain experiences in a variety of practice settings.
- 1.5: Students will engage in patient encounters with a diverse population of patients, including: throughout the lifespan, of different sexes, with different socioeconomic statuses, of varying levels of activity & athletic ability, who participate in nonsport activities.

Program Goal #2

Recruit, admit, retain, and graduate individuals who meet or exceed the MSAT admissions standards and are committed to a career in athletic training.

- 2.1: Entering students' GPA will meet or exceed the requirement each year.
- 2.2: Students will progress through the MSAT according to the curricular plan.
- 2.3: Graduates will pursue careers in athletic training.

Program Goal #3

Faculty will continually develop contemporary expertise in routine areas of athletic training and will engage in scholarship.

- 3.1: Faculty will develop and maintain contemporary expertise in areas of athletic training practice.
- 3.2: Faculty will engage in scholarship as defined by Boyer's model of scholarship.

Student Outcome #1

Students will demonstrate the knowledge, skills, clinical abilities and professional behaviors needed to practice with diverse populations of patients.

- 1.1: Students will demonstrate increased ability to engage in critical inquiry throughout the program.
- 1.2: Students will demonstrate competence in scientific theory and other knowledge required of entry-level athletic trainers.
- 1.3: Students will demonstrate competence in the acquisition and application of clinical skills.
- 1.4: Students will demonstrate appropriate professional behaviors according to the NATA Code of Ethics and BOC Standards of Professional Practice.
- 1.5: Students will demonstrate the ability to serve patients with quality care regardless of socioeconomic background, gender, age, ethnicity, race, religion, sexual orientation, or gender identity.

Student Outcome #2

Students and graduates will become competent clinicians who enhance best-practice healthcare, exercise sound judgement, and value lifelong learning.

2.1: Graduates will demonstrate competence and the ability to engage in best practices and exercise sound clinical judgement.

2.2: Students will progressively demonstrate competence and the ability to engage in best practices and exercise sound clinical judgement throughout the program.

2.3: Alumni will demonstrate a value for lifelong learning.

Student Outcome #3

Students and graduates will become creative, caring clinicians who engage in patient-centered healthcare.

3.1: Students will demonstrate creativity in clinical practice.

3.2: Students will display a caring demeanor in their clinical practice.

3.3: Graduates will display a caring demeanor in their clinical practice.

3.4: Students will demonstrate patient-centeredness in their clinical practice.

3.5: Graduates will demonstrate patient-centeredness in their clinical practice.

For specific information regarding the Master of Science in Athletic Training in the Department of Kinesiology, please contact us at 817.272.6735 or by email at msat@uta.edu.

Master of Science in Exercise Science - Objective

The Kinesiology Department's Master's of Science Program provides students with advanced level training in Exercise Science. Students will interact with world-renowned faculty at the forefront of research and discovery, to accomplish three distinct objectives:

1. Provide students with the academic and research skills needed for doctoral study in integrative and applied physiology, movement and rehabilitation sciences, or physical education.
2. Prepare students for employment in clinically oriented environments, associated with physical activity and rehabilitation such as cardiac rehabilitation, strength and conditioning, or sports medicine.
3. Enhance the theoretical background and skills of students seeking employment in Physical and Health Education.

Students can choose to (1) work directly with a faculty member to complete a manuscript project or a thesis OR (2) complete an internship during the final semester in a clinical environment.

For specific information regarding the Master of Science in Exercise Science in the Department of Kinesiology, please contact us at 817.272.3288 or by email at PhDKine@uta.edu.

Master of Public Health

Program Mission

Educate future public health professionals so they may improve the health of urban and underserved communities locally, nationally, and globally by addressing health determinants and applying core public health functions.

Values of the UTA Public Health

- Health Equity
- Opportunity for Health is a Human Right
- Diversity and Inclusion
- Engagement
- Student Success
- Community Voice

Objective of the Master of Public Health Degree

The Master of Public Health (MPH) degree is a 42-credit hour, professional master degree program designed to prepare graduates to work in public health career fields. Public health training in the core public health disciplines offer foundational public health knowledge necessary to assess, implement interventions, and evaluate the health of a population with an organization or community. Additional core courses build on the foundation to cultivate practice-based skill sets readily applied to the public health setting. The MPH degree may complement students' current job skills, or provide students with new public health knowledge and career opportunities. Coursework will emphasize prevention, interdisciplinary approaches, applied skills, and social justice.

The MPH curriculum has been designed to meet current needs in the field of public health, Council on Education for Public Health (CEPH) accreditation criteria, and the College's mission, goals and objectives.

The MPH degree offers the following concentrations:

Urban Health

The Urban Health concentration trains students to meet the demand of multi-faceted public health issues facing urban communities, and address health inequities arising from racial, ethnic and socioeconomic health disparities. Concentration coursework represents a variety of disciplines and technical skillsets integral in promoting health in urban settings, including courses focused on advocacy, policy and social justice. Graduates will be equipped to advocate for policies to address health needs in urban communities, as well as apply skills to conduct health needs assessments, program implementation, and program evaluation.

The Urban Health concentration prepares graduates to work in a wide range of settings, including:

- Health care systems
- Public health agencies on local, state, national and international levels
- Nonprofit health organizations
- Research organizations
- Advocacy organizations

Epidemiology

The Epidemiology concentration prepares students with the skills and knowledge required to work as epidemiologists or in related jobs. Graduates will be prepared to monitor the trends of chronic and infectious disease in populations, as well as investigate infectious disease outbreaks, while considering how to prevent disease or stop its spread. Concentration coursework includes training in chronic disease epidemiology, infectious disease epidemiology, social epidemiology, and large data set analysis for epidemiology.

The Epidemiology concentration prepares graduates to work in many public health settings such as:

- Local and state health departments
- Federal agencies like Centers for Disease Control and Prevention
- Hospitals
- Research centers
- Infection control
- Laboratories
- Food safety
- Health data analysis
- Non-governmental and non-profit organizations
- Global health

For specific information regarding Public Health studies in the Department of Kinesiology, please contact us at 817.272.1890 or by e-mail at publichealth@uta.edu.

Doctor of Philosophy in Kinesiology

The Doctor of Philosophy in Kinesiology prepares students to be scholarly researchers who generate new knowledge in the field of Kinesiology, with the skills to apply existing scholarship to questions concerning the prevention, assessment, and treatment of motor difficulties, chronic diseases, and musculoskeletal injuries.

The program's interprofessional and multidisciplinary curriculum, as well as research focus, incorporates basic and clinical science approaches to identify disease markers and mechanisms, as well as evidence-based interventions designed to prevent and treat specific health conditions such as chronic illnesses and injuries in vulnerable and at-risk populations comprised of obese, older, and/or minority persons. This program builds and extends the Department of Kinesiology's existing research, education, and community outreach initiatives in health and the human condition across the lifespan. Students will work with their advisor to design an individualized program of study to meet their research interests and career goals.

For specific information regarding the Doctor of Philosophy in Kinesiology in the Department of Kinesiology, please contact us at 817.272.3288 or by email at PhDKine@uta.edu.

Admission Requirements for M.S. in Athletic Training

Application instructions and materials can be found on the UT Arlington MSAT website.

UNCONDITIONAL ADMISSION

- Earned Bachelor's degree, with an undergraduate cumulative GPA of 3.0, or a 3.0 GPA during the last 60 hours of undergraduate course work.
- GRE score report (Preferred scores: Verbal = 150; Quantitative = 141*UT Arlington graduates who have an undergraduate GPA of 3.0 (or higher), in the last 60 credit hours as calculated by Graduate Admissions, a 3.0 cumulative GPA, AND a 3.0 in all upper division work are eligible for a GRE waiver. *(only applies to UT Arlington graduates)*.)
- 50 hours of observation with an athletic trainer (LAT and/or ATC credential)
- Meet program technical standards for admission
- Measles, Mumps and Rubella (MMR) vaccination
- Hepatitis B vaccination (three doses)
- International students are required to receive tuberculosis screening and this must be performed at the UTA Student Health Center or another U.S. facility
- International applicants must meet the University's English language test score requirements for graduate admission.
- Required prerequisite courses *Prerequisite courses must have been completed with a grade of "C" or better and within the last 10 years.

o Anatomy and Physiology I

o Anatomy and Physiology II

o Functional Anatomy (must be upper division and may also be titled Applied Kinesiology, Kinesiology, or Biomechanics)

o Physiology of Exercise

o Nutrition

o Psychology

o Statistics or Research Design

o Biology (lecture and lab)

o Physics (lecture and lab; will accept PHYS 3360 from UTA students)

o Chemistry (lecture and lab)

- Preferred Prerequisite Courses

o Medical Terminology

o Care and Prevention of Athletic Injuries

PROBATIONARY ADMISSION

Applicants failing to meet the unconditional admission criteria may be considered for probationary admission with documented previous relevant experience and recommendations describing potential for exceptional personal and professional growth. Students who are admitted on a probationary status will be limited in their clinical experience time, will be required to meet with the MSAT faculty to develop a success plan, and must complete their first term with a 3.0 GPA.

START DATE

Each new cohort begins the MSAT program summer (typically the first Monday in June). In addition, an in-service is typically held 1-3 days prior to the start date.

RETENTION CRITERIA

MSAT students' academic and clinical progress will be closely monitored each semester by the MSAT Program Director and Coordinator of Clinical Education. To remain in the MSAT program, students must:

Complete each course with a grade of "C" or better.

Maintain a 3.0 cumulative GPA

Adhere to documents which outline professional behaviors, including but not limited to the MSAT Student Handbook, the BOC Standards of Professional Practice, the NATA Code of Ethics, and course syllabi.

TRANSFER POLICY

No transfer credit will be awarded for MSAT courses.

CRIMINAL BACKGROUND CHECK

All students accepted for admission into the MSAT will be required to complete a criminal background check. Students who have a criminal record are encouraged to meet with the MSAT Program Director to discuss how this may affect their ability to become credentialed as an athletic trainer.

Degree Requirements for M.S. in Athletic Training

All students accepted into the Master of Science in Athletic Training Program will complete 57 hours of coursework.

REQUIRED COURSEWORK

The following courses will be required for completion of the MSAT degree program.

Prefix and Number Required Courses SCH

KINE 5230	FOUNDATIONS OF ORTHOPEDIC ASSESSMENT AND THERAPEUTIC INTERVENTIONS	2
KINE 5120	ATHLETIC TRAINING CLINICAL I	1
KINE 5231	FUNDAMENTALS OF ATHLETIC TRAINING I	2
KINE 5353	LOWER EXTREMITY ASSESSMENT AND REHABILITATION	3
KINE 5232	FUNDAMENTALS OF ATHLETIC TRAINING II	2
KINE 5355	PATHOPHYSIOLOGY & PHARMACOLOGY II	3
KINE 5354	UPPER EXTREMITY ASSESSMENT AND REHABILITATION	3
KINE 5233	THERAPEUTIC MODALITIES	2
KINE 5348	PATHOPHYSIOLOGY AND PHARMACOLOGY I	3
KINE 5221	CLINICAL ATHLETIC TRAINING II	2
KINE 5222	CLINICAL ATHLETIC TRAINING III	2
KINE 5223	CLINICAL ATHLETIC TRAINING IV	2
KINE 5333	HEALTH CARE ADMINISTRATION	3
KINE 5227	LITERATURE AND RESEARCH FOR THE ATHLETIC TRAINER	2
KINE 5224	CLINICAL ATHLETIC TRAINING V	2
KINE 5228	SEMINAR IN ATHLETIC TRAINING	2
KINE 5344	SCHOLARSHIP IN ATHLETIC TRAINING PRACTICE	3
KINE 5225	CLINICAL ATHLETIC TRAINING VI	2
KINE 5229	FUNCTIONAL ANATOMY AND BIOMECHANICS FOR THE ATHLETIC TRAINER	2
KINE 5356	HEAD AND SPINE ASSESSMENT AND REHABILITATION	3
KINE 5341	ADVANCED IMMEDIATE AND EMERGENCY CARE	3
KINE 5234	CLINICAL REASONING AND DECISION MAKING	2
KINE 5235	ADVANCED FUNCTIONAL ASSESSMENT AND CORRECTIVE EXERCISE	2
KINE 5128	CLINICAL DIAGNOSTIC PROCEDURES	1
KINE 5357	PREVENTATIVE MEDICINE AND POPULATION HEALTH	3
Total Hours		57

Admission Requirements for M.S. in Exercise Science

Admissions Standards for Master's Degree in Exercise Science (Note – Meeting these minimum standards does not guarantee acceptance into the program).

1. Undergraduate degree from a U.S. accredited institution or an equivalent foreign institution.
2. GPA of 3.0 or above during the last 60 hours of undergraduate work or in any previous graduate program.
3. GRE Quantitative score of 144 (500 on old scale) and Verbal score of 153 (500 on old scale). Additionally, satisfactory Writing scores are required. If scores are below these standards the application will still be considered as the Department takes all components of the application into consideration.

4. A minimum score of 550 on the paper-based TOEFL, a minimum score of 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section.
5. All Master's students are originally accepted as "Non-thesis track".
6. Contact information for references is not required but may be asked for if additional information is needed.

Probationary Admission

Applicants failing to meet the above admission criteria may be considered for **probationary admission** in which case the following additional criteria will also be considered by the Graduate Studies Committee:

- Professionally relevant experience
- Additional writing samples and/or information may be requested
- Applicants admitted on probation will be required to maintain a B or better average during their first 12 hours of graduate study.

A graduate advisor within the Department of Kinesiology will review transcripts of prospective students to determine what prerequisites are needed prior to enrollment in courses within the proposed program. If deficiencies are identified, a pre-program of study designed to prepare the student for graduate course prerequisites will be written and signed by the prospective student and the graduate advisor.

Waiver of the Graduate Record Examination

Upon recommendation of the Graduate Advisor, outstanding UT Arlington graduates with a degree in Kinesiology or related fields (such as Biology, Chemistry, Mathematics, Computer Science, or Engineering) may qualify for a waiver of the requirements for the Graduate Record Examination (GRE). To qualify, the applicant must meet the following minimum requirements:

1. The student must have graduated from a commensurate bachelor's degree program at UT Arlington no more than three academic years prior to admission to the graduate program (as measured from the start of the semester for which admission is sought). A commensurate bachelor's degree program is one that is a normal feeder program for the master's degree program to which the student seeks admission. Undergraduate students in their final year of study are also eligible; in such cases, admission with the GRE waiver is contingent upon successful completion of the bachelor's degree.
2. The student's UT Arlington grade-point average must equal or exceed 3.0 in the following calculations:
 - as calculated for admission by the Office of Graduate Studies;
 - overall;
 - in the major field; and
 - in all upper-division work.

Applicants qualifying for waiver of GRE who do not qualify for advanced admission, must comply with all other requirements for admission, i.e., submitting the application for admission, paying fees, providing official transcripts from other institutions, and meeting any requirements established by the admitting graduate program. The GRE waiver must be recommended by the Graduate Advisor at the time of admission.

Graduate Assistantships for M.S. Students in Exercise Science

The Department of Kinesiology and faculty offers financial assistance to M.S. students. Assistantships are contingent upon prior acceptance to the Graduate School and are limited and thus offered on a competitive basis. Graduate Assistant applicant evaluation begins on January 1 and continues until all positions are filled. Please direct all inquiries to the graduate program director Dr. R. Matthew Brothers at matthew.brothers@uta.edu.

Degree Requirements for M.S. in Exercise Science

All students are required to complete 36 hours for the master's degree. All students accepted into the Master of Science in Exercise Science will take a core of 15-semester hours of required KINE courses. In addition, all students are required to complete one of the following in their last semester; KINE 5389: Research Manuscript Submission, KINE 5689: Thesis, or KINE 5389 Physiology of Exercise Internship. The remaining required hours will be completed through various course electives.

All M.S. students are initially accepted on the non-thesis track. The student's academic advisor within the Department of Kinesiology will review transcripts of prospective students to determine what prerequisites are needed prior to enrollment in courses within the proposed program. If deficiencies are identified, a pre-program of study designed to prepare the student for graduate course prerequisites will be written and signed by the prospective student and the student's graduate advisor.

Required Coursework

KINE 5300	RESEARCH METHODS IN KINESIOLOGY	3
KINE 5305	APPLIED STATISTICAL PRINCIPLES IN KINESIOLOGY	3
KINE 5320	ADVANCED PHYSIOLOGY OF EXERCISE	3

KINE 5350	APPLIED BIOMECHANICS	
KINE 5323	MOTOR CONTROL AND LEARNING	3
KINE 5389	RESEARCH MANUSCRIPT SUBMISSION	3-6
or KINE 5698	THESIS	
or KINE 5393	PHYSIOLOGY OF EXERCISE INTERNSHIP	
Elective Coursework		
Select five to six of the following (based on thesis/non-thesis, or physiology of exercise internship track):		18-21
KINE 5322	METABOLISM & EXERCISE BIOCHEMISTRY	
KINE 5326	CARDIOCIRCULATORY PHYSIOLOGY OF EXERCISE	
KINE 5327	PULMONARY PHYSIOLOGY OF EXERCISE	
KINE 5328	NEUROMUSCULAR PHYSIOLOGY OF EXERCISE	
KINE 5329	STRENGTH & CONDITIONING IN SPORT AND PERFORMANCE	
KINE 5331	OBESITY & WEIGHT MANAGEMENT	
KINE 5345	SPORT NUTRITION	
KINE 5360	FUNDAMENTAL PRINCIPLES OF INTEGRATIVE PHYSIOLOGY	3
KINE 5390	SPECIAL TOPICS IN KINESIOLOGY	
KINE 5393	PHYSIOLOGY OF EXERCISE INTERNSHIP	
KINE 5394	RESEARCH IN KINESIOLOGY	
KINE 5340	ENVIRONMENTAL PHYSIOLOGY	3
Total Hours		39-45

Coursework that is more than six years old at the time of graduation or teacher/administrator certification program completion cannot be used toward meeting the requirements for a master's degree or graduate-level certification. Master's degree and graduate-level certification programs must be completed within six years (time in military service excluded) from initial registration in the Graduate School. Appropriate state exams and application to the State Board for Educator Certification for a standard certificate must be made within six months of completion of residency/practicum/program. If a candidate allows the six-month period to go by without passing all state exams and applying for certification, additional coursework and/or exams will be required.

Admission Requirements for Master of Public Health

Admission to the Master of Public Health degree is based on completion of general admission requirements of the Graduate School as specified under the Graduate School Admissions Requirements and Procedures in the Graduate Catalog.

Admission criteria include:

- Official transcripts showing an earned bachelor's degree from an accredited school, with a 3.0 or higher grade point average for the last 60 undergraduate or the last 18 graduate/post-baccalaureate credit hours completed.
- Official Graduate Record Examination (GRE) scores taken within the last five years are required of all applicants. Preference will be given to applicants with verbal, quantitative and analytic writing scores above the 50th percentile.

Applicants may request a waiver of the GRE requirement if they meet any of the following criteria:

- Hold a graduate or terminal degree from an accredited U.S. university.
- Completed a UTA Graduate Certificate in Public Health Practice and/or a UTA Bachelor of Science in Public Health degree with a minimum cumulative GPA of 3.0 and no less than a grade of "B" in any required public health course.
- At least 5 years of full-time professional experience in a public health field.

An approved GRE waiver does not guarantee admission into the degree program. To apply for a GRE waiver, applicants should submit the following items via email to the Public Health Graduate Advisor:

- Completed GRE Waiver Application
- Scanned copies of all college or university transcripts (official or unofficial transcripts)
- Current resume or CV
- A one-page personal statement written in English describing the applicant's interest in earning an MPH degree and potential for contributing to public health, as well as the applicant's career objectives, self-assessment of abilities and preparation for succeeding in a public health graduate program. The quality of written expression in the applicant's personal statement will be considered.
- An applicant whose native language is other than English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies as defined under Admissions Requirements and Procedures in the Graduate Catalog.

- Three letters of recommendation from academic or professional references.
- The applicant's resume or CV, highlighting professional experience such as accomplishments, linguistic abilities, computer expertise, and analytics expertise.

PROBATIONARY ADMISSION

For an applicant who does not meet all admission criteria but shows promise for completing a graduate program based on some admission criteria, in rare cases probationary admission may be granted. Students on probationary admission conditions specified by the Public Health Graduate Advisor.

PROVISIONAL, DEFERRED AND DENIED ADMISSION

Provisional, deferred and denied admission decisions meet the criteria as defined under Admission Requirements and Procedures in the Graduate Catalog.

Degree Requirements for the Master of Public Health

Degree Requirements

The Master of Public Health is a degree program consisting of 42 credit hours to include required core courses in the following areas:

Biostatistics

KINE 5376 Introduction to Biostatistics

OR

KINE 5305 Applied Statistical Principles in Kinesiology

Epidemiology

KINE 5372 Introduction to Epidemiology

Health Policy and Health Management

KINE 5377 Introduction to Health Systems and Policy

Social and Behavioral Health

KINE 5375 Community and Behavioral Health

Health Communications

KINE 5385 Communication and Health

OR

COMM 5385 Seminar in Health Communication

Core Functions of Public Health

KINE 5378 Foundations of Public Health

Culminating Practice Experience

KINE 5383 Community Based Internship

KINE 5384 Capstone Experience

Students have five years to complete the program.

Foundation Requirements - No previous specific coursework is required.

Transfer Credit - Students may transfer three courses (9 SCH) into the MPH program from an accredited school, if approved by the Public Health Graduate Advisor. The course must have been completed at the graduate level at an accredited university, with a grade of "B" or above, and be determined to be equivalent to the course offered at UTA. The course should not have been used for another degree or certificate program. Determination of course equivalency will be made by the course instructor on a case-by-case basis.

In addition to the courses required for all concentrations, students enrolling in the Urban Health concentration will take the following concentration courses:

KINE 5380 Urban Community Health Assessment
KINE 5374 Race, Ethnicity, and Health in the U.S.
KINE 5371 Introduction to Program Planning and Evaluation
SOCW 5343 Health Policy and Social Justice

In addition, MPH students will select two electives from the following courses:

KINE 5379 Fundamentals of Population Health
KINE 5373 Introduction to Environmental and Occupational Health
KINE 5370 Global Health
KINE 5385 Chronic Disease Epidemiology
KINE 5386 Big Data for Epidemiology
KINE 5381 Social Epidemiology
KINE 5387 Infectious Disease Epidemiology
SOCW 5345 Critical Issues in Health Equity
SOCW 5353 Mental Health Policy and Social Justice
NURS 5366 Principles of Research in Nursing
PAPP 5345 Evaluation Research
PAPP 5329 Financial Management in the Public and Non-Profit Sectors
PAPP 5309 Local Politics in the Intergovernmental Setting
PAPP 5311 Public Policy Formation and Analysis
PAPP 5324 Urban Public Finance
PAPP 5367 Strategic Public and Non-Profit Human Resource Management
COMM 5306 Qualitative Research Methods
PAPP 5352 Conflict Resolution
MANA 5330 Negotiations and Conflict Management
HCAD 5350 Health Care Information Systems
HCAD 5333 Economics of Health

Admission Standards for Doctor of Philosophy in Kinesiology

Faculty Sponsorship

Please note that all PhD students (regardless of Bachelors – Ph.D. or Masters to Ph.D.) **must** be accepted by a faculty member based on faculty research/mentoring alignment in order to be accepted into the program: <https://www.uta.edu/conhi/academics/kinesiology/phd-kinesiology/faculty.php>

Admissions Standards

Please make sure to follow the admissions standards that applies to your degree option.

Masters to Ph.D. option:

1. Master's degree from a US accredited institution or an equivalent foreign institution.

2.GPA of 3.25 on all graduate work.

3.GRE Quantitative score of 150 and Verbal score of 150. Additionally, satisfactory Writing scores are required. If scores are below these standards the application will still be considered as the Department takes all components of the application into consideration.

4.A minimum score of 550 on the paper-based TOEFL, a minimum score of 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section.

5.A resume or CV of the applicant (maximum of 2 pages). This should highlight the educational background of the applicant, work / volunteer history, awards, research experience etc.

6.A Statement of Purpose (maximum of 2 pages). This should highlight the previous achievements and experiences of the applicant that have led to the decision to consider a Doctoral graduate degree in Kinesiology as well as the previous achievements that would qualify the applicant for admission into the Kinesiology Doctoral Program. The statement should also include future career goals following obtaining a Doctoral degree in Kinesiology.

7.Three (3) letters of reference. The Department accepts letters through email and/or postal mail.

§Recommendation Form (PDF)

§Email: Reviewers can email recommendations directly to Dr. Matthew Brothers (matthew.brothers@uta.edu).

§Postal Mail: Reviewers should directly mail physical forms to the address specified at the bottom of this page. We suggest that prospective students provide their reviewers with the form and a stamped envelope with the correct address as a convenience to their reviewers.

Bachelors to Ph.D. Option:

1.Undergraduate degree from a US accredited institution or an equivalent foreign institution.

2.GPA of 3.5 and/or 3.5 GPA during the last 60 hours of undergraduate work.

3.3.5 GPA on all Kinesiology-related work.

4.GRE Quantitative score of 150 and Verbal score of 150. Additionally, satisfactory Writing scores are required. If scores are below these standards the application will still be considered as the Department takes all components of the application into consideration.

5.A minimum score of 550 on the paper-based TOEFL, a minimum score of 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section.

6.A resume or CV of the applicant (maximum of 2 pages). This should highlight the educational background of the applicant, work / volunteer history, awards, research experience etc.

7.A Statement of Purpose (maximum of 2 pages). This should highlight the previous achievements and experiences of the applicant that have led to the decision to consider a Doctoral graduate degree in Kinesiology as well as the previous achievements that would qualify the applicant for admission into the Kinesiology Doctoral Program. The statement should also include future career goals following obtaining a Doctoral degree in Kinesiology.

8.Three (3) letters of reference. The Department accepts letters through email and/or postal mail.

- Recommendation Form (PDF)
- Email: Reviewers can email recommendations directly to Dr. Matthew Brothers (matthew.brothers@uta.edu).
- Postal Mail: Reviewers should directly mail physical forms to the address specified at the bottom of this page. We suggest that prospective students provide their reviewers with the form and a stamped envelope with the correct address as a convenience to their reviewers.

Address for Letters of Reference

All letters of reference should be mailed to the following address:

Dr. R. Matthew Brothers
Associate Chair for Graduate Programs in Exercise Science and Kinesiology
Department of Kinesiology
P.O. Box 19259
University of Texas at Arlington
500 W. Nedderman Drive
Arlington, TX 76019-0259

Addresses for Transcripts and GRE Scores

Transcripts and GRE scores should be sent directly to the Office of Graduate Admissions using the appropriate address below.

U.S. Postal Mail for Graduate Admissions

Graduate Admissions
Box 19167
Arlington, TX 76019

Courier Service Address for Graduate Admissions - UPS, FedEx, DHL, etc.

Graduate Admissions
701 S. Nedderman Dr.
University Administration Building Room B17
Arlington, TX 76019

Degree Requirements for Doctor of Philosophy Degree in Kinesiology

The degree requirements differ slightly depending on if a student enters the B.S. to Ph.D. program or the M.S. to Ph.D. program.

- *B.S. – Ph.D. program:* Requires 18 required course credit hours, 42 credit hours (minimum) of track electives, and 9 – 12 credit hours of dissertation (69 total credit hours minimum).
- *M.S. – Ph.D. program:* Requires 11 required course credit hours, 22 credit hours (minimum) of track electives, and 9 – 12 credit hours of dissertation (69 total credit hours minimum).

Required Courses (B.S. – Ph.D.)

KINE 6300 Research Methods

KINE 5305 Applied Statistics in Kinesiology, or KINE 5376 Introduction to Biostatistics

3 hours of advanced statistics **OR** Advanced Research Methods (course can be taken outside of the department).

KINE 6293 Grant Writing

KINE 6105 Laboratory Techniques in Kinesiology I

KINE 6106 Laboratory Techniques in Kinesiology II

KINE 6103 Professional Development

4 hours of KINE 6100 Seminar in Kinesiology (this is a 1 hour credit course that must be taken in a minimum of 4 different semesters).

Required Courses (M.S. – Ph.D.) KINE 5300 Research Methods

3 hours of advanced statistics **OR** Advanced Research Methods (course can be taken outside of the department).

KINE 6293 Grant Writing

KINE 6105 Laboratory Techniques in Kinesiology I

KINE 6103 Professional Development

4 hours of KINE 6100 Seminar in Kinesiology (this is a 1 hour credit course that must be taken in a minimum of 4 different semesters).

Electives for Either Track

KINE 6322 Metabolism & Exercise Biochemistry

KINE 6326 Cardiocirculatory Physiology of Exercise

KINE 6327 Pulmonary Physiology of Exercise

KINE 6340 Environmental Physiology of Exercise

KINE 6328 Neuromuscular Physiology of Exercise

KINE 5329 Strength & Conditioning

KINE 5331 Obesity and Weight Management

KINE 6338 Exercise Prescription for Special Populations

KINE 6350 Applied Biomechanics

KINE 6360 Fundamental Principles of Integrative Physiology

KINE 6393 Physiology of Exercise Internship

KINE 6394 Research in Kinesiology

Students in the B.S – Ph.D and the M.S. – Ph.D. tracks **MUST** complete 9 – 12 credit hours of dissertation

Individual graduate advisors / research mentors may require additional courses.

Doctor of Philosophy in Kinesiology – Dissertation Committees and Candidacy

The Dissertation requirement for the Ph.D. in Kinesiology includes two components:

1. A written Dissertation to include at least 2 manuscripts of quality and format that are submitted to a peer-reviewed scientific journal and
2. A successful oral defense of the Dissertation.

The Dissertation Committee is responsible for the evaluation of both the written dissertation and oral defense. The Committee must be comprised of a minimum of four members, including the Committee Chair who will be the student's primary faculty mentor. This Committee Chair must be a member of the Department of Kinesiology Graduate Studies Committee or have status on the Department of Kinesiology Graduate Studies Committee. The remaining Committee members must include at least one additional faculty member from the Department of Kinesiology. If the Committee Chair is not a full time member of the Department of Kinesiology Graduate Studies Committee the remaining Committee members must include at least two members from the Department of Kinesiology. In addition the Committee must include at least one member who is external to the Department of Kinesiology. The external member may include individuals not working within UT Arlington if applicable. All Committee members must hold a terminal degree in their field and/or demonstrate the required expertise and appropriate faculty status for serving on dissertation committees.

Comprehensive Examination

B.S. to Ph.D. students will become eligible for the comprehensive examination when they have completed 36 hours of their graduate work.

M.S. to Ph.D. students will become eligible for the comprehensive examination when they have completed 18 hours of their graduate work (at UT Arlington).

These completed course hours represent the minimum requirement; however, eligibility for the comprehensive examination will be dependent on approval from the Chair of the Dissertation Committee.

Successful completion of the comprehensive examination makes students eligible for PhD candidacy. Students must be enrolled in the semester they take the comprehensive examination.

The purpose of the comprehensive examination is to evaluate the extent to which students have acquired the basic principles / knowledge in pertinent coursework. The expectation will be that students will be able to apply, integrate, and synthesize their knowledge.

When students are eligible for the comprehensive examination, the student's graduate mentor/advisor will recommend the student for the examination to the Department of Kinesiology Graduate Studies Committee for approval.

Upon completion, the comprehensive examination committee will meet to discuss the merits of the student's examination. Comprehensive examinations will only be held in regular, long semesters.

The composition of the comprehensive examination committee will be decided by the Department of Kinesiology Graduate Academic Committee. This comprehensive examination committee will be comprised of at least one member of the Graduate Academic Committee and a minimum of 2 additional members with relevant content expertise.

Following completion of the examination the Committee may recommend any of the following outcomes:

1. Unconditional pass. With an unconditional pass, students become eligible for PhD candidacy and prepare for the defense of their dissertation proposal.
2. Pass with conditions. A pass with conditions requires that students perform each of the conditions satisfactorily in order to become eligible for PhD candidacy.
3. Unsatisfactory with opportunity to retake the examination. With this recommendation, the committee will specify when the retake will occur.
4. Unsatisfactory, do not continue in program.

If the outcome of the comprehensive examination is an unconditional pass, students immediately become eligible for PhD candidacy. If the outcome is a pass with conditions, students may only become eligible for candidacy when the examining committee determines that the student has successfully met the conditions stipulated by the committee.

Dissertation Proposal

Following successful completion of the oral examination the student will then need to draft a grant application to be written in the format of a National Institute of Health Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (F31) grant (<https://grants.nih.gov/grants/guide/pa-files/PA-16-309.html>). This grant application will describe the student's dissertation projects and will also serve as the student's dissertation proposal. The student will give an oral presentation of the research proposal outlined in the grant application to his/her dissertation committee. This proposal defense must occur within two long semesters following successful completion of the oral comprehensive examination.

GRADUATE CERTIFICATE IN PUBLIC HEALTH PRACTICE: MISSION AND OBJECTIVES

PROGRAM MISSION

The mission of the University of Texas at Arlington's graduate Public Health programs is to prepare students to become leading public health practitioners and advocates who serve communities and organizations, promote collaboration between public health and health care practitioners, and protect and advance community health through applying the core public health functions of assessment, policy development and assurance.

PROGRAM OBJECTIVES

Through completing the Graduate Certificate in Public Health Practice (GCPHP), students will:

1. Gain graduate-level introductory knowledge and accompanying foundational skill sets in the five core public health disciplines: Biostatistics, epidemiology, health systems and policy, environmental health, and social and behavioral health.
2. Be prepared to apply fundamental skills from each of the five core public health disciplines to complement current job skills, or gain new public health knowledge and career opportunities.
3. Be equipped to execute skills to assess, implement interventions, and evaluate the health of a population within their organizations or communities.

Admission Requirements for the Graduate Certificate in Public Health Practice

ADMISSION CRITERIA

Official transcripts showing an earned bachelor's degree from an accredited school, with a 3.0 or higher grade point average for the last 60 undergraduate or the last 18 graduate/post-baccalaureate credit hours completed.

- Only GPA will be considered for admission to the program. The Graduate Record Exam (GRE) or other standardized graduate school exam is not required for admission to the certificate program.

A one-page personal statement written in English describing the applicant's interest in and potential for contributing to public health, career objectives, and self-assessment of abilities and preparation for succeeding in a public health graduate program. The quality of written expression in the applicant's personal statement will be considered.

An applicant whose native language is other than English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies as defined under Admissions Requirements and Procedures in the Graduate Catalog.

The applicant's resume or CV, highlighting professional experience such as accomplishments, linguistic abilities, computer expertise, and analytics expertise.

PROBATIONARY ADMISSION

Applicants who fail to meet the admission criteria may be considered for probationary admission. Applicants admitted on a probationary basis must maintain a 3.0 GPA in the first two semesters of program enrollment.

PROVISIONAL, DEFERRED AND DENIED ADMISSION

Provisional, deferred and denied admission decisions meet the criteria as defined under Admission Requirements and Procedures in the UTA Graduate Catalog.

TRANSFER CREDIT

Students may transfer one course (3 SCH) into the GCPHP program. The course must have been completed at the graduate level at an accredited university, with a grade of "B" or above, and be determined to be equivalent to the course offered at UTA. The course should not have been used for another degree or certificate program. Determination of course equivalency will be made by the course instructor on a case-by-case basis.

Degree Requirements for the Graduate Certificate in Public Health Practice

The Graduate Certificate in Public Health Practice is a certificate program consisting of 15 credit hours to include one required 3-hour course in each of the five public health disciplines:

REQUIRED COURSEWORK

The following courses will be required for completion of the Graduate Certificate in Public Health Program. Students have three years to complete the program.

Biostatistics

KINE 5376 Introduction to Biostatistics

or

KINE 5305 Applied Statistical Principles in Kinesiology

Epidemiology

KINE 5372 Introduction to Epidemiology

Health Policy and Health Management

KINE 5377 Introduction to Health Systems and Policy

Environmental Health

KINE 5373 Introduction to Environmental and Occupational Health

Social and Behavioral Health

KINE 5375 Community and Behavioral Health

FOUNDATION REQUIREMENTS

No previous specific coursework is required.

Kinesiology - Undergraduate Programs

Overview

The Department of Kinesiology is committed to providing quality educational programs that emphasize scientific theory, hands-on learning in the laboratory setting and real-world application through clinical internships and other field-based experiences. The faculty's vast teaching experience and research expertise provide rich learning experiences across all of the department's academic programs.

The undergraduate studies within the Department of Kinesiology are organized into three areas: Bachelor of Arts in Kinesiology (Physical Education Teacher Education, Sports Leadership & Management), Bachelor of Science in Exercise Science (Clinical & Applied Physiology; Health, Fitness, & Wellness; and Motor & Rehabilitation Sciences), and Bachelor of Science in Public Health. Each of these academic programs share a common core of kinesiology courses that provide students with a strong foundation in the sciences of human anatomy, biomechanics, motor behavior, and exercise physiology, as well as an introduction to research methodology. In addition to the kinesiology core, each undergraduate degree plan provides a comprehensive discipline-specific program of study designed to prepare students for a specific career path.

The Department of Kinesiology offers multiple degree plan options that work towards meeting the prerequisite requirements for admission to physical therapy, occupational therapy, speech pathology, and physician's assistant graduate programs, as well as medical and dental schools.

The undergraduate program areas are listed below. Complete degree plans, descriptions, and course requirements are provided on subsequent pages.

Bachelor of Arts in Kinesiology

PHYSICAL EDUCATION TEACHER EDUCATION (PETE)

Bachelor of Arts in Physical Education Teacher Education (PETE) for individuals who wish to teach in the PK-12 setting.

SPORTS LEADERSHIP AND MANAGEMENT (SLAM)

The Bachelor of Arts in Kinesiology - Sports Leadership and Management (SLAM) programs prepare individuals for sport and physical activity program leadership in both the public and private settings such as coaching, youth sports, sport marketing, sport management, sport psychology, or sport sociology. There are two concentrations offered under the SLAM program. Coaching and Youth Sports; and Sports Leadership and Management.

BA MINOR IN COACHING AND YOUTH SPORTS

The minor consists of 18 hours, six of which must be upper level. A 2.5 grade point average must be maintained for a student to remain in the minor.

Bachelor of Science in Exercise Science

CLINICAL & APPLIED PHYSIOLOGY (CAP)

The Bachelor of Science in Exercise Science - Clinical & Applied Physiology (CAP) is designed for individuals who plan to pursue a graduate degree in the fields of physical therapy, physician assistant, and medical/dental schools, or athletic training, as well as careers and research in physiological sciences applied to exercise.

HEALTH, FITNESS, & WELLNESS (HFW)

The Bachelor of Science in Exercise Science - Health, Fitness, & Wellness is designed for individuals who wish to pursue a career in personal fitness training, strength and conditioning, cardiac rehabilitation, or other health and wellness related career paths..

MOTOR & REHABILITATION SCIENCES (MRS)

The Bachelor of Science in Exercise Science - Motor & Rehabilitation Sciences is designed for individuals who plan to pursue careers and research in pediatrics and special populations, biomechanics, motor behavior, and rehabilitation sciences, as well as graduate school programs in occupational therapy or speech & language pathology.

Bachelor of Science in Public Health

BACHELOR OF SCIENCE IN PUBLIC HEALTH (BSPH)

The Bachelor of Science in Public Health is designed to prepare individuals for career opportunities in areas such as community health education, project management, compliance in public sector capacities, environmental science and protection, non-profit organizations, and healthcare services and administration. The Bachelor of Science in Public Health (BSPH) degree consists of two program delivery options: A traditional Campus Based Program and an Accelerated Online Program (AO). The Accelerated Online Program is an online format developed by UT Arlington's Department of Kinesiology and College of Nursing and Health Innovation to serve students in Texas and beyond by offering a high quality, affordable, and convenient undergraduate public health degree program. The BSPH AO program is available to those students who have earned a minimum of 45 transfer-credit hours prior to enrollment.

PUBLIC HEALTH MINOR

The Department of Kinesiology offers a minor in public health. The minor consists of 18 credit hours. Students must complete at least nine hours toward the minor at UT Arlington. A 2.5 grade point average must be maintained for a student to remain in the minor.

Oral Communication Competencies

All students declared as majors in the Department of Kinesiology (with the exception of BSPH majors) are required to complete KINE 3325 UNDERGRADUATE RESEARCH METHODS. Embedded in this class is the task of orally presenting research findings as both a formal oral research presentation and also in support of posters presented during the Kinesiology Research Presentation Day. BS Public Health students are required to complete KINE 4352 SCIENCES & METHODS IN PUBLIC HEALTH.

Computer Use Competencies

All students declared as majors in the Department of Kinesiology (with the exception of BSPH majors) are required to pass the University computer competency exam or complete KINE 1100 early in their specialization. Embedded in this class are tasks requiring familiarity with the word processor, spreadsheet and Internet browsing programs common on personal computers. BS Public Health students are required to complete KINE 3351 PUBLIC HEALTH INFORMATICS to meet this requirement. Additionally, the department's core curriculum requires the demonstration of computer use competencies for completion of the majority of assignments.

The Bachelor of Arts in Kinesiology

The Bachelor of Arts in Kinesiology is designed to prepare individuals for teaching and coaching positions in public and private schools and for sport and physical activity program leadership in both the public and private settings. Majors can choose from one of two degree plan options: Physical Education Teacher Education (PETE) and Sport Leadership & Management (SLAM).

Physical Education Teacher Education (PETE)

The Bachelor of Arts in Kinesiology, Physical Education with All-Level Teacher Certification prepares individuals for teaching and coaching positions in public and private schools. This degree is specifically designed to prepare graduates for certification in teaching PK-12 physical education. The program is designed to provide a scientific and pedagogical foundation with multiple public school experiences that enable students to observe, assist teachers and coaches, experiment with curriculum, create programs, and gain structured experiences in teaching. Because of the emphasis on field experiences, our graduates are well prepared when they enter the workforce. In addition, our graduates work in diverse settings and are able to plan and teach individuals with disabilities successfully. Candidates are also encouraged to earn a second teaching area concentration (such as English, History, Biology/Life Science, Math, Modern Language, Health Education, etc.).

Admission Requirements:

To ensure that all students develop a solid academic foundation, all first time, first-year freshman students (regardless of intended major) must obtain academic advising and clearance for registration from an advisor in the Division of Student Success during their first year. After the first year, students should seek advisement from the PETE Advisor in the Department of Kinesiology. Transfer students must seek academic advising from the PETE Advisor in the Department of Kinesiology immediately. .

In order to qualify for admission to the Physical Education Teacher Education (PETE) program, students must:

- Satisfy the University's credit hour requirements for admission to a degree plan
- Provide transcripts from each college or university the student has attended (reflecting all current/completed semesters)
- Petition for admission into the College of Education prior to taking education coursework
- Have a cumulative GPA of at least 2.75 for classes taken at UT Arlington, and sustain a 3.00 GPA across the following education sequence:

• KINE 2301	TEACHING GAMES FOR UNDERSTANDING	3
KINE 2302	DANCE AND MOVEMENT ACTIVITIES	3
KINE 3304	ADAPTED PHYSICAL EDUCATION & SPORT	3
KINE 3388	THEORY AND APPLICATION IN MOTOR DEVELOPMENT	3
KINE 4319	FITNESS, HEALTH AND OUTDOOR ADVENTURE ACTIVITIES EDUCATION	3
KINE 4193	PHYSICAL EDUCATION TEACHER CERTIFICATION PRACTICUM	1
KINE 4320	TEACHING SECONDARY PHYSICAL EDUCATION	3
KINE 4321	TEACHING ELEM PHYSICAL EDUCATION	3
EDUC 4340	HUMAN GROWTH AND DEVELOPMENT	3
LIST 4343	CONTENT AREA READING AND WRITING	3

EDUC 3301	TEACHING DIVERSE LEARNERS	3
Total Hours		31

- All classes involving field-based experiences require students to pass a criminal background check. This is also a requirement for all certified teachers in the State of Texas.
- Students who have been suspended or expelled from The University of Texas at Arlington or any other university or program for reasons other than academic reasons may be denied admission or readmission to an educator preparation program in the College of Education.

Maintaining Major Status:

If a student falls below a 2.75 GPA at any time prior to petitioning for admission into the College of Education, the student will be on departmental probation for one semester. If the student is unable to make up the deficiency in the semester immediately following the probation, the student will lose status as a Bachelor of Arts in Kinesiology with All-Level Certification major and be moved to the Bachelor of Arts in Kinesiology - Sports Leadership and Management major. Courses to make up a GPA deficiency must be taken at UT Arlington. If the student is able to make up the GPA deficiency in the semester immediately following loss of major status, she or he will be eligible to apply for reinstatement as a major by making application to the Departmental Advisor when grades are released. No courses on the degree plan may be taken as pass/fail.

Each candidate in the PETE program will be evaluated on the College of Education Professional Dispositions by faculty and staff. These dispositions have been identified as essential for a highly-qualified professional. Instructors and program directors will work with candidates rated as "unacceptable" in one or more stated criteria. The candidate will have an opportunity to develop a plan to remediate any digressions.

Application for Student Teaching: Students must apply to the Director of Field Experience in the College of Education by the appropriate deadline to begin. Students must also submit any applicable background checks at registration. The student teaching will be performed in both elementary and secondary (high school or middle school) levels.

BA Kinesiology - PETE

Pre-Professional Courses

General Core Requirements (p. 50)	42
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Recommended Core Requirements

ENGL 1301	RHETORIC AND COMPOSITION I	
MATH 1302	COLLEGE ALGEBRA	
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
ENGL 1302	RHETORIC AND COMPOSITION II	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
BIOL 1441	CELL AND MOLECULAR BIOLOGY	
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I	

Program Requirements	3
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BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II	
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Professional Courses

Education Sequence		
KINE 4320	TEACHING SECONDARY PHYSICAL EDUCATION	3
KINE 4321	TEACHING ELEM PHYSICAL EDUCATION	3
LIST 4343	CONTENT AREA READING AND WRITING	3
EDUC 3301	TEACHING DIVERSE LEARNERS	3
EDUC 4340	HUMAN GROWTH AND DEVELOPMENT	3
KINE 4647	CLINICAL TEACHING PHYSICAL EDUCATION EC-12	6
KINE 4193	PHYSICAL EDUCATION TEACHER CERTIFICATION PRACTICUM	1
Kinesiology Academic Core		
KINE 1315	INTRODUCTION TO PHYSICAL EDUCATION AND SPORT	3
KINE 1300	INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE	3
KINE 1100	LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE	1
KINE 2301	TEACHING GAMES FOR UNDERSTANDING	3
KINE 2302	DANCE AND MOVEMENT ACTIVITIES	3
KINE 3300	FUNCTIONAL ANATOMY	3

KINE 3401	BIOMECHANICS OF HUMAN MOVEMENT	4
KINE 3302	SPORT AND EXERCISE PSYCHOLOGY	3
or KINE 3307	SPORT AND SOCIETY: ISSUES AND DEBATES	
KINE 3304	ADAPTED PHYSICAL EDUCATION & SPORT	3
KINE 3415	PHYSIOLOGY OF EXERCISE	4
KINE 3325	UNDERGRADUATE RESEARCH METHODS	3
KINE 3388	THEORY AND APPLICATION IN MOTOR DEVELOPMENT	3
KINE 4319	FITNESS, HEALTH AND OUTDOOR ADVENTURE ACTIVITIES EDUCATION	3
Second Concentration Area Electives		
14 hours from second teaching field area		14
Total Hours		120

Sports Leadership and Management (SLAM)

The Bachelor of Arts in Kinesiology - Sports Leadership and Management (SLAM) program prepares individuals for sport and physical activity program leadership in both the public and private settings. The curriculum examines sport in the contexts of historical and contemporary culture. It looks at sport's cultural relationship with education, the economy, families, the media, and politics, and considers race, class, and gender differences in the sport experience. Two specializations are offered under the SLAM program: Coaching and Youth Sports; and Sports Leadership and Management.

Admission Requirements:

To ensure that all students develop a solid academic foundation, all first time, first-year freshman students (regardless of intended major) must obtain academic advising and clearance for registration from a Division of Student Success academic advisor during their first year. After the first year, students should seek advisement from the BA Kinesiology Advisor in the Department of Kinesiology. Transfer students must seek academic advising from the BA Kinesiology Advisor in the Department of Kinesiology immediately.

- All classes involving field-based experiences require students to pass a criminal background check. This is also a requirement for all certified teachers and professionals that work with school aged children in the State of Texas.

Maintaining Major Status:

Students must maintain an overall GPA of 2.5 and a KINE GPA of 2.5.

Coaching and Youth Sports

This concentration is designed to provide a scientific and pedagogical foundation with multiple experiences that enable students to observe, assist, coach, and create programs that encourage physical activity across the age spectrum: Youth, high school, collegiate, elite-level, or private coaching. In addition to the identified core and specialization courses there are 9 hours available as electives.

BA Kinesiology - Coaching and Youth Sports

Pre-Professional Courses

General Core Requirements (p. 50) 42

Recommended Core Requirements

ENGL 1301	RHETORIC AND COMPOSITION I
ENGL 1302	RHETORIC AND COMPOSITION II
MATH 1302	COLLEGE ALGEBRA
HIST 1301	HISTORY OF THE UNITED STATES TO 1865
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS
POLS 2311	GOVERNMENT OF THE UNITED STATES
POLS 2312	STATE AND LOCAL GOVERNMENT
BIOL 1441	CELL AND MOLECULAR BIOLOGY
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I

Program Requirements 9

BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II
Cultural Diversity (6 hours)	

Professional Courses

Kinesiology Academic Core

KINE 1315	INTRODUCTION TO PHYSICAL EDUCATION AND SPORT	3
KINE 1300	INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE	3
KINE 1100	LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE	1
KINE 2301	TEACHING GAMES FOR UNDERSTANDING	3
KINE 2302	DANCE AND MOVEMENT ACTIVITIES	3
KINE 3300	FUNCTIONAL ANATOMY	3
KINE 3401	BIOMECHANICS OF HUMAN MOVEMENT	4
KINE 3302	SPORT AND EXERCISE PSYCHOLOGY	3
KINE 3307	SPORT AND SOCIETY: ISSUES AND DEBATES	3
KINE 3304	ADAPTED PHYSICAL EDUCATION & SPORT	3
KINE 3415	PHYSIOLOGY OF EXERCISE	4
KINE 3325	UNDERGRADUATE RESEARCH METHODS	3
Coaching and Youth Sports Concentration Course Work		
KINE 2330	CARE AND PREVENTION OF ATHLETIC INJURIES	3
KINE 3312	COACHING INVASION GAME PRINCIPLES	3
KINE 3313	COACHING OF NET/WALL GAME PRINCIPLES	3
KINE 3388	THEORY AND APPLICATION IN MOTOR DEVELOPMENT	3
KINE 4319	FITNESS, HEALTH AND OUTDOOR ADVENTURE ACTIVITIES EDUCATION	3
KINE 4323	MOTOR CONTROL AND LEARNING	3
KINE 4329	STRENGTH & CONDITIONING IN SPORT AND PERFORMANCE	3
KINE 4339	SPORTS LEADERSHIP AND MANAGEMENT INTERNSHIP	3
Electives - 9 hours		9
Total Hours		120

Sports Leadership and Management

This concentration provides students with managerial, psychosocial, socio-cultural, and developmental knowledge about sport participation to allow them to understand and to provide leadership related to key issues in sport while analyzing and engaging in the business and culture of sport. In addition to the identified core and specialization courses there are 9 hours available as electives.

BA Kinesiology - Sports Leadership and Management

Pre-Professional Courses

General Core Requirements (p. 50) 42

Recommended Core Requirements

ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
MATH 1302	COLLEGE ALGEBRA	
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
BIOL 1441	CELL AND MOLECULAR BIOLOGY	
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I	
Program Requirements		9
BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II	
Cultural Diversity (6 hours)		

Professional Courses

Kinesiology Academic Core

KINE 1315	INTRODUCTION TO PHYSICAL EDUCATION AND SPORT	3
KINE 1300	INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE	3
KINE 1100	LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE	1
KINE 2301	TEACHING GAMES FOR UNDERSTANDING	3

KINE 2302	DANCE AND MOVEMENT ACTIVITIES	3
KINE 3300	FUNCTIONAL ANATOMY	3
KINE 3401	BIOMECHANICS OF HUMAN MOVEMENT	4
KINE 3302	SPORT AND EXERCISE PSYCHOLOGY	3
KINE 3307	SPORT AND SOCIETY: ISSUES AND DEBATES	3
KINE 3304	ADAPTED PHYSICAL EDUCATION & SPORT	3
KINE 3415	PHYSIOLOGY OF EXERCISE	4
KINE 3325	UNDERGRADUATE RESEARCH METHODS	3
Sports Leadership and Management Concentration Course Work		
BLAW 3310	LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS	3
ECON 2306	PRINCIPLES OF MICROECONOMICS	3
ECON 3306	SPORTS ECONOMICS AND BUSINESS	3
KINE 4330	PROGRAM DESIGN & ADMINISTRATION	3
MANA 3318	MANAGING ORGANIZATIONAL BEHAVIOR	3
MANA 4330	TEAM MANAGEMENT	3
SOCI 3339	RACE, SPORT AND MEDIA	3
KINE 4339	SPORTS LEADERSHIP AND MANAGEMENT INTERNSHIP	3
Electives - 9 hours		9

Total Hours

120

BA Minor in Coaching and Youth Sports

The minor consists of 18 hours, six of which must be upper level.

A 2.5 grade point average must be maintained for a student to remain in the minor.

Courses that may be taken toward the minor are:

Required:

KINE 1315	Introduction to Physical Education and Sport
KINE 2301	Teaching Games for Understanding
KINE 2302	Dance and Movement Activities

Electives

Nine hours from the following.

KINE 3302	Sport and Exercise Psychology
KINE 3304	Adapted Exercise and Sport Activities
KINE 3307	Sport and Society: Issues and Debates
KINE 3312	Coaching Invasion Games
KINE 3313	Coaching Net/Wall Game Principles
KINE 4319	Fitness and Outdoor Adventure

Bachelor of Science in Exercise Science

The Bachelor of Science in Exercise Science is designed to provide a foundation of the movement and exercise science to students interested in pursuing careers associated with therapy and rehabilitation, fitness and training, and research with typical and atypical populations. The three tracks are designed to provide a thorough foundation in three areas of Exercise Science: Clinical & Applied Physiology, Health, Fitness, & Wellness, and Motor & Rehabilitation Sciences. All KINE listed courses are designed for majors only.

The Clinical & Applied Physiology (CAP) Track incorporates prerequisites and prepares students for graduate school applications in physical therapy, physician assistant, and medical/dental schools.

The Health, Fitness, & Wellness (HFW) Track prepares students for careers in strength conditioning, personal training, cardiac rehabilitation, and corporate wellness & fitness. It also prepares students for certifications programs such as ACSM, HFS, NSCA, CSCS. In addition, it incorporates prerequisites and prepares students for graduate school applications in athletic training.

The Motor & Rehabilitation Sciences (MRS) Track Incorporates prerequisites and prepares students for graduate school applications in occupational therapy and speech & language pathology, as well as careers and research in pediatrics and special populations, biomechanics, motor behavior and rehabilitation sciences.

Admission Requirements:

To ensure that all students develop a solid academic foundation, all first time, first-year freshman students (regardless of intended major) must obtain academic advising and clearance for registration from an advisor in the Division of Student Success during their first year. After the first year, students should seek advisement from the Exercise Science Advisor in the Department of Kinesiology prior to each semester and summer sessions. Transfer students must seek academic advising from the Exercise Science Advisor in the Department of Kinesiology immediately. All incoming freshmen and transfer students wishing to major in Exercise Science are initially classified as Exercise Science pre-majors.

To be classified as an Exercise Science major, students must satisfy the following requirements:

Clinical & Applied Physiology Track

- Completion of 12 hours at UT Arlington
- Overall GPA of 3.00 and KINE GPA of 3.00 by completion of KINE 3415 and a grade of "B" or better at KINE 3415.

Health, Fitness, & Wellness Track

- Completion of 12 hours at UT Arlington
- Overall GPA of 2.5 and KINE GPA of 2.5 by completion of KINE 3415.

Motor & Rehabilitation Sciences Track

- Completion of 12 hours at UT Arlington
- Overall GPA of 2.5 and KINE GPA of 2.5 by completion of KINE 3415.

Maintaining Major Status:

Students accepted as Bachelor of Science in Exercise Science majors in the Department of Kinesiology must maintain the minimum GPAs as indicated above or they will be on departmental probation. Students who are on departmental probation must meet with their academic advisor for future enrollment options. If the student is unable to make up the deficiency in the semester immediately following the probation, the student will lose status as a Bachelor of Science in Exercise Science major. Courses to make up the GPA deficiency must be taken at UT Arlington. No courses on the degree plan may be taken as pass/fail.

Clinical & Applied Physiology - (CAP)

The Exercise Science Clinical & Applied Physiology track incorporates prerequisites and prepares students for graduate school applications in physical therapy, physician assistant, and medical/dental schools, as well as careers and research in physiological sciences applied to exercise.

BS in Exercise Science - CAP

Pre-Professional Courses

General Core Requirements (p. 50)

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Recommended Core Requirements

ENGL 1301	RHETORIC AND COMPOSITION I
ENGL 1302	RHETORIC AND COMPOSITION II
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS
POLS 2311	GOVERNMENT OF THE UNITED STATES
POLS 2312	STATE AND LOCAL GOVERNMENT
PSYC 1315	INTRODUCTION TO PSYCHOLOGY
BIOL 1441	CELL AND MOLECULAR BIOLOGY
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I
Select one of the following:	
MATH 1302	COLLEGE ALGEBRA
MATH 1303	TRIGONOMETRY
MATH 1426	CALCULUS I

Program Science Requirements		19
BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II	
CHEM 1441	GENERAL CHEMISTRY I	
CHEM 1442	GENERAL CHEMISTRY II	
PHYS 1441	GENERAL COLLEGE PHYSICS I	
PHYS 1442	GENERAL COLLEGE PHYSICS II	
General Electives (sufficient to bring total to 120 hours)		23
Professional Courses		
Clinical & Applied Physiology Major Core		
KINE 1300	INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE	3
KINE 1100	LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE	1
KINE 3300	FUNCTIONAL ANATOMY	3
KINE 3401	BIOMECHANICS OF HUMAN MOVEMENT	4
KINE 3415	PHYSIOLOGY OF EXERCISE	4
KINE 3325	UNDERGRADUATE RESEARCH METHODS	3
KINE 4317	EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS	3
KINE 4415	FITNESS ASSESSMENT/PROGRAMMING	4
KINE 4323	MOTOR CONTROL AND LEARNING	3
KINE 4490	EXERCISE SCIENCE INTERNSHIP (Requires a minimum of 180 hours in the field)	4
KINE 4400	APPLIED EXERCISE PHYSIOLOGY	4
KINE Electives		
There are no electives for this track		
Total Hours		120

¹ Students planning to pursue graduate programs in physical therapy, occupational therapy or physician's assistant should meet with their advisor to determine specific elective requirements. (Example for PT: NURS 3309, BIOL 1442, PHYS 1442, KINE 3388 THEORY AND APPLICATION IN MOTOR DEVELOPMENT). PSYC 3318 ABNORMAL PSYCHOLOGY

Many of the courses in the Kinesiology curriculum require prerequisite courses which are identified in the course description.

Health, Fitness, & Wellness Track (HFW)

The Exercise Science – Health, Fitness, & Wellness track is designed for students interested in careers in the commercial and corporate fitness industry as personal fitness trainers and fitness directors, strength and conditioning coaches as well as for students interested in pursuing a graduate degree in exercise science or athletic training.

BS in Exercise Science - HFW

Pre-Professional Courses		
General Core Requirements (p. 50)		42
Recommended Core Requirements		
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
MATH 1302	COLLEGE ALGEBRA	
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
BIOL 1441	CELL AND MOLECULAR BIOLOGY	
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I	
Program Science Requirements		7
BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II	
Choose 1 of the following:		
CHEM 1441	GENERAL CHEMISTRY I	
PHYS 1441	GENERAL COLLEGE PHYSICS I	
BIOL 1442	EVOLUTION AND ECOLOGY	

CHEM 1451	CHEMISTRY FOR HEALTH SCIENCES	
General Electives (sufficient to bring total to 120 hours)		30
Professional Courses		
Fitness/Wellness Major Core		
KINE 1300	INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE	3
KINE 1100	LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE	1
KINE 2330	CARE AND PREVENTION OF ATHLETIC INJURIES	3
KINE 3300	FUNCTIONAL ANATOMY	3
KINE 3401	BIOMECHANICS OF HUMAN MOVEMENT	4
KINE 3302	SPORT AND EXERCISE PSYCHOLOGY	3
KINE 3415	PHYSIOLOGY OF EXERCISE	4
KINE 3325	UNDERGRADUATE RESEARCH METHODS	3
KINE 4415	FITNESS ASSESSMENT/PROGRAMMING	4
KINE 4329	STRENGTH & CONDITIONING IN SPORT AND PERFORMANCE	3
or KINE 4337	STRENGTH AND CONDITIONING IN GENERAL POPULATIONS: HEALTH AND DISEASE	
KINE 4330	PROGRAM DESIGN & ADMINISTRATION	3
KINE 4331	OBESITY & WEIGHT MANAGEMENT	3
KINE 4490	EXERCISE SCIENCE INTERNSHIP	4
Total Hours		120

Motor & Rehabilitation Sciences (MRS)

The Exercise Science – Motor & Rehabilitation Sciences track is designed for students interested in careers and research in pediatrics, special populations, biomechanics, motor behavior, and rehabilitation sciences, as well as prepares students for graduate school applications in occupational therapy and speech & language pathology.

BS in Exercise Science - MRS

Pre-Professional Courses		
General Core Requirements (p. 50)		42
Recommended Core Requirements		
ENGL 1301	RHETORIC AND COMPOSITION I	
ENGL 1302	RHETORIC AND COMPOSITION II	
MATH 1302	COLLEGE ALGEBRA	
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
BIOL 1441	CELL AND MOLECULAR BIOLOGY	
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I	
Program Science Requirements		12
BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II	
PSYC 3310	DEVELOPMENTAL PSYCHOLOGY	
PSYC 3318	ABNORMAL PSYCHOLOGY	
PSYC 3322	BRAIN AND BEHAVIOR	
General Electives (sufficient to bring total to 120 hours)		25
Professional Courses		
Motor and Rehabilitation Sciences Major Core Major Core		
KINE 1300	INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE	3
KINE 1100	LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE	1
KINE 2330	CARE AND PREVENTION OF ATHLETIC INJURIES	3
KINE 3300	FUNCTIONAL ANATOMY	3
KINE 3401	BIOMECHANICS OF HUMAN MOVEMENT	4
KINE 3302	SPORT AND EXERCISE PSYCHOLOGY	3
KINE 3415	PHYSIOLOGY OF EXERCISE	4

KINE 3325	UNDERGRADUATE RESEARCH METHODS	3
KINE 3388	THEORY AND APPLICATION IN MOTOR DEVELOPMENT	3
KINE 4317	EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS	3
KINE 4323	MOTOR CONTROL AND LEARNING	3
KINE 4420	APPLIED MOTOR BEHAVIOR	4
KINE 4491	MRS INTERNSHIP	4

Total Hours		120
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Bachelor of Science in Public Health (BSPH)

The Bachelor of Science in Public Health (BSPH) degree consists of two program delivery options: A traditional Campus Based Program and an Accelerated Online Program (AO). The Accelerated Online Program is an online format developed by UT Arlington's Department of Kinesiology and College of Nursing and Health Innovation to serve students in Texas by offering a high quality, affordable, and convenient undergraduate public health degree program. The BSPH AO program is available to those students who have earned a minimum of 24 transfer-credit hours prior to enrollment.

The BSPH degree program aligns well with current science-based degree programs offered in the Department of Kinesiology. In addition, with a unique positioning of public health aligned with nursing and kinesiology programs along a continuum of health-related coursework and practice-based experiences, students may access an intersection point at which individual health and wellness meets population health and prevention of disease. Potential career opportunities exist in job categories such as government, non-profit organizations, medical/healthcare facilities and community agencies.

The Bachelor of Science in Public Health program features a competency-based curriculum built upon a collaborative, interdisciplinary matrix. Relevant coursework, accompanied by experiential and service learning activities anchored throughout the program support a robust program framework, which includes The Council on Education for Public Health (CEPH) accreditation criteria, Association of Schools and Programs of Public Health (ASPPH) undergraduate competencies and The Council on Linkages Between Academia and Public Health Practice Tier I Public Health Workforce competencies.

These program elements will enable students to gain a broad knowledge base, along with the skills and abilities necessary to be a competent and effective member of the public health workforce.

The Bachelor of Science in Public Health provides students with a rigorous background in public health education, while also providing multi-disciplinary support for each student to pursue his or her own individual interests and passions through minor degrees (e.g., Disability Studies, Diversity Studies, Psychology, Spanish). The degree program provides coursework and experiential learning activities that intersect individual health, wellness and prevention with population-based health perspectives. Students have the flexibility to choose 20-21 hours of electives, providing providing academic flexibility so that students may individualize components of their academic pathway to meet their unique personal, professional, and academic goals.

Admission Requirements:

To ensure that all students develop a solid academic foundation, all first time, first-year freshman students (regardless of intended major) must obtain academic advising and clearance for registration from an advisor in the Division of Student Success during their first year. After the first year, students should seek advisement from the Public Health Advisor in the Department of Kinesiology prior to each semester and summer sessions. Transfer students must seek academic advising from the Public Health Advisor in the Department of Kinesiology immediately. All incoming freshmen and transfer students wishing to major in Public Health are initially classified as Public Health pre-majors (PH.Int).

To be classified as a Public Health major, students must satisfy the following requirements:

BS Public Health

- Completion of 12 hours at UT Arlington
- Completion of KINE 2350 INTRODUCTION TO PUBLIC HEALTH: PRINCIPLES & POPULATIONS EXERCISE SCIENCE with a grade of C or better
- Overall GPA of 2.50.

Maintaining Major Status:

Students accepted as Bachelor of Science in Public Health majors in the Department of Kinesiology must maintain the minimum GPAs as indicated above or they will be placed on departmental probation. In order to take additional Public Health courses, approval must be granted by the Department Chair. If the student is unable to make up the deficiency in the semester immediately following the probation, the student will lose status as a Bachelor of Science in Public Health major. Courses to make up the GPA deficiency must be taken at UT Arlington. If the student is able to make up the GPA deficiency in the semester immediately following loss of major status, he or she can be reinstated as a major by making application to the Departmental Advisor when grades are released. No courses on the degree plan may be taken as pass/fail.

BS in Public Health - BSPH

Pre-Professional Courses

General Core Requirements (p. 50) 42

Recommended Core Requirements

ENGL 1301	RHETORIC AND COMPOSITION I
ENGL 1302	RHETORIC AND COMPOSITION II
MATH 1302	COLLEGE ALGEBRA
or MATH 1301	CONTEMPORARY MATHEMATICS
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS
POLS 2311	GOVERNMENT OF THE UNITED STATES
POLS 2312	STATE AND LOCAL GOVERNMENT
BIOL 1441	CELL AND MOLECULAR BIOLOGY
or BIOL 1345	BIOLOGY I FOR NURSING STUDENTS
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I

Program Science Requirements 7

BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II
CHEM 1441	GENERAL CHEMISTRY I
or BIOL 1442	EVOLUTION AND ECOLOGY

Science electives (may include Exercise Science classes in the Department of Kinesiology) 4

Foundational component (Recommended KINE 2307, SOCI 1310, or SOCI 1311) 3

Professional Courses

Public Health Major Core

KINE 2350	PUBLIC HEALTH: PRINCIPLES AND POPULATIONS	3
KINE 3350	URBANIZATION AND VULNERABLE POPULATIONS	3
KINE 3351	PUBLIC HEALTH INFORMATICS	3
KINE 3352	INTRODUCTION TO PUBLIC HEALTH EPIDEMIOLOGY	3
KINE 3353	HEALTH AND THE HUMAN CONDITION IN THE GLOBAL COMMUNITY	3
KINE 4351	ETHICAL PRACTICES IN HEALTH PROFESSIONS	3
HEED 4311	THE ENVIRONMENT AND PUBLIC HEALTH SYSTEMS	3
KINE 4352	PUBLIC HEALTH SCIENCES AND METHODS	3
KINE 4354	PUBLIC HEALTH ADVOCACY AND LEADERSHIP	3
KINE 4355	COMMUNICATION FOR HEALTH PROFESSIONALS	3
KINE 4357	PREPARATION FOR THE PUBLIC HEALTH WORKFORCE	3
KINE 4359	PUBLIC HEALTH CUMULATIVE EXPERIENCE	3

Cross-disciplinary Coursework

HEED 3305	WOMEN'S HEALTH ISSUES	3
HEED 3330	CONSUMER HEALTH AND PUBLIC HEALTH SYSTEMS	3
HEED 4320	STUDIES IN HEALTHY AGING	3
KINE 3354	EMERGENCY PREPAREDNESS & MANAGEMENT	3
MANA 4326	DIVERSITY IN ORGANIZATIONS	3
or KINE 4358	APPLIED APPROACHES TO DIVERSITY AND CULTURAL AWARENESS IN PUBLIC HEALTH ORGANIZATIONS	

General Electives 13

Total Hours 120

Many of the courses in the Kinesiology curriculum require prerequisite courses, which are identified in the course descriptions.

BS in Public Health - Minor

The Department of Kinesiology offers a minor in public health. The minor consists of 18 credit hours. Students must complete at least nine hours toward the minor at UT Arlington. A 2.5 grade point average must be maintained for a student to remain in the minor.

Courses that may be taken toward the minor are:

Required

KINE 2350 PUBLIC HEALTH: PRINCIPLES AND POPULATIONS

Electives

Fifteen hours from the following:

KINE 3307 SPORTS AND SOCIETY

KINE 3350 URBANIZATION AND VULNERABLE POPULATIONS

KINE 3351 PUBLIC HEALTH INFORMATICS

KINE 3352 INTRODUCTION TO PUBLIC HEALTH EPIDEMIOLOGY

KINE 3353 HEALTH AND THE HUMAN CONDITION IN THE GLOBAL COMMUNITY

KINE 3354 EMERGENCY PREPAREDNESS & MANAGEMENT

KINE 4330 PROGRAM DESIGN & ADMINISTRATION

KINE 4331 OBESITY & WEIGHT MANAGEMENT

KINE 4351 ETHICAL PRACTICES IN HEALTH PROFESSIONS

HEED 3305 WOMEN'S HEALTH ISSUES

HEED 3330 CONSUMER HEALTH AND PUBLIC HEALTH SYSTEMS

HEED 4320 STUDIES IN HEALTHY AGING

College of Science

UNDERGRADUATE:

Mission and Philosophy

The College of Science graduate programs are committed to excellence in graduate education and research and contribute, along with other institutions in this country and throughout the world, to the expansion of scientific knowledge. Graduates of our programs are highly trained and educated scientists who will be able to contribute to the economic and social well-being of our state and nation.

OVERVIEW

With outstanding departments of Biology, Chemistry and Biochemistry, Earth and Environmental Sciences, Mathematics, Physics and Psychology, the College of Science offers comprehensive graduate studies with our world class faculty and research programs. In addition to providing our students with strong core training in the physical and life sciences, we offer specialized Masters degrees for educators to expand their core science training. Interdisciplinary programs and Research Centers provide students with opportunities to span disciplines, and student research activities are complemented by excellent research facilities and state-of-the-art instrumentation. The College and Departments host a series of seminars to further expose our students to cutting edge science developments.

Master's degrees are offered in all of our departments, and we award Ph.D. degrees in Quantitative Biology, Applied Chemistry, Environmental and Earth Sciences, Mathematics, Applied Physics, and Experimental Psychology. For application and entrance requirements, or more on our graduate programs, please call us or visit our Web site at www.uta.edu/cos (<http://www.uta.edu/cos/>).

Overview

Pursuit of knowledge through scientific study has been the cornerstone of human accomplishment throughout history. The College of Science continues this tradition by providing undergraduate students with curricula that allow exploration and mastery of both the basic concepts and most recent advances of modern science and preparation for professional scientific careers. The College of Science consists of the departments of Biology, Chemistry and Biochemistry, Earth and Environmental Sciences, Mathematics, Physics, and Psychology. Bachelor of Science (B.S.) and Bachelor of Arts (B.A.) degrees offered by these departments prepare students to pursue a wide variety of rewarding, professional scientific careers or graduate study. Bachelor of Arts and Bachelor of Science degrees are offered in all departments. Bachelor of Arts degrees allow students to develop a broad liberal education with a concentration in science and are particularly appropriate for careers in science teaching. Bachelor of Science degrees provide students with a more intensive background in science, preparing them for advanced graduate study or entry into exciting technological careers in industry, medicine, government, business, or commerce. A wide range of degree options within departmental B.S. programs provide students with career-oriented course work required to pursue professional career paths in specific scientific fields. All departments within the college provide highly accessible student academic and career advising that support customization of degree plans to meet a student's specific career goals.

The College of Science fosters interaction between students and faculty. Faculty actively participate as advisors to student scientific societies and are readily available to assist or advise students both within and outside the classroom. Faculty members in all departments actively participate in research supported by world-class research facilities and modern scientific equipment. Undergraduate science majors are encouraged to engage in research under the supervision of a faculty member of their choice, many of whom have international reputations for their scholarly contributions. Students can receive course credit for supervised research.

Beyond the undergraduate degree, the College of Science offers programs leading to graduate degrees. All departments offer Master of Science degrees (M.S.) that allow students to pursue technologically intensive careers in public or private arenas. The departments of Biology, Chemistry and Biochemistry, Earth and Environmental Sciences, Mathematics, Physics and Psychology offer the Doctor of Philosophy degrees (Ph.D.) that allow students to carry out independent dissertation research within a chosen scientific specialty, leading to careers in research and/or university teaching. The M.S. and Ph.D. degrees offered by the Graduate Program in Environmental Science and Engineering prepare students for careers as environmental professionals. The Graduate Catalog provides details of the college's master's and doctoral degree programs.

Also available to undergraduate students in the College of Science are unique and innovative combined degree programs leading to both a B.S. degree and a graduate or professional degree within an accelerated time frame. These combined degree programs include the five-year Bachelor of Science (B.S.) in Biology/Master of Business Administration (M.B.A.) degree programs in Health Care and Biomedical Sciences Management and a five-year B.S. in Biology/Master of Biomedical Engineering (M.B.E.) degree program (see the Department of Biology section of this catalog for detailed descriptions of these programs).

The College of Science takes pride in offering students outstanding degree programs in all of its departments. These programs are marked by excellent teaching, broad undergraduate research opportunities and superior academic and career advising. Graduates of these degree programs are highly competitive in the job market or when applying to nationally recognized graduate or health professions schools. Please visit the College of Science website to make an appointment with one of our advisors. www.uta.edu/cos (<https://www.uta.edu/science/>)

Opportunities in Science

The future marvels of the 21st century will spring from science just as did those of the 20th century. The human genome project, miracle drugs, efficient fuels, arrays of new synthetic materials, the transistor, the laser, nuclear power, solar energy, computers, the Worldwide Web, global information systems, the electron microscope, nanotechnology, bioinformatics and sophisticated techniques for locating mineral deposits are merely a few examples of the crowning scientific achievements of the past century. Discoveries of similar or greater magnitude lie ahead in this new century as scientists bring their talents to bear on modern society's pressing problems such as alternative energy sources, environmental protection, and improved health care. Students graduating from College of Science degree programs have the unique opportunity to participate in this century of new and unparalleled scientific discovery.

Requirements for Admission to the College of Science

The University of Texas at Arlington does not admit students to specific degree programs. Instead students wishing to pursue a major in one of the College of Science undergraduate degree programs must apply to the appropriate academic unit for acceptance into that program. Students should familiarize themselves with the general requirements for acceptance to the degree program of their choice as well as the specific requirements for granting of the degree.

ACADEMIC POLICIES FOR COLLEGE OF SCIENCE MAJORS

In the College of Science, students are required to maintain a minimum overall GPA of 2.25 in all their course work as well as a minimum GPA of 2.25 in their major course work in order to remain in good standing within their degree program. Students whose overall or major GPA falls below 2.25 will be dropped as a major in the College of Science and must select an alternative major.

The general College of Science policy on academic probation may be superseded by more rigorous policies within specific science degree programs.

ACADEMIC POLICIES FOR SCIENCE MINORS

A science minor consists of 18 credit hours or more in any one of the departments within the college. At least 6 of the 18 hours must be in advanced 3000 or 4000 level courses. All classes that are to be used toward a minor must also be applicable toward a major in the same discipline. Non majors courses may not be applied toward a minor.

A 2.0 grade average must be maintained in the minor in order to be approved by the minor department. All classes for a science minor must be approved by an academic advisor in the minor department. Transfer students must complete at least nine hours toward the minor at UT Arlington, and six of the nine must be 3000 or 4000 level.

Transfer Students

Field of Study

Students who complete an approved field of study curriculum in whole or in part will receive academic credit for the equivalent courses within their selected field of study at UT Arlington. To view the field of study curriculums approved by the Texas Higher Education Coordinating Board, visit www.theccb.state.tx.us (<http://www.theccb.state.tx.us/>).

Core Complete

Students who transfer from a Texas community college or university and are certified as core complete shall have satisfied the core requirements of UT Arlington. Academic departments may, in some instances, require specific courses outside the major as prerequisites for major course work.

Academic Standards

Students who wish to be admitted to a department within the College of Science must have a grade point average of 2.25 or higher in all college course work completed prior to application for admission to the UT Arlington College of Science.

COMPETENCE IN COMPUTER USE

Graduating students are expected to be proficient in the use of computers. Proficiency is considered to be the ability to utilize word-processing, database/spreadsheet, statistical, graphical and other representative software applications in a student's major discipline. Each student should be able to tap the communications, analytical, and information-retrieval potential of computers to solve scientific problems and evaluate research results. Students should consult with their individual department, school or college undergraduate advisors to determine the mechanisms by which they can demonstrate computer competency. A student may be required to pass a proficiency examination or complete a department- or college-designated computer proficiency course to meet this requirement.

COMPETENCE IN ORAL PRESENTATIONS

Graduating students are expected to have proficiency in oral communication skills including interaction in classroom settings to meet the needs of their course work and utilization of acceptable grammar and pronunciation in formal presentations. Students should consult their individual department, school or college undergraduate advisors to determine the mechanisms by which they can demonstrate oral communication skills competency. A student may be required to pass a proficiency examination or complete a department- or college-designated oral communication skills course to meet this requirement.

Pre-Health Programs

Students interested in graduate health professional fields such as medicine, dentistry, physician assistant, pharmacy, optometry and veterinary medicine may complete required courses with most majors. The Health Professions Office offers pre-health advising on graduate health school requirements and expectations, access to resources, mock interviews, opportunity for a committee letter of recommendation, and feedback/assistance in applying to professional health schools.

In general, health professional admission committees do not state a preference regarding an applicant's undergraduate major, leaving students to choose a degree program best suited to their special abilities and interests. Therefore, a student may choose any major, as long as the minimum requirements for admission to the specific program(s) are met. Science courses for non-science majors do not satisfy the requirements for most graduate health professional schools. The B.S. in Biology meets the requirements for most programs. Additional information can be found on the Health Professions Website: <https://www.uta.edu/pre-health> (<https://www.uta.edu/pre-health/>).

Post Baccalaureate Non-Degree Seeking Program

The post baccalaureate program is intended for students who have previously completed a bachelor's degree and wish to pursue admission to a graduate health professional school, usually medical, dental, or PA school. Since student backgrounds vary, courses for the post baccalaureate program are custom designed for the individual student. This informal program does not have special admission requirements. Students in this program may complete prerequisite requirements in one to two years depending upon their undergraduate major and GPA, intended course load, time of entry to the program, and additional criteria that should be discussed with the Health Professions Advisor. Additional information can be found on the Post Bacc Program Page (<https://www.uta.edu/science/programs/health-professions/non-traditional-and-post-bacc-applicants.php>) on the Health Professions Website: <https://www.uta.edu/pre-health> (<https://www.uta.edu/pre-health/>).

Teacher Certification in the Sciences

Programs leading to teacher certification at secondary levels are available in departments of the College of Science in coordination with UTeach Arlington and the College of Education. Included among these are secondary certification in Composite Science or Life Science offered in the Departments of Biology and Earth & Environmental Sciences; in Physical Science offered in the Departments of Physics and Chemistry & Biochemistry; in Chemistry offered in the Department of Chemistry and Biochemistry; in Physics/Mathematics offered in the Department of Physics; and in Mathematics offered in the Department of Mathematics. Descriptions of these programs are provided in each department's section of this catalog.

Transfer Students

Students transferring from other institutions are invited to explore opportunities in the College of Science. Inquiries about the equivalency of their transferred courses and other questions related to transferring are welcome to make an appointment with the Transfer Advisor, 107B Life Science Building.

Science Constituency Council

The Science Constituency Council is the official representative student organization for the College of Science with Student Government. Meeting twice monthly, the SCC serves both the College and its students. The SCC strives to involve a greater number of students in all aspects of the College of Science. SCC members are majors in the departments of the College. For more information, visit <https://mavorgs.campuslabs.com/engage/organization/scienceconstituencycouncil> (<https://mavorgs.campuslabs.com/engage/organization/scienceconstituencycouncil/>).

Science Learning Center

501 S. Nedderman Dr. · 106 Life Science Bldg.

The Science Learning Center is an on-site resource facility designed to support student learning and course work in science and mathematics through self-study modules and a variety of study aids. In cooperation with College of Science faculty, the center offers a full spectrum of multimedia resource materials and study aids for students in biology, chemistry, geology, mathematics, physics and psychology classes. The center also provides students with study areas and a study lounge.

Materials currently available include:

- Study guides and sample exams
- Lab notes and solutions manuals
- Hands-on models (Anatomical and Molecular)
- MCAT Prep Resources
- Networked computers

Chemistry Clinic

The Chemistry Clinic is available to answer questions related to your chemistry courses. This service is free for all UT Arlington students enrolled in the following courses:

CHEM 1400	INTRODUCTORY CHEMICAL PRINCIPLES	4
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 1451	CHEMISTRY FOR HEALTH SCIENCES	4
CHEM 1465	CHEMISTRY FOR ENGINEERS	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3

The tutors are outstanding undergraduates in the Department of Chemistry & Biochemistry. The clinic's location is Room 318, Science Hall, where you can find the operation hours posted. No appointment is necessary.

Math Clinic

The Math Clinic is a service provided on a walk-in basis for all math students enrolled in:

MATH 0302	FUNDAMENTALS OF ALGEBRA	3
MATH 1301	CONTEMPORARY MATHEMATICS	3
MATH 1302	COLLEGE ALGEBRA	3
MATH 1303	TRIGONOMETRY	3
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	3
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	3
MATH 1324	ALGEBRA AND TRIGONOMETRY	3
MATH 1325	ANALYTIC GEOMETRY	3
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4
MATH 2326	CALCULUS III	3
MATH 2425	CALCULUS II	4
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3

It is located in Room 325, Pickard Hall, and is open seven days a week during the Fall and Spring semesters and with limited hours during the Summer semesters. The tutors are outstanding undergraduate students with demonstrated abilities for helping students.

Physics Clinic

The Physics Clinic is a tutoring service provided on a walk-in basis for students enrolled in:

PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4

The tutors include graduate students, faculty and outstanding undergraduates. The location and times are posted in the Physics Department Office, 108 Science Hall.

Science and Mathematics for the Non-Science Major

The College of Science provides a wide variety of science courses for non-science majors. These courses, including those listed below, have been specifically designed to be applicable to science and mathematics requirements for non-science majors. Non-major students should examine the requirements for their degrees before selecting science courses to meet those requirements. The listed courses are also intended to stimulate interest in science and mathematics beyond the specific degree requirements for non-science majors. The figures in parenthesis indicate the number of hours

of instruction per week in the Fall and Spring Semesters. The first figure indicates the amount of time devoted to theory, and the second indicates the amount of time devoted to laboratory work.

BIOLOGY

BIOL 1301	NUTRITION	3
BIOL 1333	DISCOVERING BIOLOGY: MOLECULES, CELLS AND DISEASE	3
BIOL 1334	LIFE ON EARTH: EVOLUTION, ECOLOGY AND GLOBAL CHANGE	3
BIOL 3303	DRUGS AND BEHAVIOR	3

CHEMISTRY

CHEM 1445	CHEMISTRY FOR NON-SCIENCE MAJORS	4
CHEM 1446	CHEMISTRY II FOR NON-SCIENCE MAJORS	4
CHEM 1451	CHEMISTRY FOR HEALTH SCIENCES	4

GEOLOGY

GEOL 1360	GEOLOGIC HAZARDS	3
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
GEOL 1330	GLOBAL WARMING	3
GEOL 1350	INTRODUCTION TO OCEANOGRAPHY	3
GEOL 1350	INTRODUCTION TO OCEANOGRAPHY	3
GEOL 2410	PLANETARY GEOLOGY	4

MATHEMATICS

MATH 0302	FUNDAMENTALS OF ALGEBRA	3
MATH 1301	CONTEMPORARY MATHEMATICS	3
MATH 1302	COLLEGE ALGEBRA	3
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	3

PHYSICS

PHYS 1300	INTRODUCTION TO MUSICAL ACOUSTICS	3
PHYS 1301	PHYSICS FOR NON SPECIALISTS I	3
PHYS 1302	PHYSICS FOR NON SPECIALISTS II	3

PSYCHOLOGY

The psychology courses listed below are of general interest. Such courses contribute significantly to a well-balanced education even though they do not apply to any science requirement.

PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
PSYC 2300	STATISTICS IN PSYCHOLOGY	3
PSYC 2317	BASIC CONCEPTS IN HUMAN SEXUALITY ¹	3
PSYC 3301	PSYCHOLOGY OF HUMAN RELATIONS	3
PSYC 3304	ANALYSIS & MANAGEMENT OF BEHAVIOR	3
PSYC 3303	DRUGS AND BEHAVIOR ¹	3
PSYC 3306	PSYCHOLOGY OF CREATIVITY AND CREATIVE THINKING	3
PSYC 3310	DEVELOPMENTAL PSYCHOLOGY	3
PSYC 3311	ADULTHOOD AND AGING	3
PSYC 3312	SOCIAL & PERSONALITY DEVELOPMENT	3
PSYC 3313	CULTURAL PSYCHOLOGY	3
PSYC 3314	PSYCHOLOGY OF PERSONALITY	3
PSYC 3315	SOCIAL PSYCHOLOGY	3
PSYC 3317	INTRODUCTION TO CLINICAL AND COUNSELING PSYCHOLOGY	3

PSYC 3318	ABNORMAL PSYCHOLOGY	3
PSYC 3326	ANIMAL BEHAVIOR ¹	3

¹ Course can be taken as biology.

GRADUATE:

Scholastic Activity and Research Interests of the Faculty

BIOLOGY

The Department of Biology has a wide array of research programs ranging from molecular through ecosystem levels of integration. The program boasts strengths in ecology and systematics, evolution, microbiology, genomics, and molecular biology, and has active funding from a variety of private and public agencies. The department also hosts centers for genomics, biological macrofouling, electron microscopy and a collection of vertebrates. The research program emphasizes quantitative aspects of biology and provides students with strong training in statistics and experimental design.

CHEMISTRY AND BIOCHEMISTRY

Research programs include synthetic work on natural products, medically active agents, novel ligands, new catalysts, luminescent materials, photocatalysts, supramolecular and metallosupramolecular compounds, molecular magnetism, molecular recognition, stabilization of reactive intermediates, solar energy conversion and electrically conducting polymers. Biochemical research includes studies of enzymology and molecular biology of bacterial metabolism, and studies on problems involved in anticancer therapy. Physical, analytical and electrochemical research includes studies of colloids and surfaces, electrode modification through thin film surface deposition, MALDI mass spectrometry and characterization of the electrical properties of polymers and other materials. Theoretical studies involve both a major computational program applying molecular orbital theory to a variety of problems.

EARTH AND ENVIRONMENTAL SCIENCES

Department research has a strong orientation toward the application of geochemistry, oceanography, geophysics and paleobiology to earth resources and the environment. Current research interests include analysis and modeling of geologic deformational structures, biostratigraphy of accreted terranes of the Pacific Northwest and the middle Permian of West Texas, sedimentology, paleoclimatology, hydrology, fluvial geomorphology, environmental health, and plate tectonics.

MATHEMATICS

The Department of Mathematics at the University of Texas at Arlington is fast evolving into one of the premier centers in the Dallas/Fort Worth metroplex for mathematics research and education. Our active research faculty have strengths that lie in pure, applied mathematics, statistics, and mathematics education. Many of their research projects are supported by external grants. Recent faculty scholarly accomplishments attest to the high quality of research. The research interests of the faculty in the Mathematics Department include the following areas:

Algebra: homological theory of commutative Noetherian rings; non-commutative algebra using geometric methods: symbolic computations; representations of Lie Algebras and superalgebras.

Differential Equations, Integral Equations and Dynamical Systems: geometric study of integrable Hamiltonian systems; stability and instability of solitary waves; nonlinear dispersive waves; free boundary problems related to phase transition and multi-fluid flow; stochastic differential equations; control theory; inverse problems; computerized tomography.

Geometry: birational algebraic geometry and Mori theory; differential geometry and inverse spectral geometry; finite geometry related to non-associative division algebras.

Mathematical Biology: mathematical modeling of microbial populations, biofilms and competition dynamics; population biology and epidemiology; neuronal dynamics.

Mathematical Statistics, Probability Theory and Stochastic Process: multivariate analysis, statistical inference, sample survey and statistical process control; stochastic processes and applications to stochastic differential equations, random graphs, path integrals, quantum mechanics.

Mathematical Education: mathematics program development, impact of reform mathematics learning strategies on mathematics teaching, mathematics problem solving for teaching.

Numerical Analysis: numerical solutions to ordinary and partial differential equations; moving grid, multi-grid and multilevel adaptive methods; fluid dynamics (mechanics); numerical simulation and scientific computation; numerical combustion; software development.

PHYSICS

Current research in the department is primarily in the areas of condensed matter physics, materials science and high energy physics. The theoretical condensed matter group is engaged in cluster, electron transport, electronic structure, molecular dynamics and path integral computations having relevance to the chemical, electrical and magnetic properties of surfaces, metals and semiconductors. The experimental condensed matter group is

engaged in studies of diamond coatings, magnetic multi-layers, metals, semiconductors and surfaces using electron, positron, optical and magnetic resonance spectroscopies. The experimental high energy group is involved in collider experiments at Fermi-lab, Brookhaven Laboratory and CERN to study QCD and to search for super-symmetry and other physics beyond the standard model. Other active research areas include high energy theory, optics, parallel computing and statistical physics.

PSYCHOLOGY

Expertise and research activity include animal behavior, animal and human learning, cognitive processes, social psychology, psycho-biology and developmental psychology. Current research interests include group brainstorming, verbal memory and neuro-psychology, applied psychological measurement, pain systems, decision processes, naturalistic social cognition, stress, genetic and hormonal determinants of aggressive and defensive behaviors and parent-offspring interactions, sea turtle behavior, and infant mental representation of objects.

SCIENCE EDUCATION

The Master of Arts in Interdisciplinary Science (MAIS), a 36 credit hour degree program without a thesis requirement, was designed and developed by science teachers for science teachers. The program will help science educators strengthen and update their knowledge of content in two or more of the following cognate areas: biology, chemistry, earth & environmental sciences, mathematics, and physics. In addition to enhancing content knowledge, the courses will help educators develop teaching strategies that lead to improved student learning, implement high quality instructional materials, and develop skills in using various strategies for assessing student learning. The MAIS degree will serve the needs of classroom teachers, content-area and staff development specialists, curriculum developers, program directors, school administrators, college/university faculty, and educators from informal science institutions who have responsibility for designing, delivering, evaluating, and/or continuously improving standards-based science, mathematics, and technology instruction for students, prekindergarten through the undergraduate degree.

While engaging in the coursework, educators will become learners themselves to deepen their own mastery of scientific and/or mathematical content. The laboratory-based learning activities in the program will help science educators see teaching as less a matter of knowledge transfer and more as an activity of facilitation in which knowledge is generated, content is investigated in depth, and meaning is developed from experience. Graduates of the program will take their place as master science educators who are recognized as proven practitioners in delivering rigorous and relevant instruction and are valued as effective coaches, mentors, and teacher trainers.

Programs

MASTER OF SCIENCE DEGREES

Biology
Chemistry
Earth & Environmental Sciences (Both Thesis and Non-thesis)
Mathematics
Physics
Psychology

MASTER OF ARTS DEGREE

Interdisciplinary Science (Non-thesis)
Mathematics

DOCTORAL DEGREES

Chemistry
Experimental Psychology
Physics and Applied Physics
Quantitative Biology
Mathematics
Earth and Environmental Sciences

Biology

Undergraduate Degrees

- Bachelor of Arts in Biology (<http://catalog.uta.edu/science/biology/undergraduate/#bachelorstext/#ba>)
- Bachelor of Arts in Biology with Secondary Teacher Certification (<http://catalog.uta.edu/science/biology/undergraduate/#bachelorstext/#bsteacher>)
- Bachelor of Arts in Biology with Composite Science Certification (<http://catalog.uta.edu/science/biology/undergraduate/#bachelorstext/#bacomposite>)
- Bachelor of Science in Biology (<http://catalog.uta.edu/science/biology/undergraduate/#bachelorstext/#bsbiology>)
- Bachelor of Science in Microbiology (<http://catalog.uta.edu/science/biology/undergraduate/#bachelorstext/#bsmicrobiology>)
- Bachelor of Science in Medical Technology (<http://catalog.uta.edu/science/biology/undergraduate/#bachelorstext/#bsmedicaltechnology>)
- Bachelor of Science in Biology and Master of Science in Biology Fast Track (<https://catalog.uta.edu/science/biology/undergraduate/#bachelorstext>)
- Bachelor of Science in Biology and Master of Science in Biomedical Engineering (<http://catalog.uta.edu/science/biology/undergraduate/#bachelorstext/#bsmsbiomedical>)
- Minor in Biology (p. 1133)

Graduate Degrees

- Biology, M.S. (p. 1112)
- Quantitative Biology, B.S. to Ph.D. (p. 1113)
- Quantitative Biology, Ph.D. (p. 1113)

COURSES

BIOL 1301. NUTRITION. 3 Hours. (TCCN = BIOL 1322)

Nutrients essential to an adequate diet and good health and the nutritive values of common foods are reviewed. Offered as BIOL 1301 and HEED 1301: credit will be granted for only one of these courses. Students seeking certification in Health Education must enroll in HEED 1301. Students seeking credit toward their science requirement must enroll in BIOL 1301. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, or medical technology.

BIOL 1333. DISCOVERING BIOLOGY: MOLECULES, CELLS AND DISEASE. 3 Hours. (TCCN = BIOL 1306)

Scientific literacy is crucial for navigating health-related issues in today's society. In this lecture and lab course, non-science majors will learn about the molecules of life, the cell, energy and metabolism, cell division, genetics and inheritance and diseases, such as cancer and diabetes. This course will satisfy the laboratory science requirements for students in the Colleges of Liberal Arts and Business Administration, and in the School of Social Work. Formerly listed as BIOL 1433, credit will not be given for both.

BIOL 1334. LIFE ON EARTH: EVOLUTION, ECOLOGY AND GLOBAL CHANGE. 3 Hours. (TCCN = BIOL 1307)

Scientific literacy is crucial for understanding the natural world and our relationship to it. In this lecture and lab course, non-science majors will learn about biologically-based problems facing today's society. Course themes include evolution, antibiotic resistance, genetic diversity, animal and bacterial and plant diversity, ecosystems, ecology and global change. This course will satisfy the laboratory science requirements for students in the Colleges of Liberal Arts and Business Administration, and in the School of Social Work. Formerly listed as BIOL 1434, credit will not be given for both.

BIOL 1345. BIOLOGY I FOR NURSING STUDENTS. 3 Hours.

This course focuses on the chemical and molecular basis of life, including metabolism, cell structure and function, and genetics to provide knowledge of these subjects for those pursuing a degree in nursing. Note: This course cannot be applied for credit toward a degree in Biology.

BIOL 1441. CELL AND MOLECULAR BIOLOGY. 4 Hours. (TCCN = BIOL 1406)

(BIOL 1406) This course focuses on the chemical and molecular basis of life, including metabolism, cell structure and function, and genetics. Laboratory experiments are designed to complement theory presented in lecture. Formerly listed as BIOL 1449; credit will not be given for both.

BIOL 1442. EVOLUTION AND ECOLOGY. 4 Hours. (TCCN = BIOL 1407)

Reviews significant aspects of organismal biology and presents current hypotheses concerning the origin and diversification of life on earth. The ecological and behavioral interactions between organisms and their biotic/abiotic environments are considered from an evolutionary perspective. The laboratory will examine evolution, ecology and the diversity of life using hands-on observational and experimental approaches. Prerequisite: BIOL 1441.

BIOL 2300. BIostatISTICS. 3 Hours.

Introduction to the collection, description, and analysis of data with statistical methods appropriate for biological sciences. Specific topics covered include but are not limited to: descriptive statistics, frequency distributions, random sampling, probabilities, binomial distribution, normal distribution theory and calculations, confidence intervals, t-tests (independent sample and paired designs), Chi-square tests (one-way and two-way analysis), analysis of variance, correlation and linear regression. Prerequisite: BIOL 1441 and BIOL 1442, or permission of the instructor.

BIOL 2317. BASIC CONCEPTS IN HUMAN SEXUALITY. 3 Hours.

The physiological, psychological, and sociological aspects of human sexuality. Offered as BIOL 2317, HEED 2317, PSYC 2317, and WOMS 2317. Credit will be granted for one of these courses only. Students seeking certification in Health Education must enroll in HEED 2317. Students seeking credit toward their science requirement must enroll in BIOL 2317. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, medical technology, psychology, or sociology.

BIOL 2444. GENERAL MICROBIOLOGY. 4 Hours.

Fundamental principles of microbiology including the structure and function of microbial cells and their activities in nature. Bacteria will be used in the laboratory to provide training and experimental methodology. Formerly listed as BIOL 3444; credit will not be granted for both. Prerequisite: BIOL 1441, CHEM 1441 or CHEM 1341.

BIOL 2457. HUMAN ANATOMY AND PHYSIOLOGY I. 4 Hours. (TCCN = BIOL 2401)

Functional morphology of humans, cellular function, principles of support and movement, and neural and endocrine control systems. Laboratory exercises involve both anatomical and experimental aspects of principles introduced in the lecture. This class is designed for students in sport activities (EXSA), medical technology and pre-nursing. Prerequisite: BIOL 1345 or BIOL 1441 or equivalent, or approval of the department. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology or microbiology.

BIOL 2458. HUMAN ANATOMY AND PHYSIOLOGY II. 4 Hours. (TCCN = BIOL 2402)

Functional morphology of humans, maintenance of the human body, and continuity of life. Topics will include the cardiovascular, respiratory, digestive, urinary, immune, and reproductive systems. Laboratory exercises explore both anatomical and experimental aspects of principles introduced in the lecture. This class is designed for students in sport activities (EXSA), medical technology, and pre-nursing. Prerequisite: BIOL 2457 or equivalent. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology or microbiology.

BIOL 2460. NURSING MICROBIOLOGY. 4 Hours.

The intention of this course is to present basic information, relevant to nursing practice, with the principles of microbiology and the nature of microbial disease. This course will give the nursing student a fundamental background of knowledge that will be applicable to the care of infectious patients, to the control of microbial diseases, and an understanding of microorganisms. The laboratory will provide practice in aseptic techniques, the use of disinfectants and antimicrobial agents, and microscopic study of bacteria. This course cannot be applied for credit toward a degree in Biology. Prerequisite: BIOL 1345, or BIOL 1441 or equivalent.

BIOL 3101. CURRENT TOPICS IN BIOLOGY. 1 Hour.

Seminar on significant topics and issues in modern biology. Students will present seminars on selected topics and participate in discussions of those topics. Topics will vary depending on instructor. This course will satisfy the oral communication competency required in Biology. May be repeated once for biology credit.

BIOL 3131. SERVICE LEARNING. 1 Hour.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisite: Permission of the Instructor.

BIOL 3149. COOPERATIVE PROGRAM IN BIOLOGY. 1 Hour.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 3231. SERVICE LEARNING. 2 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisite: Permission of the Instructor.

BIOL 3249. COOPERATIVE PROGRAM IN BIOLOGY. 2 Hours.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 3301. CELL PHYSIOLOGY. 3 Hours.

An introduction to the basic physical, chemical, and biological principles which govern function in eukaryotic cells, and the relationships between cells and their environments. Prerequisite: BIOL 1441. CHEM 2181 and CHEM 2321 are recommended.

BIOL 3302. UNDERGRADUATE RESEARCH EXPERIENCE. 3 Hours.

In this laboratory course, students will learn core concepts in Biology through an intense research experience. Students will master skills including quantitative data analysis, oral and written communication, and critical thinking. Permission is required to enroll in this course.

BIOL 3303. DRUGS AND BEHAVIOR. 3 Hours.

A survey of the psychoactive agents, their therapeutic uses, and social abuses. Alcohol, nicotine, caffeine, narcotics, hallucinogens, stimulants, and tranquilizers. Offered as BIOL 3303, HEED 3303, and PSYC 3303; credit will be granted only once. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology, microbiology, or medical technology. Students seeking certification in health education must enroll in HEED 3303.

BIOL 3304. MICROBIAL GENETICS. 3 Hours.

Consideration of the physical, chemical, and functional nature of genetic processes in micro-organisms. Prerequisite: BIOL 2444 or BIOL 3444, or permission of instructor.

BIOL 3306. BACTERIAL PHYSIOLOGY AND ANTIBIOTICS. 3 Hours.

This course will cover the fundamentals of how bacterial cells work, and how antibiotics interfere with essential functions to stop bacterial cells from working. This class is taught largely through reading and discussion of the primary literature, and with active learning and writing assignments.

Prerequisite: BIOL 2444 or BIOL 3444.

BIOL 3307. EVOLUTIONARY MEDICINE. 3 Hours.

The application of evolutionary theory to the practice of medicine from an anthropological perspective. Topics include diet/paleodiets, sleep habits, infectious diseases, the developmental origins of health and disease, mental health, women's health and reproduction, and aging/senescence, among others. Offered as BIOL 3307 and ANTH 3307; credit will only be granted in one department.

BIOL 3308. MICROBIAL ECOLOGY AND EVOLUTION. 3 Hours.

The diversity, ecology and evolution of microorganisms in natural systems. Topics will include the role of bacteria and fungi in the functioning of terrestrial ecosystems; microbial biogeography; taxonomic and metabolic diversity; evolutionary diversification; and interactions among microbes and with plant and animal hosts. Prerequisite: BIOL 2444 or BIOL 3444.

BIOL 3310. SELECTED TOPICS IN BIOLOGY. 3 Hours.

Topics in biology not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for biology elective credit as different topics are offered. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3311. SELECTED TOPICS IN MICROBIOLOGY. 3 Hours.

Topics in microbiology not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for microbiology elective credit as different topics are offered. Prerequisite: BIOL 1441, BIOL 3444.

BIOL 3312. IMMUNOLOGY. 3 Hours.

An introduction to the components, properties, and manifestations of the adaptive immune response that occurs in vertebrates. Prerequisite: BIOL 1441, BIOL 3444. CHEM 2181, CHEM 2321 are recommended.

BIOL 3313. HUMAN ADAPTATION AND THE CONCEPT OF RACE. 3 Hours.

The study of modern human biological variation in the context of the history of the concept of race. Detailed historical review explores changing perspectives on variation within our species. Course examines physiological adaptations to environmental stress among a variety of human populations and implications of recent genetic research. Offered as BIOL 3313 and ANTH 3311; credit will only be granted in one department.

BIOL 3314. PRIMATE EVOLUTION AND BEHAVIOR. 3 Hours.

An overview of the Primate Order covering primate origins, evolution, ecology, adaptation, and behavior. Examination of the environmental context within which primates live, how the form of their bodies reflects their activities, and how they relate behaviorally to their environments and to one another. Offered as BIOL 3314 and ANTH 3313; credit will only be granted in one department.

BIOL 3315. GENETICS. 3 Hours.

Principles of molecular and classical genetics. The function and transmission of hereditary material in microorganisms, plants, and animals, including humans. Prerequisite: BIOL 1441.

BIOL 3316. ASTROBIOLOGY I. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include properties of life, origin and evolution of life on Earth, terrestrial geology and habitability, environmental forcings, extremophiles, mass extinctions, meteorites, searches for life in the solar system. Offered as BIOL 3316, GEOL 3316 and PHYS 3316; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent.

BIOL 3317. GENOMICS. 3 Hours.

This course presents an integrative approach to genome science, combining elements of genetics, state of the art technologies in genomic analysis. A basic knowledge of genetics and probability concepts is required. Use of the World Wide Web will be an essential part of the course. Prerequisite: BIOL 3315 or permission of instructor.

BIOL 3318. LIMNOLOGY. 3 Hours.

The living and nonliving components of inland waters. An introduction to the geological, physical, and chemical background, and to the major organisms and ecological processes. Prerequisite: BIOL 1441, BIOL 1442 or equivalent.

BIOL 3319. HUMAN GENETICS. 3 Hours.

This course will enable students to comprehend the basic principles of genetics applied to human inheritance and disease, to interpret the research strategies aimed to identify and study the genes responsible for diverse functions and traits, as well as to assess the consequences of the genetic technologies in our society. Prerequisites: BIOL 1441 and BIOL 3315.

BIOL 3320. BIOLOGY OF TEXAS. 3 Hours.

This course is an introduction to habitat diversity and the number of species found in the state of Texas. Students will learn about the physical, climatological, and human geography of Texas and how that affects animal and plant life within the state. Descriptions of state and federal endangered species listing processes will also be covered. Prerequisite: BIOL 1441 and BIOL 1442.

BIOL 3321. INFECTIOUS DISEASE. 3 Hours.

This course will cover key concepts that relate to the history and background of infectious diseases, as well as the emergence, spread, and control of infectious disease epidemics. Vaccination, antibiotic resistance, and eradication of diseases will also be discussed. Prerequisite: BIOL 3444.

BIOL 3322. BRAIN AND BEHAVIOR. 3 Hours.

An introduction to the anatomical structures and physiological processes that determine behavior. Topics include the acquisition and processing of sensory information, the neural control of movement, and the biological bases of complex behaviors (such as learning, memory, sex, language, and addiction), as well as the basic functioning of the nervous system. Offered as BIOL 3322 and PSYC 3322. Credit will be granted only once. BIOL 3322 prerequisite: BIOL 1441, BIOL 1442. PSYC 3322 prerequisite: BIOL 1441 or PSYC 1315.

BIOL 3324. HUMAN ECOLOGY OF FOOD. 3 Hours.

Modern food production and consumption is a complex, interdisciplinary topic directly relevant to global environmental and public health issues. This course will examine our place in the food web from ecological, biogeographical, historical, cultural, and sociopolitical perspectives. Course participants will examine the implications of our everyday decisions as consumers who play a key role in an intricate ecological system. Prerequisite: BIOL 1441 and BIOL 1442.

BIOL 3326. ANIMAL BEHAVIOR. 3 Hours.

A survey of research and theory comparing behavior at various phyletic levels. Offered as BIOL 3326 and PSYC 3326. Credit will be granted for only one of these courses. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3327. MICROBIAL DIVERSITY. 3 Hours.

This course is an introduction to the great diversity of microbial life. The topic material explores this diversity by considering the great age of bacteria, their evolution, biochemistry, habitat and form. The course of study focuses attention on organisms not commonly encountered in General Microbiology laboratories. Prerequisite: BIOL 3444 Microbiology.

BIOL 3328. ENVIRONMENTAL MICROBIOLOGY. 3 Hours.

An introduction to the principles, methodology, and practical applications and implications of environmental microbiology. Lecture topics include habitat and community approaches to environmental microbiology, measures of microbial populations and activities, interactions among microbial communities, the role of microorganisms in the origin of mineral resources, microorganisms and pollution, and current developments on energy flow through microbial communities. Prerequisite: BIOL 3444.

BIOL 3331. SERVICE LEARNING. 3 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisite: Permission of the Instructor.

BIOL 3339. INTRODUCTION TO EVOLUTION. 3 Hours.

The goals of this course are: to introduce students to the process of evolution, the patterns that result, and the way that evolutionary history has shaped the diversity of organisms on Earth; to explore how evolutionary biologists formulate and test hypotheses; to investigate applications of evolutionary biology to mainstream medical research; and to investigate current controversies in evolutionary biology. Prerequisites: BIOL 1441 and BIOL 3315 (or equivalent), or permission of instructor.

BIOL 3340. BIOINFORMATICS. 3 Hours.

This course is an applied introduction to bioinformatics and computational genomics. The course is geared toward the student with a biology background and limited programming experience. The course provides an entrance to commonly used programming/scripting languages and an introduction to numerous aspects of modern genomic data analyses (e.g. identification of coding and regulatory features in novel sequences, expression analysis, and comparative/phylogenetic analyses). Prerequisite: BIOL 1442 and BIOL 3315, or permission of instructor.

BIOL 3348. PRE-MEDICAL PRECEPTORSHIP. 3 Hours.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment. This course offers an introduction to the general principles and the environment of the practice of medicine in various specialties. Students are afforded the opportunity to observe a physician in a real-world setting, often including inpatient and operating theater scenarios. Students will also be exposed to the primary literature and practice oral presentation skills over biomedical topics.

BIOL 3349. COOPERATIVE PROGRAM IN BIOLOGY. 3 Hours.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 3352. INTRODUCTION TO FORENSIC LAB SCIENCE. 3 Hours.

An introduction to the various disciplines of Forensic Science including DNA analysis, drug analysis, and firearms basics. Laboratory consists of hands-on investigation of mock crime scenes, fingerprint enhancement methods, and biological analysis of fluids. Prerequisite: BIOL 1441, BIOL 1442, CHEM 1441.

BIOL 3355. TOXICOLOGY. 3 Hours.

An introduction to the general principles of toxicology with an emphasis on certain classes of toxic agents, their sources and toxic effects, as well as their environmental fates. Pollution of various media (air, water and soil) and the differences between them will be discussed. Prerequisite: BIOL 1441 or 4 hours of BIOLTRAN; CHEM 1441.

BIOL 3356. ENVIRONMENTAL SYSTEMS, BIOLOGICAL ASPECTS. 3 Hours.

Biological components of environmental systems. Population dynamics, species interactions, community structure, biodiversity, bioenergetics, nutrient cycling and human impacts are reviewed. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3358. ASTROBIOLOGY II. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include basic properties of life, habitability of Earth, studies of possible life regarding Mars, Europa & Titan, space missions, exoplanets and exomoons, stellar habitable zones, multistellar systems, exoEarths, biomarkers, SETI, Fermi paradox, Drake equation, cosmology. Offered as BIOL 3358, GEOL 3358, and PHYS 3358; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent. Note that Astrobiology I is strongly recommended to students to be taken prior to Astrobiology II, but is not a prerequisite.

BIOL 3409. PALEOANTHROPOLOGY. 4 Hours.

Paleoanthropology: an exploration of fossil evidence for human origins and human evolution. Course focuses on the evolution of humans and our close relatives, from our origins as a distinct lineage to "anatomically modern" Homo sapiens, including the relationship between biological and cultural/behavioral evolution. Offered as BIOL 3409 and ANTH 3409; credit will be granted only once.

BIOL 3410. SELECTED TOPICS IN BIOLOGY. 4 Hours.

Topics in biology not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May include lab, service learning or any other experiential learning module. May be repeated for biology elective credit as different topics are offered. Prerequisite: BIOL 1441 or BIOL 1442.

BIOL 3420. GENETICS METHODS LAB. 4 Hours.

Computational and experimental approach to genomics research. The course theme will be transposable elements. Prerequisite: BIOL 3315.

BIOL 3427. PLANT SCIENCE. 4 Hours.

A survey of plant science including the importance of plants to people and the human side of botany: the structure, reproduction, physiology, and classification of plants. The laboratory includes the study of structure, function, reproduction, and classification of plants. Replaces BIOL 3327 and BIOL 3183. Credit cannot be given for BIOL 3427 and BIOL 3327 and 3183. Prerequisite: BIOL 1441, BIOL 1442 or equivalent.

BIOL 3442. HUMAN PHYSIOLOGY. 4 Hours.

A comparative study of vertebrate function. The general principles of physiological mechanisms on the cellular, tissue, organ, and organismal levels will be examined. Laboratory studies will complement lecture material and will stress experimental design, data analysis, and the understanding of critical research in physiology. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3445. METHODS IN MOLECULAR MICROBIOLOGY. 4 Hours.

An overview of different techniques used during manipulation of microorganisms. It will allow students to gain an historical perspective of techniques used in microbiology as well as learn state of the art molecular characterization of microorganisms and their genetic manipulation. Introduces biochemical, physiological, and molecular biology methods to assess community diversity and microbial activity in a variety of ecosystems. Bacterial growth and survival, population biology, and microbial interactions will also be discussed. Prerequisite: BIOL 1441 and BIOL 3444.

BIOL 3446. HUMAN ANATOMY. 4 Hours.

Study of the gross functional anatomy of the human body. Students will participate in laboratory exercises designed to familiarize them with human anatomical structures and their functions. Use of eponyms for anatomical terms will be minimized. Prerequisite: BIOL 1441, BIOL 1442 or 8 hours of Bioltran.

BIOL 3454. GENERAL ZOOLOGY. 4 Hours.

An overview of animal life including the diversity and evolution of major animal phyla, reproduction, development and aspects of physiological function. The laboratory examines form, function and phyletic relationships in a wide variety of animal types. Prerequisite: BIOL 1441, BIOL 1442, or equivalent, or permission of instructor.

BIOL 3457. GENERAL ECOLOGY. 4 Hours.

An examination of the theoretical and experimental aspects of the relationship between the biological and physical environments (organisms, food, space, and time) at the individual, population, community, and ecosystem levels. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 4089. RESEARCH IN BIOLOGY. 0 Hours.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. Prerequisite: written permission of the supervising instructor prior to registration. This is a non-credit course. Prerequisite: Written permission of the supervising instructor prior to registration.

BIOL 4179. RESEARCH AND DIRECTED STUDY. 1 Hour.

Research or independent study by individual students in biology under the supervision of a biology faculty member. Topics must be approved by the supervising faculty member. Prerequisite: BIOL 1441, BIOL 1442, and permission of instructor.

BIOL 4189. RESEARCH IN BIOLOGY. 1 Hour.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. A limit of two hours per semester is imposed and only a total of three hours may be counted toward degree requirements. These courses are offered only on a pass/fail basis. Prerequisite: written permission of the supervising instructor prior to registration.

BIOL 4279. RESEARCH AND DIRECTED STUDY. 2 Hours.

Research or independent study by individual students in biology under the supervision of a biology faculty member. Topics must be approved by the supervising faculty member. Prerequisite: BIOL 1441, BIOL 1442, and permission of instructor.

BIOL 4289. RESEARCH IN BIOLOGY. 2 Hours.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. A limit of two hours per semester is imposed and only a total of three hours may be counted toward degree requirements. These courses are offered only on a pass/fail basis. Prerequisite: written permission of the supervising instructor prior to registration.

BIOL 4307. MOLECULAR EVOLUTION. 3 Hours.

This course focuses on understanding how genes and genomes evolve at the molecular level. Molecular biology provides the data while population genetics provides the theoretical framework. Prerequisite: BIOL 3315, BIOL 3339.

BIOL 4309. NEUROPHARMACOLOGY. 3 Hours.

A survey of how drugs affect the nervous system. General topics will include cellular and molecular foundations of neuropharmacology, receptors and modulation of neural signaling. The specific role of neurotransmitter systems (i.e. acetylcholine, dopamine, norepinephrine, serotonin, and opiate) will be explored. Offered as BIOL 4309 and PSYC 4309; credit will be granted only once. Prerequisite: one or more of the following courses or permission of instructor: BIOL 1441 or PSYC 3322/BIOL 3322 or BIOL 3301.

BIOL 4311. HISTOLOGY. 3 Hours.

Histology is a branch of biological science concerned with structure and function of the organism on a cellular level. The objective in this class is to provide students with the skills and knowledge needed to identify and describe tissues and organs in the microscopic images based on the characteristic morphologies of cells and arrangement of tissues. Students will learn about basic histological techniques used in slide preparation, four basic tissue types and types of tissue, followed by the survey of microscopic images of all organ systems. This course bridges the "whole body" disciplines of anatomy and physiology and cell-level sciences such as cell physiology and genomics. It will help students understand how the differential expression of the genome leads to different cell morphology that in turn leads to different functions. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 4312. INTRODUCTION TO VIROLOGY. 3 Hours.

The nature, reproduction, and host cell interactions of viruses and virus-like agents of bacteria, animals, and plants. Prerequisite: BIOL 3444.

BIOL 4316. GROWTH, DEVELOPMENT, AND EVOLUTION. 3 Hours.

A survey of topics at the nexus of modern human biological research in growth and development and the evolutionary record of hominid subadults. Offered as BIOL 4316 and ANTH 4315; credit will be granted only in one department. Prerequisite is only required for students registering for ANTH 4315. Prerequisite: ANTH 2307 or permission of the instructor.

BIOL 4317. BACTERIAL PATHOGENESIS. 3 Hours.

Host-pathogen relationships in microbial diseases. Topics include bacterium-host interactions; pathogens and pathogenic factors; techniques in pathogenesis research; molecular mechanisms of pathogenesis by major bacterial pathogens; antimicrobial compounds and resistance to antibiotics; and discussion of human genomics and susceptibility to infections. Prerequisites: BIOL 3312, BIOL 3444.

BIOL 4327. BEHAVIORAL GENETICS. 3 Hours.

Genetic influences on behavioral phenotypes. Research strategies, quantitative methods, and pharmacogenetic approaches to the brain; sociality and altruism; the personality, emotionality and intelligence; psychopathology; chromosomal abnormalities; forensic implications of genetic counseling. Offered as BIOL 4327 and PSYC 4327; credit will be granted only once. Students seeking credit toward the science requirement must enroll in BIOL 4327. Prerequisite: PSYC 1315 or BIOL 1441.

BIOL 4329. NEURAL ENGINEERING. 3 Hours.

This course consists of both lecture/discussion and laboratory. Lecture topics include central and peripheral nervous system injury and regeneration, brain/machine interfacing, primary culture of neural cells, neuroinflammatory and neurodegenerative disease. Laboratories include embryonic and neonatal rat derived neuronal culturing, immunostaining and quantitative analysis. Prerequisites: BIOL 3301, CSE 1310, CHEM 2322, and MATH 3319.

BIOL 4332. POLYMERS IN BIOMEDICAL ENGINEERING. 3 Hours.

This is a foundation course in polymeric biomaterial design, synthesis, characterization, and processing. The topics include design, surface-engineering, functionalization, characterization, as well as micro- and nano-fabrication of polymeric biomaterials. The biomedical applications of the polymeric biomaterials and their interaction with cell/tissue is discussed. Prerequisite: BIOL 3301, CSE 1310, CHEM 2322 and MATH 3319.

BIOL 4333. NANOBOMATERIALS. 3 Hours.

Synthesis, fabrication, characterization, and biomedical applications of nanobiomaterials. Topics include synthetic nanobiomaterials, biological nanobiomaterials (DNA nanomaterials, protein and peptide nanomaterials, etc.), biofunctionalization of nanobiomaterials, use of nanobiomaterials in tissue engineering, drug delivery, gene delivery. Prerequisites: BIOL 3301, CSE 1310, CHEM 2322, and MATH 3319.

BIOL 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with 4 independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment; junior or senior standing.

BIOL 4345. MICROBIAL PHYSIOLOGY. 3 Hours.

This course considers the anatomy and physiology of the bacterial cell in detail. Lecture topics consider the molecular architecture of cell walls, membranes and organelles, synthesis of wall material and membranes, insertion of proteins into membranes and regulation of biosynthetic systems at the whole cell level. Prerequisite: BIOL 1441 and BIOL 3444. CHEM 4311 recommended.

BIOL 4350. CONSERVATION BIOLOGY. 3 Hours.

Introduction to theory and practice of conservation biology, with emphasis on applications of modern quantitative and genetic techniques to preservation of organisms and habitats. Topics include identification and prioritization of units for protection; conservation genetics; preserve design; public policy issues; and case studies. Prerequisite: BIOL 3315 or equivalent (Genetics), or permission of the instructor.

BIOL 4352. FORENSIC BIOLOGY. 3 Hours.

A comprehensive review of biological principles, applied to forensic science, including sample recovery and handling, analytical techniques, profile matching/exclusion, reporting, and testimony. Prerequisite: BIOL 3315; statistics course recommended; or permission of instructor.

BIOL 4355. METHODS IN FORENSIC BIOLOGY. 3 Hours.

Analysis of typical biological evidentiary samples including extraction of DNA, quantitation, amplification and electrophoresis of examples. Instrumentation utilized includes thermal cyclers and ABI 377 genetic analyzer. Prerequisite: BIOL 4352 or concurrent enrollment.

BIOL 4357. HEALTH PSYCHOLOGY. 3 Hours.

This course provides a broad introduction to health psychology and its interface with the medical world. The course provides a balanced presentation of the important issues in the field, as well as specific content topics that are especially relevant today to better understand health and illness. Offered as BIOL 4357, HEED 4357, and PSYC 4357. Students seeking science requirement credit must enroll in BIOL 4357; students seeking Certification in Health must enroll in HEED 4357. Prerequisite: PSYC 1315 or BIOL 1333 or BIOL 1441 or BIOL 2457; junior standing recommended.

BIOL 4365. TISSUE ENGINEERING LAB. 3 Hours.

Each student will be given the opportunity to perform the techniques commonly used in tissue engineering and biomaterial research. These techniques are culture media preparation, cell culture/subculture, degradable scaffold preparation, scaffold modification, histological sections and staining, and cell imaging analyses. Prerequisites: BIOL 3301, CSE 1310, CHEM 2322, and MATH 3319.

BIOL 4379. RESEARCH AND DIRECTED STUDY. 3 Hours.

Research or independent study by individual students in biology under the supervision of a biology faculty member. Topics must be approved by the supervising faculty member. Prerequisite: BIOL 1441, BIOL 1442, and permission of instructor.

BIOL 4388. INSTRUCTIONAL TECHNIQUES IN BIOLOGY. 3 Hours.

Students will participate in laboratory instruction and student recitation sessions under the supervision of a faculty member. A maximum of 3 hours can be applied to the major for biology or microbiology credit. Enrollment by departmental permission only. A maximum of 6 hours credit from this class will be used to calculate a student's grade point average. Students on probation or who have not qualified for major status may not enroll in this course.

BIOL 4389. RESEARCH IN BIOLOGY. 3 Hours.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. A limit of two hours per semester is imposed and only a total of three hours may be counted toward degree requirements. These courses are offered only on a pass/fail basis. Prerequisite: written permission of the supervising instructor prior to registration.

BIOL 4390. INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY. 3 Hours.

Students will participate in laboratory instruction and laboratory preparation under the supervision of the lab coordinator. A maximum of 3 hours can be applied to the major for biology or microbiology credit. Enrollment by departmental permission only. A maximum of 6 hours credit from this class will be used to calculate a student's grade point average. Students on probation or who have not qualified for major status may not enroll in this course.

BIOL 4392. INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY LEADER. 3 Hours.

Students will take on a leadership role in laboratory instruction and preparation under the supervision of the lab coordinator. Students will strengthen their skill set and gain experience in a supervisory role. A maximum of 3 hours can be applied to the major for biology or microbiology credit. Enrollment by departmental permission only. A maximum of 6 hours credit from this class will be used to calculate a student's grade point average. Students on probation or who have not qualified for major status may not enroll in this course.

BIOL 4393. HONORS SENIOR PROJECT IN BIOLOGY. 3 Hours.

A topic will be selected after consultation with a supervising professor and will involve both original research and writing a formal report. The work will be evaluated by a faculty honors committee. Completion of this course will satisfy the thesis requirement for the Honors College described elsewhere in this catalog.

BIOL 4395. FORENSICS-EL PA. 3 Hours.**BIOL 4406. HUMAN OSTEOLOGY. 4 Hours.**

Detailed examination of human skeletal morphology. Topics include form and function of all skeletal elements in the human body, differentiation of each bone, left and right side identification, identification of fragmented remains, and muscle attachments and articulations. Content useful in forensic anthropology, archaeology, and hominid paleontology. Offered as BIOL 4406 and ANTH 4406; credit will be granted only in one department.

BIOL 4421. ADVANCED TOPICS IN NEUROSCIENCE. 4 Hours.

This course will cover current topics in Neuroscience using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Neuroscience research. Completion of this course is essential for students who are interested in pursuing a career in Neuroscience research. Offered as BIOL 4421 or PSYC 4421. Credit will be granted only once. Junior standing recommended. Prerequisite: C or better in BIOL 3322 or PSYC 3322.

BIOL 4440. LABORATORY METHODS IN BACTERIAL PATHOGENESIS. 4 Hours.

This course is intended to expose students to research techniques for studying bacterial pathogens. Students will use molecular and classical techniques to isolate, identify, and characterize bacteria and their response to stimuli. Techniques will range from polymerase chain reaction (PCR), gene sequencing, sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) and Immunofluorescence Microscopy. Prerequisites: BIOL 3312, BIOL 3444, BIOL 4317, or permission of instructor.

BIOL 4441. ADVANCED MICROBIOLOGY LAB. 4 Hours.

An overview of advanced microbiology techniques used in microbial genetics and physiology. It will allow students not only to gain an advanced and applicable perspective of techniques used in microbiology, but also to learn current state-of-the-art molecular techniques for genetic manipulation and physiological characterization of microorganisms. Included are molecular, physiological, and biochemical methods as well as metagenomics approaches and basic analysis of sequencing data for studying microbiomes. Enrollment requirements: BIOL 1441, General Microbiology (BIOL 2444), and Microbial Genetics (BIOL 3304). Prerequisite: BIOL 1441, BIOL 2444 or BIOL 3444, BIOL 3304.

BIOL 4459. BIOARCHAEOLOGY. 4 Hours.

The study of human remains in archaeological contexts in order to reconstruct individual identity, life history, and past population characteristics. No formal prerequisites, but familiarity with the human skeleton is helpful. Lab component is required. Offered as BIOL 4459 and ANTH 4459; credit will be granted only in one department.

BIOL 4460. ZOOARCHAEOLOGY. 4 Hours.

The study of faunal remains from archaeological contexts to understand past human economic strategies and ecological circumstances. Topics include skeletal and taxonomic identification, taphonomic processes, mortality profiles, biometric analyses, and human behavioral ecology. Lab component is required. Offered as BIOL 4460 and ANTH 4460; credit will be granted only once.

BIOL 5101. SPECIAL TOPICS IN BIOLOGY. 1 Hour.

Seminar on significant biological research. May be repeated for credit. Prerequisite: consent of the instructor.

BIOL 5102. PROFESSIONAL DEVELOPMENT. 1 Hour.

This course will provide senior graduate students with important information regarding various aspects of their professional development including job searching, interviewing, stress and time management, and professional ethics.

BIOL 5193. RESEARCH IN BIOLOGY. 1 Hour.

Conference course in which the student undertakes intensive investigation of topics under the supervision of a staff member. Prerequisite: consent of the instructor. Graded P/F/R.

BIOL 5291. INDIVIDUAL PROBLEMS IN BIOLOGY. 2 Hours.

Individual research projects supervised by a faculty member. Prerequisite: consent of the instructor.

BIOL 5293. RESEARCH. 2 Hours.**BIOL 5301. LABORATORY ROTATION. 3 Hours.**

This course is an elective designed to enable students to choose a major advisor and laboratory. Rotations among two or three faculty laboratories will familiarize students with faculty research interests, sharpen individual research skills, and expose students to different study systems, instruments, and research methods. May only be taken once for credit by MS students; may be repeated for credit once by Ph.D. students.

BIOL 5302. MICROBIAL GENETICS. 3 Hours.

Consideration of the nature, expression and regulation of the genetic processes in micro-organisms.

BIOL 5303. MICROBIOMES: HEALTH AND THE ENVIRONMENT. 3 Hours.

The development, interactions, and change of polymicrobial communities in both humans and the environment with implications in health, nutrition, disease, research, ecology and agriculture.

BIOL 5304. VIROLOGY. 3 Hours.

The nature, reproduction and host-cell interactions of viruses and animals. Emphasizes molecular aspects of viral replication and the molecular basis of pathogenesis. Prerequisite: consent of the instructor.

BIOL 5307. NEUROBIOLOGY. 3 Hours.

General principles of the function, structure, and organization of the nervous system. Topics include the gross and microscopic anatomy of nervous tissues; physical and chemical basis for action potentials and synaptic transmission; sensory and motor pathways of transduction; molecular, cellular, and systems study of learning and memory; development; and a study of neural diseases and disorders.

BIOL 5309. IMMUNOLOGY. 3 Hours.

This course is designed to acquaint students with the cellular processes involved in the generation of an immune response. It will provide students with detailed knowledge of the cells and organs of the immune system, their organization and diversity and their specialized functions at different anatomical locations. The importance of immune cell receptors and cytokines in cellular interactions and co-ordination of immunological mechanisms is also emphasized.

BIOL 5310. SELECTED TOPICS IN BIOLOGY. 3 Hours.

Topics may vary depending on the needs and interests of the students. May be repeated for credit. Prerequisite: consent of the student's thesis committee and the current course instructor.

BIOL 5311. EVOLUTION. 3 Hours.

Study of the origin of living systems and the mechanism of their evolution. Prerequisite: BIOL 3315 or equivalent or consent of the instructor.

BIOL 5312. ADVANCED GENETICS. 3 Hours.

Mechanisms of transmission and function of genetic material. Covers fundamental concepts in transmission genetics including: genotype/phenotype relationships; inheritance; linkage; genome organization; and gene expression. Experimental and quantitative approaches to genetic analyses are emphasized. Prerequisite: consent of the instructor.

BIOL 5314. BIOMETRY. 3 Hours.

An examination of statistical methods and procedures in relation to the design of biological experiments and the analysis of their results. Prerequisite: consent of the instructor.

BIOL 5315. COMMUNITY ECOLOGY. 3 Hours.

An investigation of the effects of interspecific interactions on the distribution and abundance of organisms. Prerequisite: consent of the instructor.

BIOL 5317. BACTERIAL PATHOGENESIS. 3 Hours.

Host-pathogen relationships in microbial diseases. Topics include bacterium-host interactions, pathogens and pathogenic factors: techniques in pathogenesis research: molecular mechanisms of pathogenesis by major bacterial pathogens; antimicrobial compounds and resistance to antibiotics; and discussion of human genomics and susceptibility to infections.

BIOL 5319. HUMAN GENETICS. 3 Hours.

This course will enable students to comprehend the basic principles of genetics applied to human inheritance and disease, to interpret the research strategies aimed to identify and study the genes responsible for diverse functions and traits, as well as to assess the consequences of the genetic technologies in our society.

BIOL 5325. PLANT ECOLOGY. 3 Hours.

An introduction to plant ecology including physiological, population, community and ecosystem ecology.

BIOL 5335. ESSENTIALS OF GENOMICS. 3 Hours.

An integrative approach to genome science, combining elements of genetics, statistics and bioinformatics. Current technologies used in genomics analysis will be presented.

BIOL 5336. MOLECULAR EVOLUTION. 3 Hours.

An exploration of how genes and genomes evolve at the molecular level. The presentation uses the theoretical framework provided by population genetics to analyze molecular biology data.

BIOL 5340. BIOINFORMATICS. 3 Hours.

This course is an applied introduction to bioinformatics and computational genomics. The course is geared toward the student with a biology background and limited programming experience. The course provides an entrance to commonly used programming/scripting languages and an introduction to numerous aspects of modern genomic data analyses (e.g. identification of coding and regulatory features in novel sequences, expression analysis, and comparative/phylogenetic analyses).

BIOL 5349. COOPERATIVE PROGRAM IN BIOLOGY. 3 Hours.

The purpose of this course is to allow students to earn credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 5350. CONSERVATION BIOLOGY. 3 Hours.

Theory and practice of conservation biology, with emphasis on applications of modern quantitative and molecular genetic techniques to preservation of organisms and habitats. Includes: identification and prioritization of units for protection; conservation genetics; preserve design; public policy; and current case studies. Prerequisites: BIOL 3315 or equivalent or consent of the instructor.

BIOL 5351. ENVIRONMENTAL MICROBIOLOGY. 3 Hours.

Principles, methodology, and practical applications of environmental microbiology. Topics include: habitat and community approaches to environmental microbiology; measures of microbial populations and activities; interactions among microbial communities; role of microorganisms in the origin of mineral resources and pollution and energy flow through microbial communities. Prerequisite: BIOL 3444 or equivalent or consent of the instructor.

BIOL 5354. LIMNOLOGY. 3 Hours.

The study of biotic and abiotic components of inland waters. Prerequisite: consent of the instructor.

BIOL 5355. TOXICOLOGY. 3 Hours.

An introduction to the general principles of toxicology with an emphasis on certain classes of toxic agents, their sources and toxic effects, as well as their environmental fates. Pollution of various media (air, water and soil) and the differences between them will be discussed.

BIOL 5391. INDIVIDUAL PROBLEMS IN BIOLOGY. 3 Hours.

Individual research projects supervised by a faculty member. Prerequisite: consent of the instructor.

BIOL 5393. RESEARCH IN BIOLOGY. 3 Hours.

Conference course in which the student undertakes intensive investigation of topics under the supervision of a staff member. Prerequisite: consent of the instructor. Graded P/F/R.

BIOL 5398. THESIS. 3 Hours.

Graded R/F only. Prerequisite: consent of faculty.

BIOL 5420. GENETICS METHODS LAB. 4 Hours.

Computational and experimental approach to genomics research. The course theme will be transposable elements.

BIOL 5421. METHODS IN MOLECULAR MICROBIOLOGY. 4 Hours.

This course will provide an overview of different techniques used during manipulation of microorganisms. It will allow students to gain a historical perspective of techniques used in microbiology (Winogradsky column, Koch solid agar plating) as well as learn state of the art molecular characterization of microorganisms and their genetic manipulation. This course introduces current biochemical, physiological and molecular biology methods to assess community diversity and microbial activity in a variety of ecosystems. Other topics discussed include bacterial growth and survival, population biology, and microbial interactions.

BIOL 5440. LABORATORY METHODS IN BACTERIAL PATHOGENESIS. 4 Hours.

This course is intended to expose students to research techniques for studying bacterial pathogens. Students will use molecular and classical techniques to isolate, identify and characterize bacteria and their response to stimuli. Techniques will range from PCR, Gene Sequencing, SDS-PAGE and Immunofluorescence Microscopy. Prerequisites BIOL 3312, BIOL 3444, BIOL 4317.

BIOL 5493. RESEARCH. 4 Hours.**BIOL 5593. RESEARCH. 5 Hours.****BIOL 5693. RESEARCH IN BIOLOGY. 6 Hours.**

Conference course in which the student undertakes intensive investigation of topics under the supervision of a staff member. Prerequisite: consent of the instructor. Graded P/F/R.

BIOL 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: consent of faculty.

BIOL 5998. THESIS. 9 Hours.

Graded P/F/R. Prerequisite: consent of faculty.

BIOL 6191. ADVANCED RESEARCH. 1 Hour.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6291. ADVANCED RESEARCH. 2 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6301. ESSENTIAL TOPICS IN GENOMICS. 3 Hours.

This course will explore diverse aspects of genome biology, including the evolutionary principles that influence how genomes change through time, genome structure, and genome function. Emphasis will be given on how genome technology influences the way we do modern biology and how genomics influences the world around us.

BIOL 6302. MICROBIOLOGY, MOLECULAR AND CELLULAR BIOLOGY. 3 Hours.

Using model microorganisms, this course will investigate their (1)Physiology, biochemistry, and genetics, (2)The hosts innate and adaptive immune responses, (3)The molecular basis for virulence and pathogenesis and (4)The ecological and economic impact of microbial pathogens including epidemics and pandemics.

BIOL 6303. BIODIVERSITY IN A CHANGING WORLD. 3 Hours.

Biodiversity, encompassing 8.7 million species, is the most distinctive feature of Earth. In this class, students will learn about the evolutionary and ecological forces shaping biodiversity, the measures of biodiversity from local to global scales, biogeographical patterns of biodiversity, the benefits of biodiversity to humans and ecosystems, and the major threats to biodiversity due to human activities.

BIOL 6310. SELECTED TOPICS IN BIOLOGY FOR PhD STUDENTS. 3 Hours.

Topics may vary depending on the needs and interests of the students. May be repeated for credit. This course is specific to students in the PhD program.

BIOL 6391. ADVANCED RESEARCH. 3 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6399. DISSERTATION. 3 Hours.

BIOL 6399 and BIOL 6699 graded R/F only; BIOL 6999 graded P/F/R. Prerequisite: admission to candidacy for the degree Doctor of Philosophy in Quantitative Biology.

BIOL 6491. ADVANCED RESEARCH. 4 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6591. ADVANCED RESEARCH. 5 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6691. ADVANCED RESEARCH. 6 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6699. DISSERTATION. 6 Hours.

BIOL 6399 and BIOL 6699 graded R/F only; BIOL 6999 graded P/F/R. Prerequisite: admission to candidacy for the degree Doctor of Philosophy in Quantitative Biology.

BIOL 6999. DISSERTATION. 9 Hours.

BIOL 6399 and BIOL 6699 graded R/F only; BIOL 6999 graded P/F/R. Prerequisite: admission to candidacy for the degree Doctor of Philosophy in Quantitative Biology.

BIOL 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Biology - Graduate Programs

Objective

The program leading to the degree of Master of Science in biology is designed to provide graduate education that will prepare students for vocations in industry, government, and teaching, and to pursue further graduate education leading to the doctorate. The doctoral program is designed to train students to apply sophisticated quantitative techniques to solving basic and applied problems in biology. Students in this program will attain substantially greater quantitative skills than in traditional doctoral programs in the biological sciences, providing them with a competitive advantage in business, industry, government, and academia.

Admission Requirements

The following are minimal requirements for entrance into the graduate program in Biology. However, satisfying or exceeding these requirements does not guarantee admission to the program. Admission to the program is determined solely by the Biology Graduate Studies Committee and the Graduate School and is based on an evaluation of all pertinent aspects of an applicant's record.

Admission status in the Master of Science program is determined as follows:

Unconditional Admission

Decisions are based on consideration of all the information listed below and are not based on any single criterion alone.

1. A Bachelor's degree in Biology or a Bachelor's degree in some other discipline with at least 12 hours of advanced level coursework (junior or senior level courses) in Biology.
2. A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School. Applicants overall GPA in the Sciences and within Biology are also considered.
3. A satisfactory score on the Verbal and Quantitative sections of the Graduate Record Exam. Successful students tend to have a minimum combined total score of 1000 (old GRE scale), or 296 (new GRE scale) on the Verbal and Quantitative sections, with strong performance on the Quantitative section of the GRE exam.
4. Favorable letters of recommendation from at least three individuals able to assess the applicant's potential for success in graduate school.
5. Evidence of previous research experience may also be considered.
6. International students whose native language is not English must provide a score on the Test of Spoken English (TSE) of at least 45, a minimum score of 23 on the Speaking portion of the TOEFL iBT exam or a minimum score of 7 on the Speaking portion of the IELTS exam.

Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria listed above.

Probationary Admission

If an applicant does not meet a majority of standards for unconditional admission outlined above, he or she may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in his/her first two long semesters of graduate coursework at UT Arlington.

Deferred and Provisional Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Master of Science Options

Master of Science Thesis Option (MST)

The Master of Science with a major in Biology Thesis option is a 30-hour research degree that requires 24 hours of formal course work, including BIOL 5314 Biometry, BIOL 5340 Bioinformatics, and BIOL 5101 Current Topics in Biology, plus a 6-hour thesis (BIOL 5698) and additional hours to complete the degree requirements. Students have the option to conduct research leading to a thesis in a variety of specializations, including aquatic biology, ecology, genetics, evolutionary biology, genomics, microbiology, and cell biology. The thesis option is intended to prepare students for Ph.D. programs and careers in research and industry by obtaining skills such as the collection and analysis of data, evaluation of primary literature, and essential laboratory techniques.

Master of Science Non-Thesis Option (MSNT)

The Master of Science with a major in Biology non-thesis option is a 30-hour program of formal coursework requiring BIOL 5314 Biometry, BIOL 5340 Bioinformatics, BIOL 5101 Current Topics in Biology, BIOL 5391 Individual Problems in Biology, and sufficient additional hours to complete the degree requirements. The non-thesis option is intended to meet the needs of students looking to advance in their careers or those seeking additional

preparation for professional or health science programs. Graduates of this program can currently be found working in consulting, resource management, state and local agencies, and K-12 education.

Subject to written approval by the Graduate Advisor and within the limitations stated in the General Graduate School Regulations, a student may take up to nine hours of coursework from among courses listed under Biology at the 3000 or 4000 levels. Coursework may be taken in other areas in support of the student's program subject to approval by the graduate advisor.

Admission Requirements

DOCTOR OF PHILOSOPHY

Students interested in pursuing the Ph.D. in the Biology Department may apply for the B.S. - Ph.D. Track or the doctoral program directly depending on their background. The B.S. - Ph.D. Track is the point of entry into doctoral studies for students with a Bachelor's degree in Biology, but without 30 hours of graduate level coursework in Biology or a master's degree in Biology. Students who have already accomplished these goals may apply directly for the doctoral program as Ph.D. students. Degree requirements are the same for both groups (see below).

B.S. - PH.D. TRACK STUDENTS

Admission status in the B.S. - Ph.D. Track program is determined as follows:

Unconditional Admission

Decisions are based on consideration of all the information listed below and are not based on any single criterion alone.

1. A Bachelor's degree in Biology or a Bachelor's degree in some other discipline with at least 12 hours of advanced level coursework (junior or senior level courses) in Biology.
2. A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School. Applicants overall GPA in the Sciences and within Biology are also considered.
3. A satisfactory score on the Verbal and Quantitative sections of the Graduate Record Exam. Successful students tend to have a minimum combined total score of 1100 (old GRE scale), 301 (new GRE scale) on the Verbal and Quantitative sections, with strong performance on the Quantitative section of the GRE exam.
4. Favorable letters of recommendation from at least three individuals able to assess the applicant's potential for success in graduate school.
5. Evidence of previous research experience may also be considered.
6. International students whose native language is not English must provide a score on the Test of Spoken English (TSE) of at least 45, a minimum score of 23 on the Speaking portion of the TOEFL iBT exam or a minimum score of 7 on the Speaking portion of the IELTS exam.

Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria listed above.

Probationary Admission

If an applicant does not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in their first two long semesters of graduate coursework at UT Arlington.

Deferred and Provisional Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Fellowships and Scholarships

Students that are unconditionally admitted will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on consideration of the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships.

PH.D. STUDENTS

Admission status in the doctoral program is determined as follows:

UNCONDITIONAL ADMISSION

Decisions are based on consideration of all the information listed below and are not based on any single criterion alone.

1. A master's degree in Biology or at least 30 hours of graduate level coursework in Biology.
2. A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School. If an Applicant has a Master's degree, the GPA from their Bachelor's degree, as calculated by the Graduate School, will also be considered. If they have 30 hours of graduate coursework but no degree, the GPA from that 30 hours, as calculated by the Graduate School, will also be considered.
3. A satisfactory score on the Verbal and Quantitative sections of the Graduate Record Exam. Successful students tend to have a minimum combined total score of 1100 (old GRE scale), or 301 (new GRE scale) on the Verbal and Quantitative sections, with strong performance on the Quantitative section of the GRE exam.
4. Favorable letters of recommendation from at least three individuals able to assess the applicant's potential for success in a doctoral program in quantitative biology.
5. Evidence of previous research experience including publications resulting from previous graduate work may also be considered.
6. International students whose native language is not English must provide a score on the Test of Spoken English (TSE) of at least 45, a minimum score of 23 on the Speaking portion of the TOEFL iBT exam, or a minimum score of 7 on the Speaking portion of the IELTS exam.

Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria listed above.

Probationary Admission

The Department of Biology does not as a matter of course admit doctoral students on a probationary basis. Under exceptional circumstances, an applicant that does not meet the standards for unconditional admission outlined above, may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in their first two long semesters of graduate coursework at UT Arlington.

Deferred and Provisional Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

Fellowships and Scholarships

Students that have no provisional admission conditions to meet will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships.

Doctor of Philosophy Degree Requirements

The degree of Doctor of Philosophy in Quantitative Biology requires distinguished attainment both in scholarship and in research. In addition to meeting the minimum requirements of a planned course of study, the ultimate basis for conferring the degree must be the demonstrated ability to do independent and creative work and the exhibition of a profound grasp of the subject matter within the field.

Mathematics: Students will be expected to have (or complete during their first year of residence) a strong quantitative background including a formal course in differential and integral calculus (i.e., Calculus I).

General Course Requirements: All students are required to complete 15 hours of coursework. All students are required to take BIOL 5314 (Biometry), BIOL 5340 (Bioinformatics), two seminar courses (2 x BIOL 5101), and one elective (see course listings below) as part of their required courses. All students must also complete two of the following three courses (BIOL 6301, BIOL 6302, BIOL 6303).

Other requirements: Each student will make three research presentations that are open to the entire department. These may include the proposal defense, a research progress report, and the dissertation defense.

Students can choose among the following courses to fulfill additional course requirements:

BIOL 5302	MICROBIAL GENETICS	3
BIOL 5304	VIROLOGY	3
BIOL 5309	IMMUNOLOGY	3
BIOL 5311	EVOLUTION	3
BIOL 5317	BACTERIAL PATHOGENESIS	3
BIOL 5319	HUMAN GENETICS	3
BIOL 5335	ESSENTIALS OF GENOMICS	3
BIOL 5354	LIMNOLOGY	3

Research hours:

BIOL 5101	SPECIAL TOPICS IN BIOLOGY
BIOL 5291	INDIVIDUAL PROBLEMS IN BIOLOGY
BIOL 5301	LABORATORY ROTATION
BIOL 5193 - BIOL 5693	
BIOL 5398	THESIS
BIOL 5698	THESIS
BIOL 5998	THESIS
BIOL 6191	ADVANCED RESEARCH
BIOL 6291	ADVANCED RESEARCH
BIOL 6391	ADVANCED RESEARCH
BIOL 6491	ADVANCED RESEARCH
BIOL 6591	ADVANCED RESEARCH
BIOL 6691	ADVANCED RESEARCH
BIOL 6999	DISSERTATION
BIOL 7399	DOCTORAL DEGREE COMPLETION

Please Note:

The grade of **R** (research in progress) is a permanent grade; completing course requirements in a later semester cannot change it. To receive credit for an **R**-graded course, the student must continue to enroll in the course until a passing grade is received. This is the case for dissertation hours.

An incomplete grade (the grade of **I**) cannot be given in a course that is graded **R**, nor can the grade of **R** be given in a course that is graded **I**. To receive credit for a course in which the student earned an **I**, the student must complete the course requirements. Enrolling again in the course in which an **I** was earned cannot change a grade of **I**. At the discretion of the instructor, a final grade can be assigned through a change of grade form.

Three-hour thesis courses and three- and six-hour dissertation courses are graded **R/F/W** only (except social work thesis courses.) The grade of **P** (required for degree completion for students enrolled in thesis or dissertation programs) can be earned only in three-, five-, six-, or nine-hour dissertation courses and nine-hour thesis courses and when the student has taken 9 or more hours of dissertation hours BIOL XX99. In the course listings below, **R**-graded courses are designated either "Graded **P/F/R**" or "Graded **R**." Occasionally, the valid grades for a course change. Students should consult the appropriate **graduate advisor** or instructor for valid grade information for particular courses. (See also the sections titled "**R**" Grade, Credit for Research, Internship, Thesis or Dissertation Courses and Incomplete Grade in this catalog.)

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these courses can be repeated for credit.

Biology - Undergraduate Programs

Academic Advising: 345, 346, 347 and 349 Life Science Bldg. • 817-272-2408

Overview

The Department of Biology curriculum familiarizes students with basic concepts inherent to biological science and allows them to master new, cutting edge areas of biological research. Its degree programs prepare students to enter exciting and challenging careers in the many diverse and rapidly expanding areas of biological employment, including environmental biology, conservation, microbiology, the health sciences, science teaching, pharmacology, biotechnology, molecular biology, neurobiology, and forensics as well as in basic biological research. Superior teaching and faculty involvement with students is a high priority in the department. Many of its faculty have received university-wide awards for teaching excellence. Biology faculty have internationally recognized research programs in which students are actively encouraged to participate through credit for supervised research. Thus, students can prepare for careers in specific areas of biology by being actively engaged in research related to that career area under faculty supervision.

The Department of Biology offers four programs of study leading to an undergraduate degree. These are the Bachelor of Arts (B.A.) degree in Biology and the Bachelor of Science (B.S.) degrees in Biology, Microbiology or Medical Technology. The Microbiology B.S. degree prepares students to enter careers in the highly diverse field of microbiology, ranging from control of infectious diseases, through public health and environmental microbiology to genetic engineering and molecular biology or to pursue graduate study. The B.S. in Medical Technology combines course work with 16 months of clinical laboratory training in an accredited hospital school of medical technology. This degree prepares students for careers as technicians in medical laboratories, clinics, hospitals and industry. The Biology B.S. program provides students with a strong background in the fundamental tenets of the biological sciences while allowing them to customize their degree plans to meet specific career goals. The Biology B.A. program is suitable for career preparation in a number of biological fields and for teaching certification in Composite Science.

There are two degree plan options through which students can complete their Biology B.S. degree. Option one in General Biology allows students to choose elective courses beyond the biology core that prepare them to enter a specific professional field, such as medical, dental, veterinary, or graduate school for further study and research. Students pursuing health professions careers should contact the Health Professions Advisor for assistance in selecting course electives pertinent to their specific career path. Students interested in genomics, environmental biology, or other areas of specialization should contact their Biology advisor for assistance with recommended courses. Option two in Forensics provides students with the training necessary to pursue exciting careers in biological forensics, DNA testing or police department laboratories.

All Biology degrees and degree plan options are supported by providing students with ready access to both academic and career advice provided by full-time undergraduate advisors and faculty members knowledgeable with a student's particular areas of academic and/or career interests. Students are strongly encouraged to interact with departmental and faculty advisors throughout their academic careers, particularly through independent research under faculty supervision, to develop the skills and course work background that will allow them to achieve their future academic/career goals. Detailed information on Biology and degree plan options is provided later in this section.

Beyond the undergraduate B.A. and B.S. degrees, the Department of Biology offers programs leading to graduate degrees, including the Master of Science in Biology (M.S.) which allows students to pursue biological careers requiring a greater knowledge base than provided by an undergraduate B.A. or B.S. degree and a Doctor of Philosophy Degree in Quantitative Biology (Ph.D.) which allows students to carry out independent dissertation research within a chosen area of biological research leading to a career in research and/or university teaching. The Ph.D. degree in Biology provides students with a strong background in modern mathematical approaches to biological research, including biostatistics, experimental design and mathematical modeling of biological systems. The Graduate Catalog provides details of the Biology M.S. and Ph.D. degree programs.

The Department of Biology takes pride in offering students outstanding degree programs supported by excellent teaching, undergraduate research opportunities and superior academic advising. These programs make graduates highly competitive in the job market or when applying to graduate or professional degree programs. Please visit the Biology Department and speak with one of our advisors. Phone 817-272-2408 to make an appointment.

Applying for Major Status in Biology

Freshmen who have no previous college work must complete the following courses before applying to the Biology Department to become a major:

19 hours from the University core (consisting of courses in English, history, political science, et al. See list of general core curriculum requirements set by the University elsewhere in this catalog) and a minimum of 20 hours from the courses below:

BIOLOGY

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2300	BIOSTATISTICS <small>BIOL 2300 not required for BIOL B.A.</small>	3
BIOL 3315	GENETICS	3

MEDTECH

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4

MICROBIOLOGY

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3304	MICROBIAL GENETICS	3
BIOL 4441	ADVANCED MICROBIOLOGY LAB	4

CHEMISTRY

CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4

The applicant for status as a biology major MUST have a GPA of 2.25 or better in all courses taken, and 2.25 or better in biology courses. An application form is available from the undergraduate advisor (Room 345 or 346 LS).

A suggested course sequence for entering freshmen students for the first two years is:

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1421		4 MATH 1426	4
CHEM 1441		4 CHEM 1442	4
BIOL 1441		4 BIOL 1442	4
		15	15
Second Year			
First Semester	Hours	Second Semester	Hours
CHEM 2321 & CHEM 2181		4 CHEM 2322 & CHEM 2182	4
Lang/Phil/Cult		3 BIOL 3315	3
POLS 2311		3 BIOL 3427 or 3454	4
BIOL 2300		3 POLS 2312	3
BIOL 2444		4	
		17	14

Total Hours: 61

- ¹ Micro majors will substitute BIOL 2444 in the second semester of their freshman year, and another micro class in the first semester of their sophomore year. Med Tech majors will substitute BIOL 2444 during the first semester of their sophomore year.

Transfer students interested in one of the degree programs in biology will, after admission to UT Arlington, be placed into pre-major status: BIOL intended, MEDT intended, or MICR intended major. To apply for status as a major in biology, microbiology, or medical technology, these students must have a minimum of 39 hours which include:

- At least 28 hours in the University core curriculum including eight hours of freshman chemistry, with lab (credit by transfer or earned at UT Arlington).
- At least 11 hours in biology courses taken at UT Arlington that apply to one of the three programs awarded by the department.

At the time of application for major status in biology, the student must have a GPA of 2.25 or better in courses taken at UT Arlington (both overall and in biology courses). An application form for requesting major status is available from the Department Advisor (Room 346 LS). Transfer students will be evaluated for major status only after completing 11 hours in biology in residence at UT Arlington.

Maintaining Major Status

- Students who are accepted as majors in biology, microbiology, or medical technology must thereafter maintain a GPA of 2.25 or better in all courses and in biology courses. Any student whose GPA falls below 2.25 in either of these categories will be returned to undeclared status at the end of the semester in which the deficiency occurs.
- Students who fall into academic difficulty will be required to meet with their Advisor and/or Academic Dean in order to discuss academic consequences and their future status in the College of Science. Please refer to the College of Science section of the catalog, "Academic Policies for College of Science Majors".

- Students who have lost status as a major must have departmental permission to enroll in any junior or senior course in biology at UT Arlington.
- Students in the medical technology program should have a 2.8 GPA or higher after completing three years of course work to be competitive when applying for the final year of training in medical technology.

General Information

- In order to receive a B.A. degree in Biology or a B.S. degree in Biology or Microbiology from UT Arlington, transfer students must complete a minimum of 18 hours of junior or senior level courses (12 of the 18 hours in Biology) at UT Arlington. Transfer students who are approved for admission to the medical technology program must complete at least 13 hours of junior or senior level courses in biology at UT Arlington to qualify for a B.S. Degree in Medical Technology from UT Arlington.
- No student working toward a B.A. degree in Biology or a B.S. degree in Biology, Medical Technology or Microbiology may take any biology course on a Pass/Fail basis.
- Students are not allowed to receive credit for biology courses at the sophomore level or above by special examination.
- Exceptions to the core course prerequisites for advanced courses will be made only for specialized degree programs such as Medical Technology, Nursing, and Physical Education, and for selected non-majors with special needs.

UNIV 1101 Career Preparation and Student Success

All transfer students are required to enroll in a 1 hour career preparation course, UNIV 1101.

UNIV 1131 Issues in College Adjustment

All entering freshmen are required to enroll in a 1 hour college adjustment course, UNIV 1131.

Computer and Oral Communication Competency Requirement

Students majoring in Biology, Microbiology, or Medical Technology are required to demonstrate computer use and oral communication competencies.

The University requirement of competency in computer proficiency is satisfied by completion of the BIOL 1441 or 1442 labs.

Oral communication competency can be demonstrated by completion of COMS 1301, COMS 2302, or an approved substitute.

Teacher Certification

A student interested in earning a degree with a major in biology with secondary teacher certification, should refer to the "Bachelor of Science Degree in Biology – Life Science Certification" and the "Bachelor of Arts Degree in Biology – Composite Science Certification" degree plans for teacher certification requirements and for biology courses recommended for each teaching field option.

Requirements for a Bachelor of Arts Degree in Biology

The Bachelor of Arts Degree in Biology is suitable for career preparation in a number of biological career fields and for students who desire teaching certification with a teaching field in biology or composite science. Students choosing this program are required to consult with the Department of Biology's undergraduate advisor to develop an acceptable degree plan. Students seeking teaching certification with a teaching field in biology or composite science are required to consult with the Department of Biology certification advisor in order to develop an acceptable teaching certification degree program.

Pre-Professional Courses

General Core Requirements (p. 50)		42
CORE REQUIREMENTS FOR BIOLOGY		
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Language, Philosophy & Culture ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Creative Arts ¹		3
Social & Behavioral Sciences ¹		3
Foundational Component Elective ¹		3
MATH 1302	COLLEGE ALGEBRA ²	3
MATH 1303	TRIGONOMETRY ²	3

PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
Select one of the following for oral communication competency:		3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	
Or other approved communication course		
Advanced elective courses (3000/4000 level courses)		12
Any level electives		16
Professional Courses		
UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Major		
Core Curriculum		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 3315	GENETICS	3
Diversity Courses		
BIOL 3427	PLANT SCIENCE	4
BIOL 3454	GENERAL ZOOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4
Select 7 hours of advanced core courses from the following:		7
BIOL 3301	CELL PHYSIOLOGY	
BIOL 3310	SELECTED TOPICS IN BIOLOGY	
BIOL 3339	INTRODUCTION TO EVOLUTION	
BIOL 3442	HUMAN PHYSIOLOGY	
BIOL 3446	HUMAN ANATOMY	
BIOL 3457	GENERAL ECOLOGY	
Advanced BIOL elective course - approved by advisor		6
Total: 120 Hours (must have minimum of 36 hours 3000/4000 level)		

¹ See general core requirements (p. 50).

² Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses.

SUGGESTED COURSE SEQUENCE

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1302		3 MATH 1303	3
BIOL 1441		4 BIOL 1442	4
Social/Behavioral Science		3 CHEM 1441	4
UNIV 1131 or 1101		1	
		14	14
Second Year			
First Semester	Hours	Second Semester	Hours
POLS 2311		3 POLS 2312	3
BIOL 3315		3 BIOL 2444	4
CHEM 1442		4 CHEM 2321	3
Language, Philosophy and Culture		3 Advanced Biology Elective	3
		Any Level Elective	3
		13	16

Third Year

First Semester	Hours	Second Semester	Hours
PHYS 1441		4 PHYS 1442	4
BIOL 3427		4 BIOL 3454	4
Foundational Component Area Elective		3 BIOL 3301 or 3339	3
HIST 1301		3 COMS 2302	3
		Creative Arts	3
		14	17

Fourth Year

First Semester	Hours	Second Semester	Hours
Advanced Elective		6 Advanced Biology Elective	3
BIOL 3442 or 3446		4 Advanced General Elective	6
Any Level Elective		7 HIST 1302	3
		Any level elective	3
		17	15

Total Hours: 120

Requirements for a Bachelor of Science Degree in Biology -- Life Science Teacher Certification

This program is suitable preparation for students who desire secondary teacher certification in biology. Interested students should meet with the UTeach advisor.

Pre-Professional Courses

General Core Requirements (p. 50) 42

CORE REQUIREMENTS FOR BIOLOGY

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4

Language, Philosophy & Culture 3

Social & Behavioral Science 3

Creative Arts 3

Foundational Component Elective 3

Program Requirements

CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1

Education - Teacher Preparation Courses

SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
SCIE 4107	CLINICAL TEACHING SEMINAR	1
SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE (satisfies computer literacy requirement)	3

EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3

Professional Courses

Major		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2300	BIOSTATISTICS	3
BIOL 3315	GENETICS	3
BIOL 4343	RESEARCH METHODS - UTEACH	3
BIOL 3427	PLANT SCIENCE	4
BIOL 3454	GENERAL ZOOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4
Select 7 hours from the following:		7
BIOL 3312	IMMUNOLOGY	3
BIOL 3301	CELL PHYSIOLOGY	3
BIOL 3339	INTRODUCTION TO EVOLUTION	3
BIOL 3442	HUMAN PHYSIOLOGY	4
BIOL 3446	HUMAN ANATOMY	4
BIOL 3457	GENERAL ECOLOGY	4
Advanced BIOL elective courses approved by the UTeach biology advisor		6

Total: 125 Hours

SUGGESTED COURSE SEQUENCE**First Year**

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
BIOL 1441		4 BIOL 1442	4
CHEM 1441		4 CHEM 1442	4
MATH 1421		4 SCIE 1202	2
SCIE 1201		2 MATH 1426	4
UNIV 1131 or 1101		1	
		18	17

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 2321		3 BIOL 3427	4
BIOL 2444		4 BIOL 3315	3
CHEM 2181		1 EDUC 4332	3
POLS 2311		3 CHEM 2322	3
EDUC 4331		3 CHEM 2182	1
Language, Philosophy and Culture		3 POLS 2312	3
		17	17

Third Year

First Semester	Hours	Second Semester	Hours
BIOL 2300		3 BIOL 3301	3
BIOL 3454		4 BIOL 4343	3
PHYS 1441		4 PHYS 1442	4
PHIL 2314		3 Social / Behavioral Science	3
HIST 1301		3 HIST 1302	3
		17	16

Fourth Year

First Semester	Hours	Second Semester	Hours
EDUC 4333		3 SCIE 4607	6
BIOL 3442		4 SCIE 4107	1
Biology Advanced Electives		6	
Creative Arts		3	
		16	7

Total Hours: 125

Requirements for a Bachelor of Arts Degree in Biology - Composite Science Teacher Certification

This program is suitable preparation for students who desire secondary teacher certification in composite science. Interested students should meet with the UTeach advisor.

Pre-Professional Courses

General Core Requirements (p. 50) 42

CORE REQUIREMENTS FOR BIOLOGY

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
MATH 1302	COLLEGE ALGEBRA	3
MATH 1303	TRIGONOMETRY	3
ASTR 1345	INTRODUCTORY ASTRONOMY I	3
GEOL 1301	EARTH SYSTEMS	3
Language, Philosophy & Culture		3
UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Creative Arts		3
Social & Behavioral Science		3
Foundational Component Elective		3
Any level elective		2

Program Requirements

CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Education - Teacher Preparation Courses		
SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
SCIE 4107	CLINICAL TEACHING SEMINAR	1
SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE (satisfies computer literacy requirement)	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3

Professional Courses

Major		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 3315	GENETICS	3
BIOL 3427	PLANT SCIENCE	4
BIOL 3454	GENERAL ZOOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 4343	RESEARCH METHODS - UTEACH	3
Select 7 hours from the following:		7
BIOL 3301	CELL PHYSIOLOGY	3
BIOL 3312	IMMUNOLOGY	3

BIOL 3339	INTRODUCTION TO EVOLUTION	3
BIOL 3442	HUMAN PHYSIOLOGY	4
BIOL 3446	HUMAN ANATOMY	4
BIOL 3457	GENERAL ECOLOGY	4
Advanced BIOL elective chosen with advisor		3
Total: 120 Hours		

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
BIOL 1441		4 BIOL 1442	4
CHEM 1441		4 CHEM 1442	4
MATH 1302		3 MATH 1303	3
ENGL 1301		3 ENGL 1302	3
SCIE 1201		2 SCIE 1202	2
UNIV 1131 or 1101		1	
		17	16

Second Year

First Semester	Hours	Second Semester	Hours
BIOL 3315		3 BIOL 2444	4
CHEM 2321		3 BIOL 3301	3
PHYS 1441		4 PHYS 1442	4
HIST 1301		3 EDUC 4332	3
EDUC 4331		3 Any level elective	2
		16	16

Third Year

First Semester	Hours	Second Semester	Hours
BIOL 3427		4 BIOL 3454	4
Advanced Biology Elective		3 GEOL 1301	3
HIST 1302		3 POLS 2311	3
Language, Philosophy and Culture		3 Social and Behavioral Science	3
PHIL 2314		3 BIOL 4343	3
		16	16

Fourth Year

First Semester	Hours	Second Semester	Hours
BIOL 3442		4 SCIE 4607	6
ASTR 1345		3 SCIE 4107	1
POLS 2312		3	
EDUC 4333		3	
Creative Arts		3	
		16	7

Total Hours: 120

Requirements for a Bachelor of Science Degree in Biology

The requirements to receive a Bachelor of Science Degree in Biology can be achieved through degree plans under either of two options (i.e., General Biology, and Forensics Biology) detailed in this section. Before choosing a B.S. degree program under one of these options, please consult with a biology undergraduate advisor and biology faculty associated with the chosen option.

OPTION 1: GENERAL BIOLOGY

The General Biology Option is intended for students studying basic aspects of the biological sciences. Students developing degree plans under the General Biology Option choose elective courses in Biology, other sciences, and nonscience areas to develop either a broad knowledge-base in Biology or to focus their studies in a particular area of Biology (a list of potential areas of study in Biology and the faculty who can assist students in developing degree plan programs in these areas is available from the undergraduate biology advisors). The General Biology Option will prepare students for careers in a variety of the Biological Sciences (including Health Professions, Genomics, Ecology/Environmental Studies, etc.) or for graduate study in Biology at the Master's or Ph.D. levels.

Pre-Professional Courses

General Core Requirements (p. 50)

CORE REQUIREMENTS FOR BIOLOGY

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Language, Philosophy & Culture ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Creative Arts ¹		3
UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Social & Behavioral Sciences ¹		3
Foundational Component Area Elective ¹		3
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I ²	4
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
Select one of the following in oral communication:		3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	
Or other approved communication course		
Any level electives		6
Advanced elective courses (3000/4000 level)		9
Professional Courses		
Major		
Core Curriculum		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2300	BIOSTATISTICS (or approved substitute)	3
BIOL 3315	GENETICS	3
Select two of the following diversity courses:		8
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3427	PLANT SCIENCE	
BIOL 3454	GENERAL ZOOLOGY	
BIOL 3457	GENERAL ECOLOGY	
Select two of the following advanced core courses:		6
BIOL 3301	CELL PHYSIOLOGY	
BIOL 3312	IMMUNOLOGY	
BIOL 3339	INTRODUCTION TO EVOLUTION	
BIOL 3442	HUMAN PHYSIOLOGY	
BIOL 3446	HUMAN ANATOMY	
Advanced BIOL elective courses - approved by advisor		10
Total: 120 Hours (must have minimum of 36 hours 3000/4000 level)		

- ¹ See general core requirements (p. 50).
- ² Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

SUGGESTED COURSE SEQUENCE

First Year			
First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1421		4 MATH 1426	4
BIOL 1441		4 BIOL 1442	4
CHEM 1441		4 CHEM 1442	4
UNIV 1131 or 1101		1	
		16	15
Second Year			
First Semester	Hours	Second Semester	Hours
CHEM 2321 & CHEM 2181		4 CHEM 2322 & CHEM 2182	4
BIOL 2300		3 BIOL 3315	3
Language, Philosophy & Culture		3 BIOL 3454	4
BIOL 2444		4 POLS 2312	3
POLS 2311		3	
		17	14
Third Year			
First Semester	Hours	Second Semester	Hours
BIOL 3427 or 3457		4 BIOL 3301 or 3339	3
PHYS 1441		4 BIOL 3442 or 3446	4
Foundational Core Area Elective		3 PHYS 1442	4
HIST 1301		3 COMS 2302	3
		Creative Art	3
		14	17
Fourth Year			
First Semester	Hours	Second Semester	Hours
BIOL Advanced Electives		3 BIOL Advanced Electives	6
Social and Behavioral Science		3 Advanced General Electives	9
HIST 1302		3	
Any Level Electives		3	
		12	15
Total Hours: 120			

- ¹ See general core requirements (p. 50).
- ² Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

OPTION 2: FORENSICS

The option in forensics is intended to prepare students for a career in biological forensics by emphasizing relevant courses in biology and related disciplines. This option is designed for students who wish to seek employment in a forensics, DNA testing, or a police department laboratory upon graduation, and, as such, an internship (BIOL 3349) is recommended when possible. Students pursuing this option are encouraged to seek advice from the faculty forensics advisor.

Pre-Professional Courses			
General Core Requirements (p. 50)			42
CORE REQUIREMENTS FOR BIOLOGY			
ENGL 1301	RHETORIC AND COMPOSITION I		3
ENGL 1302	RHETORIC AND COMPOSITION II		3
Language, Philosophy & Culture ¹			3
POLS 2311	GOVERNMENT OF THE UNITED STATES		3
POLS 2312	STATE AND LOCAL GOVERNMENT		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865		3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT		3

Creative Arts ¹		3
UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Social & Behavioral Science ¹		3
Foundational Component Core Elective ¹		3
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I ²	4
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 4311	BIOCHEMISTRY I	3
Select one of the following in oral communication:		3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	
Or other approved communication course		
Select a minimum of 9 hours in forensic electives:		9
ANTH 4406	HUMAN OSTEOLOGY	
ANTH 4322	PROBLEMS IN ANTHROPOLOGY	
BIOL 3303	DRUGS AND BEHAVIOR	
CRCJ 3370	INTRODUCTION TO FORENSICS	
CRCJ 4340	FORENSIC DEATH INVESTIGATION	
CRCJ 4341	FORENSIC EXAMINATION OF IMPRESSION EVIDENCE	
CRCJ 4342	FORENSIC HAIR AND FIBER IDENTIFICATION	
Professional Courses		
Major		
Core Curriculum		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2300	BIOSTATISTICS (or approved substitute)	3
BIOL 3315	GENETICS	3
Advanced Forensic courses		
BIOL 3352	INTRODUCTION TO FORENSIC LAB SCIENCE ³	3
BIOL 4352	FORENSIC BIOLOGY	3
BIOL 4355	METHODS IN FORENSIC BIOLOGY ³	3
Select 19 hours of advanced biology electives from the following:		19
BIOL 3149	COOPERATIVE PROGRAM IN BIOLOGY	
BIOL 3249	COOPERATIVE PROGRAM IN BIOLOGY	
BIOL 3349	COOPERATIVE PROGRAM IN BIOLOGY	
BIOL 3317	GENOMICS	
BIOL 3339	INTRODUCTION TO EVOLUTION	
BIOL 3355	TOXICOLOGY	
BIOL 3427	PLANT SCIENCE ³	
BIOL 4312	INTRODUCTION TO VIROLOGY	
BIOL 2444	GENERAL MICROBIOLOGY	
BIOL 4317	BACTERIAL PATHOGENESIS	
BIOL 3319	HUMAN GENETICS	

BIOL 3420 GENETICS METHODS LAB

Total: 120 Hours (must have minimum of 36 hours 3000/4000 level)

- ¹ See general core requirements (p. 50).
- ² Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.
- ³ Laboratory courses.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1421		4 MATH 1426	4
CHEM 1441		4 CHEM 1442	4
BIOL 1441		4 BIOL 1442	4
UNIV 1131 or 1101		1	
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 2321 & CHEM 2181		4 CHEM 2322 & CHEM 2182	4
BIOL 2300		3 BIOL 3315	3
BIOL 2444		4 BIOL 3352	3
POLS 2311		3 Social and Behavioral Science	3
		POLS 2312	3
		14	16

Third Year

First Semester	Hours	Second Semester	Hours
BIOL 4352		3 BIOL Advanced Electives from Approved List	7
BIOL 4355		3 Creative Arts	3
CHEM 4311		3 PHYS 1441	4
Foundational Core Area Elective		3	
HIST 1301		3	
		15	14

Fourth Year

First Semester	Hours	Second Semester	Hours
BIOL Advanced Electives from approved List		5 BIOL Advanced Electives from approved list	3
PHYS 1442		4 Advanced General Forensics Elective	6
COMS 2302		3 Language/Philosophy/Culture	3
General Advanced Forensic Elective		3 HIST 1302	3
		15	15

Total Hours: 120

Bachelor of Science Degree in Medical Technology

A student who completes the special degree plan given below plus 16 months of clinical laboratory training in an accredited hospital school of medical technology may receive the degree of Bachelor of Science in Medical Technology, which will be conferred by The University of Texas at Arlington. Graduates may become certified in medical technology by passing the examination of the Board of Registry of the American Society of Clinical Pathologists (ASCP).

Pre-Professional Courses

General Core Requirements (p. 50)		42
CORE REQUIREMENTS FOR BS IN MEDICAL TECHNOLOGY		
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Language, Philosophy & Culture ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3

POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Creative Arts ¹		3
Social & Behavioral Science ¹		3
Foundational Component Core Elective ¹		3
MATH 1302	COLLEGE ALGEBRA	3
MATH 1303	TRIGONOMETRY	3
or MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 4311	BIOCHEMISTRY I	3
Select one of the following in oral communication:		3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	
Or other approved communication course		
Elective credit from any discipline		1
Professional Courses		
Major		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I	4
BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II	4
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3312	IMMUNOLOGY	3
BIOL 3315	GENETICS	3
BIOL 4317	BACTERIAL PATHOGENESIS	3
BIOL 4312	INTRODUCTION TO VIROLOGY	3
3000/4000-level of biology electives selected with the advice of the undergraduate advisor		4
Total: 103 Hours		

Note: This option is a total of 103 hours, of which 16 must be 3000/4000 level, in addition to 16 months training in a school of medical technology approved by the Committee on Allied Health Education and Accreditation (CAHEA) in conjunction with the National Accrediting Agency for Clinical Laboratory Science (NAACLS).

¹ See general core requirements (p. 50).

SENIOR YEAR

Sixteen-month program in a school of medical technology which has been certified by the Committee of Allied Health Education and Accreditation (CAHEA) in conjunction with the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

Requirements for a Bachelor of Science Degree in Microbiology

Pre-Professional Courses		
General Core Requirements (p. 50)		42
CORE REQUIREMENTS FOR BS IN MICROBIOLOGY		
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3

Language, Philosophy & Culture ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Creative Arts ¹		3
UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Social & Behavioral Science ¹		3
Foundational Component Core Elective ¹		3
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I ²	4
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 4311	BIOCHEMISTRY I	3
Select one of the following in oral communication:		3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	
Or other approved communication course		
Electives at any level		10
Professional Courses		
Major		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3304	MICROBIAL GENETICS	3
BIOL 3306	BACTERIAL PHYSIOLOGY AND ANTIBIOTICS	3
BIOL 4441	ADVANCED MICROBIOLOGY LAB	4
Select 24 additional hours from the following:		24
BIOL 3301	CELL PHYSIOLOGY	
BIOL 3311	SELECTED TOPICS IN MICROBIOLOGY	
BIOL 3312	IMMUNOLOGY	
BIOL 3318	LIMNOLOGY	
BIOL 3308	MICROBIAL ECOLOGY AND EVOLUTION	
BIOL 4312	INTRODUCTION TO VIROLOGY	
BIOL 4317	BACTERIAL PATHOGENESIS	
BIOL 4390	INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY	
BIOL 4392	INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY LEADER	
or BIOL 4389	RESEARCH IN BIOLOGY	
Total: 120 Hours (must have minimum of 36 hours 3000/4000 level)		

¹ See general core requirements (p. 50).

² Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

³ Must be taken under the supervision of approved faculty members.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 ENGL 1302	3
MATH 1421		4 MATH 1426	4
CHEM 1441		4 CHEM 1442	4
BIOL 1441		4 BIOL 2444	4
UNIV 1131 or 1101		1	
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
BIOL 3312		3 BIOL 3304	3
POLS 2311		3 BIOL 4312	3
CHEM 2321 & CHEM 2181		4 CHEM 2322 & CHEM 2182	4
Any Level Elective		3 Social & Behavioral Science	3
		13	13

Third Year

First Semester	Hours	Second Semester	Hours
BIOL 3306		3 BIOL 4317	3
CHEM 4311		3 BIOL 3301	3
Foundational Component Area Elective		3 BIOL 4390	3
HIST 1301		3 PHYS 1441	4
POLS 2312		3 Creative Art	3
		15	16

Fourth Year

First Semester	Hours	Second Semester	Hours
BIOL 4441		4 BIOL 3311	3
BIOL 3308		3 BIOL 4392	3
PHYS 1442		4 COMS 2302	3
Any Level Elective		6 Language/Philosophy/Culture	3
		HIST 1302	3
		17	15

Total Hours: 120

Dual Degree Plan: Bachelor of Science in Biology and Master of Science in Biomedical Engineering

This curriculum prepares students for careers in the fast growing biotechnology and biomedical engineering industries. The curriculum also prepares students for medical school and advanced study. Students are required to take courses from engineering, life sciences and liberal arts, culminating in a five-year Master of Science Degree in Biomedical Engineering, and a Bachelor of Science Degree in Biology. The curriculum is offered jointly by the College of Engineering and the College of Science. In this program, two areas of emphasis are offered:

1. Bioimaging and
2. Biomaterials and Tissue Engineering.

DESCRIPTION

Biomedical engineers use quantitative methods and innovation to analyze and solve problems in biology and medicine. Students choose the biomedical engineering field to be of service to people, to partake in the excitement of working with living systems, and to apply advanced technology to the complex problems of medical care.

Through this program, students learn the essentials of life science, engineering theory, and the analytical and practical tools that enable them to be successful in the biotechnology and biomedical engineering industries. The program includes course work in the basic sciences, core engineering, biomedical engineering, and advanced biotechnology disciplines. Both didactic classroom lectures and hands-on laboratory experience are emphasized. Additionally, students are required to take general educational courses in literature, fine arts, history, political science, and social science.

CAREER OPPORTUNITIES

The program prepares students as biomedical engineers for careers in industry, in hospitals, in research facilities of educational and medical institutions, and in government regulatory agencies. It also provides a solid foundation for those wishing to continue for advanced degrees. For those planning to

pursue a medical degree, this cross-disciplinary curriculum offers a solid foundation in engineering, which is an advantage in preparing for a medical career.

REQUIREMENTS

Regardless whether a student chooses Bioimaging or Biomaterials and Tissue Engineering emphasis, after completion of 120 semester credit hours of the undergraduate courses from the list for the emphasis (below) and prior to taking any graduate course, the student must apply to the UT Arlington Graduate School for admission to the Bioengineering Department. A minimum grade point average of 3.0 in the 120 semester credit hours as well as a minimum average of 3.0 in the required English courses (ENGL 1301 and ENGL 1302) and a minimum average of 3.0 in the required Mathematics courses (MATH 1426, MATH 2425, MATH 2326 and MATH 3319) is required for admission to the Biomedical Engineering Graduate Program. The student should also submit two letters of recommendation, one from a faculty member and one from the Biology undergraduate advisor.

For course listings and suggested course sequences, please see Biomedical Engineering in the Engineering section of this catalog.

Fast Track Degree Plan: Bachelor of Science in Biology and Master of Science in Biology

The Fast Track program will enable outstanding senior undergraduate Biology students to satisfy degree requirements leading to a master's degree in Biology while completing their undergraduate studies.

DESCRIPTION

Undergraduate Biology students will apply when they are within 30 hours of completing their bachelor's degrees. They must have completed at least 30 hours at UTA, achieving a GPA of at least 3.3 in those courses, have an overall GPA of 3.3 or better in all department courses, and have a GPA of at least 3.3 in all biology courses taken at UTA. Additionally, they must have completed 13 hours of specified undergraduate Fast Track foundation courses at UTA that are listed below with a minimum GPA of 3.5 in these courses. If one of these courses is transferred from another school it will not be included, and an equivalent course determined by the undergraduate advisor will be used as a Fast Track foundation course.

Foundation Courses Required for Admission into the Fast Track program:

1. **BIOL 2300** Biostatistics (3-0)
2. **BIOL 3315** Genetics (3-0)
3. **BIOL 3301** Cell Physiology (3-0)
4. **BIOL 2444** General Microbiology (4-0)

BIOL students pursuing the Fast Track master's degree will be allowed to take **BIOL 5309, 5314** and **5304** in place of advanced undergraduate biology electives.

COURSE REQUIREMENTS

Pre-Professional Courses		
General Core Requirements (p. 50)		42
CORE REQUIREMENTS FOR BIOLOGY		
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Language, Philosophy & Culture ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Creative Arts ¹		3
Social & Behavioral Science		3
Foundational Component Core Elective (Satisfied by COMS 2302 below) ¹		
Any level elective		3
Advanced Electives		9
UNIV 1101 or UNIV 1131	CAREER PREPARATION AND STUDENT SUCCESS STUDENT SUCCESS	1
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4

PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
Oral Communication Competency (Also counts as Foundational Component Area)		3
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
Professional Courses		
Major		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2300	BIOSTATISTICS	3
BIOL 2444	GENERAL MICROBIOLOGY	4
BIOL 3315	GENETICS	3
BIOL 3301	CELL PHYSIOLOGY	3
BIOL 3454	GENERAL ZOOLOGY	4
or BIOL 3427	PLANT SCIENCE	
BIOL 3442	HUMAN PHYSIOLOGY	4
or BIOL 3446	HUMAN ANATOMY	
BIOL 3310	SELECTED TOPICS IN BIOLOGY	3
BIOL 3101	CURRENT TOPICS IN BIOLOGY	1
Graduate Program		
Graduate Courses		30
BIOL 5304	VIROLOGY	3
BIOL 5309	IMMUNOLOGY	3
BIOL 5311	EVOLUTION	3
BIOL 5314	BIOMETRY	3
BIOL 5317	BACTERIAL PATHOGENESIS	3
BIOL 5319	HUMAN GENETICS	3
BIOL 5335	ESSENTIALS OF GENOMICS	3
BIOL 5340	BIOINFORMATICS	3
BIOL 5354	LIMNOLOGY	3
BIOL 5310	SELECTED TOPICS IN BIOLOGY	3

¹ See general core requirements (p. 50).

Note: This program consists of 111 undergraduate credit hours, plus 30 graduate credit hours. A grand total of 141 credit hours.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
BIOL 1441		4 BIOL 1442	4
CHEM 1441		4 CHEM 1442	4
UNIV 1131 or 1101		1 ENGL 1302	3
ENGL 1301		3 POLS 2312	3
POLS 2311		3	
		15	14

Second Year

First Semester	Hours	Second Semester	Hours
BIOL 2300		3 BIOL 2444	4

CHEM 2321 & CHEM 2181		4 CHEM 2322 & CHEM 2182	4
HIST 1301		3 MATH 1426	4
MATH 1421		4 HIST 1302	3
COMS 2302		3	
		17	15
Third Year			
First Semester	Hours	Second Semester	Hours
BIOL 3315		3 BIOL 3301	3
BIOL 3454 or 3427		4 BIOL 3442 or 3446	4
BIOL 3101		1 PHYS 1442	4
PHYS 1441		4 Social Science	3
Language, Phil and Culture		3	
		15	14
Fourth Year			
First Semester	Hours	Second Semester	Hours
BIOL 5309		3 BIOL 5304	3
BIOL 5314		3 BIOL 3310	3
Creative Arts		3 Any level Elective	3
Foundational Component Core Elective		3 Advanced Electives	6
Advanced Elective		3	
		15	15
Fifth Year			
First Semester	Hours	Second Semester	Hours
BIOL 5340		3 BIOL 5311	3
BIOL 5310		3 BIOL 5317	3
BIOL 5354		3 BIOL 5319	3
		BIOL 5335	3
		9	12

Total Hours: 141

Requirements for a Minor in Biology

A minor in biology will consist of a minimum of 18 credit hours of approved biology classes that would be applicable toward a major in Biology. Non-majors' courses will not apply toward a minor in biology, such as:

BIOL 1301	NUTRITION	3
BIOL 1333	DISCOVERING BIOLOGY: MOLECULES, CELLS AND DISEASE	3
BIOL 1334	LIFE ON EARTH: EVOLUTION, ECOLOGY AND GLOBAL CHANGE	3
BIOL 1345	BIOLOGY I FOR NURSING STUDENTS	3
BIOL 2317	BASIC CONCEPTS IN HUMAN SEXUALITY	3
BIOL 2457	HUMAN ANATOMY AND PHYSIOLOGY I	4
BIOL 2458	HUMAN ANATOMY AND PHYSIOLOGY II	4
BIOL 2460	NURSING MICROBIOLOGY	4
BIOL 3303	DRUGS AND BEHAVIOR	3
NURS 3309	MEDICAL TERMINOLOGY FOR HEALTHCARE PROVIDERS	3

Non-lecture courses such as research, directed study, co-op, or lab TA credit may not be used toward a minor in Biology. A minimum of six of the 18 credit hours required for the minor must be at the 3000 or 4000 level. BIOL 1441 and BIOL 1442, or equivalent, are required for the minor. The remaining 10 hours must be chosen with and approved by a Biology Advisor.

A 2.0 Biology Grade Point Average must be maintained to earn the minor. Transfer students must complete at least nine hours toward the minor at UT Arlington, and six of the nine hours must be 3000 or 4000 level.

Chemistry and Biochemistry

Undergraduate Degrees

- Bachelor of Arts in Chemistry (p. 1150)
- Bachelor of Arts in Chemistry with UTeach Chemistry Teacher Certification (p. 1150)
- Bachelor of Arts in Chemistry with UTeach Physical Science Teacher Certification (p. 1150)
- Bachelor of Science in Chemistry - American Chemical Society certified (p. 1150)
- Bachelor of Science in Biochemistry - American Chemical Society certified (p. 1150)
- Bachelor of Science in Biological Chemistry (p. 1150)
- Bachelor of Science-Master of Science in Chemistry (p. 1150)
- Bachelor of Science in Biochemistry and Master of Science in Biomedical Engineering (p. 1150)
- Minors in Chemistry (p. 1166)

Graduate Degrees

- Chemistry, M.S. (<http://catalog.uta.edu/science/chemistry/graduate/#masterstext/#ms>)
- Chemistry, M.S. Thesis Substitute (<http://catalog.uta.edu/science/chemistry/graduate/#masterstext/#msthesisub>)
- Chemistry, M.S. Non-Thesis (<http://catalog.uta.edu/science/chemistry/graduate/#masterstext/#msnonthesis>)
- Chemistry, B.S. to Ph.D. (p. 1144)
- Chemistry, Ph.D. (p. 1146)

COURSES

CHEM 1181. GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES. 1 Hour.

General, analytical, and synthetic chemistry concepts will be reinforced through problem- and inquiry-based laboratory activities. The Advanced Chemical Technologies track for majors will introduce research and scientific methods in the context of instructor and student-selected research problems. Hand-on experience in the laboratory will be supplemented with mini-lectures, modules, and web resources to increase student readiness for scientific discovery. Students will also learn about contemporary challenges and advances in chemistry and biochemistry. If a student withdraws from CHEM 1181, the student must also withdraw from CHEM 1341. Prerequisite: Concurrent enrollment in CHEM 1341.

CHEM 1182. GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES. 1 Hour.

General, analytical, and synthetic chemistry concepts will be reinforced through problem- and inquiry-based laboratory activities. Research and scientific methods will be reinforced through the investigation of student-selected research problems and modules on scientific communication. Increased exposure to state-of-the-art analytical techniques and instruments, as well as synthetic methods will culminate in the preparation of a proposal related to the synthesis of new materials and the analysis of their structure and function. If a student withdraws from CHEM 1182, the student must also withdraw from CHEM 1342. Prerequisite: (CHEM 1341 with a grade of C or better) and (CHEM 1181 with a grade of C or better) and (concurrent enrollment in CHEM 1342).

CHEM 1185. CHEMISTRY FOR ENGINEERS LABORATORY. 1 Hour.

This course is intended to provide laboratory credit in chemistry for engineering-majors who transfer into UT-Arlington with credit in Chemistry for Engineers lecture only. Students may register for this course only with specific approval of a Chemistry advisor. Prerequisite: 3 hours of Chemistry for Engineers lecture. Credit cannot be earned for both CHEM 1465 and CHEM 1185.

CHEM 1188. GENERAL CHEMISTRY I LABORATORY. 1 Hour.

This course is intended to provide laboratory credit in freshman chemistry for students who transfer into UT-Arlington with credit in General Chemistry I lecture only. Experiments include: measurement and scientific equipment use, physical properties, separations, synthesis, qualitative analysis, spectroscopy. Students may register for this course only with specific approval of a Chemistry advisor. Prerequisite: 3 hours of General Chemistry I lecture. Credit cannot be earned for both CHEM 1441 and CHEM 1188.

CHEM 1189. GENERAL CHEMISTRY II LABORATORY. 1 Hour.

This course is intended to provide laboratory credit in freshman chemistry for students who transfer into UT-Arlington with credit for General Chemistry lecture only. Experiments include: thermodynamics, electrochemistry, synthesis, quantitative analysis, spectroscopy, stoichiometry, and acid-base chemistry. Students may register for this course only with specific approval of a Chemistry advisor. Prerequisite: CHEM 1188 and 6 hours of General Chemistry II lecture. Credit cannot be earned for both CHEM 1442 and CHEM 1189.

CHEM 1341. GENERAL CHEMISTRY I. 3 Hours.

The lecture covers the fundamentals of atomic structure, chemical bonding, the periodic table, nomenclature, kinetic theory, gas laws, chemical equations, and solutions. Only chemistry majors in the Advanced Chemical Technologies program may take this course. When combined with CHEM 1181, this course will satisfy completion of CHEM 1441 for Chemistry, Biochemistry, and Biological Chemistry majors. Prerequisite: (MATH 1302 or MATH 1303 or MATH 1322 or MATH 1323 or MATH 1402 or MATH 1421 or MATH 1426 or MPT Algebra score \geq 17) and (concurrent enrollment in CHEM 1181). Students must pass the departmental placement assignment. ACT program only.

CHEM 1342. GENERAL CHEMISTRY II. 3 Hours.

The lecture covers study of advanced atomic structure and bonding concepts, acid-base theory, kinetics and equilibria, thermodynamics, electrochemistry, and the chemistry of some elements. Only chemistry majors in the Advanced Chemical Technologies program may take this course. When combined with CHEM 1182, this course will satisfy completion of CHEM 1442 for Chemistry, Biochemistry, and Biological Chemistry majors. Prerequisite: (CHEM 1341 or CHEM 1441 with a grade of C or better) and (CHEM 1181 with a grade of C or better) and (concurrent enrollment in CHEM 1182). ACT program only.

CHEM 1345. CHEMISTRY IN THE WORLD AROUND US. 3 Hours.

This course looks at current issues in society and uses chemical principles to understand them. Topics include sustainability, air pollution, the ozone layer, global climate change, fuels, and water. CHEM 1345/1346 cannot be used to fulfill the CHEM 1441/1442/1451/1465 requirement in any degree program.

CHEM 1346. CHEMISTRY IN THE WORLD AROUND US II. 3 Hours.

This course is a continuation of the study of current issues in society using chemical principles to understand them. Topics include polymers, drug design, nutrition, and genetic engineering. CHEM 1345/1346 cannot be used to fulfill the CHEM 1441/1442/1451/1465 requirement in any degree program. Prerequisite: CHEM 1345 or equivalent with a grade of C or better.

CHEM 1400. INTRODUCTORY CHEMICAL PRINCIPLES. 4 Hours.

Provides a background in fundamental chemical mathematics, in writing and understanding chemical formulas and equations, and in the application of scientific laws to the behavior of matter. Students will learn problem solving skills necessary in general chemistry I by hands-on and interactive approach. This course is designed for the student with little or no previous chemical training who intends to take the CHEM 1441/CHEM 1442 sequence or CHEM 1465 at a later date. CHEM 1400 cannot replace CHEM 1441/CHEM 1442/CHEM 1451/CHEM 1465. Prerequisite: MATH 1302 or equivalent or MPT Algebra score \geq 17.

CHEM 1441. GENERAL CHEMISTRY I. 4 Hours. (TCCN = CHEM 1411)

The lecture covers the fundamentals of atomic structure, chemical bonding, the periodic table, nomenclature, kinetic theory, gas laws, chemical equations, and solutions. The laboratory introduces the scientific method, experiment design, data collection and analysis, as well as illustrates fundamental principles presented in the lecture. Students who have not had high school chemistry are advised to take an introductory chemistry course first. Prerequisite: MATH 1302 or MATH 1303 or MATH 1322 or MATH 1323 or MATH 1402 or MATH 1421 or MATH 1426 or MPT Algebra score \geq 17 or Student Group CHEM 1441. Students must pass the departmental placement assignment.

CHEM 1442. GENERAL CHEMISTRY II. 4 Hours. (TCCN = CHEM 1412)

Study of advanced atomic structure and bonding concepts, acid-base theory, kinetics and equilibria, thermodynamics, electrochemistry, the chemistry of some elements. The laboratory focuses on experimental design, data collection and analyses as well as chemical syntheses to illustrate fundamental principles presented in the lecture. Prerequisite: CHEM 1441 or equivalent with a grade of C or better or (CHEM 1341 with a grade C or better) or Student Group CHEM 1442.

CHEM 1445. CHEMISTRY FOR NON-SCIENCE MAJORS. 4 Hours. (TCCN = CHEM 1405)

Chemistry of things of everyday life: energy, radioactivity, petroleum products, pollution, the nature of matter, and the applications of chemistry to things we use. CHEM 1445, 1446 cannot be used to fulfill the 1441/1442 requirement in any degree program.

CHEM 1446. CHEMISTRY II FOR NON-SCIENCE MAJORS. 4 Hours. (TCCN = CHEM 1407)

Continuation of the chemistry of things of everyday life. Vitamins, minerals, chemical additives, plastics, cosmetics, proteins, carbohydrates, poisons, fats, and oils. Prerequisite: CHEM 1445 or equivalent with a grade of C or better. CHEM 1445, CHEM 1446 cannot be used to fulfill the CHEM 1441/ CHEM 1442 requirement in any degree program.

CHEM 1451. CHEMISTRY FOR HEALTH SCIENCES. 4 Hours.

Survey of general, organic, and biochemistry with emphasis on applications to the human body. Measurement, atomic theory and structure, bonding, quantitative relationships in chemical reactions, gases, solutions, electrolytes, organic functional groups and nomenclature, organic reactions, carbohydrates, lipids, proteins, enzymes, metabolism, and nucleic acids. CHEM 1451 cannot count for major credit toward a degree in chemistry. Prerequisite: MATH 1301 or MATH 1302 or MATH 1303 or MATH 1315 or MATH 1316 or MATH 1322 or MATH 1323 or MATH 1324 or MATH 1421 or MATH 1426 or equivalent.

CHEM 1465. CHEMISTRY FOR ENGINEERS. 4 Hours.

An introduction to important concepts and principles of chemistry with emphasis on areas considered most relevant in an engineering context. Topics include chemical stoichiometry, bonding, chemical thermodynamics, equilibria, electrochemistry, and kinetics. Engineering students may substitute the eight hour sequence CHEM 1441 and CHEM 1442 for this class, but not either CHEM 1441 or CHEM 1442 alone. Students who complete CHEM 1465 and subsequently change majors to curricula that require both CHEM 1441 and CHEM 1442 may substitute CHEM 1465 for CHEM 1441. Prerequisite: C or better in MATH 1322 or C or better in MATH 1323 or C or better in MATH 1324 or C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment) or HONR-SC 1426 (or concurrent enrollment) or MATH 2425 (or concurrent enrollment) or HONR-SC 2425 (or concurrent enrollment) or Student Group CHEM 1465.

CHEM 2101. CHEMICAL INFORMATICS I. 1 Hour.

Developing quantitative understanding in chemistry relies heavily on models, from very crude and simple ideas to complex theoretical frameworks. This class aims to introduce students into models and modeling chemical phenomena that develop understanding of chemical processes. Working with observations and data, we develop the art of developing qualitative relations and explore their limitations. The class is delivered as a practical tour with hands-on practice. Good number skills, basic knowledge of coding and handling of computers is required. Prerequisite: (CHEM 1442 with a grade of C or better) and (MATH 1426 with a grade of C or better or Concurrent enrollment in MATH 1426 or Instructor's permission).

CHEM 2180. RESEARCH IN CHEMISTRY. 1 Hour.

Research for undergraduate students supervised by faculty of the department. May be repeated. Graded pass/fail only. Prerequisite: written permission of the instructor. Students may take a maximum of 12 hours credit on a pass/fail basis.

CHEM 2181. ORGANIC CHEMISTRY I LABORATORY. 1 Hour. (TCCN = CHEM 2123)

Experiments which illustrate laboratory techniques, theoretical concepts, and synthesis. Prerequisite: CHEM 1442 with a grade of C or better or ((CHEM 1342 with a grade C or better) and (CHEM 1343 with a grade C or better)) or Student Group CHEM 2181. Corequisite: CHEM 2321. If student withdraws from CHEM 2321 prior to midsemester date, student must also withdraw from CHEM 2181.

CHEM 2182. ORGANIC CHEMISTRY II LABORATORY. 1 Hour. (TCCN = CHEM 2125)

Experiments which will include syntheses, characterization of unknown substances, and use of the chemical literature. Prerequisite: (CHEM 2181 with a grade of C or better) and (CHEM 2321 with a grade of C or better). Corequisite: CHEM 2322. If student withdraws from CHEM 2322 prior to the midsemester date, student must also withdraw from CHEM 2182.

CHEM 2283. SYNTHESIS AND ANALYSIS LABORATORY I. 2 Hours.

Students will perform experiments that build mastery in standard laboratory techniques and illustrate theoretical concepts related to organic synthesis and quantitative analysis methods. Students will continue to develop their mastery of analysis through an introduction to the acquisition and statistical analysis of quantitative and qualitative data, acquired in the context of a series of guided inquiry design and synthesis projects. Syntheses may involve small molecules, polymers, and materials designed to perform specific functions. Students will continue to develop their communication and group work skills by sharing independent data and critical feedback with peers. Additionally, laboratory exercises will involve basic titrimetric, spectrophotometric, and chromatographic methods. Prerequisite: CHEM 1442/CHEM 1342 and CHEM 1182 or equivalent with a grade of C or better. Corequisites: Concurrent enrollment or previous credit in CHEM 2321 and CHEM 2335. Students must remain enrolled in at least one of CHEM 2321 and CHEM 2335 beyond the mid-semester date to remain enrolled in CHEM 2283.

CHEM 2284. SYNTHESIS AND ANALYSIS LABORATORY II. 2 Hours.

Experiments will include syntheses and analysis, characterization of unknown substances, and use of the chemical literature. A focus will be placed on advancing the use of modern chemical technologies for both synthetic and analytical work in a guided inquiry format. Prerequisite: CHEM 2283 and CHEM 2321 with a grade of C or better. Corequisite: CHEM 2322.

CHEM 2285. QUANTITATIVE CHEMISTRY LABORATORY. 2 Hours.

An introduction to computers for the acquisition and statistical analysis of data. Laboratory exercises involving basic titrimetric, spectrophotometric and chromatographic methods. Prerequisite: CHEM 1442 or equivalent with a grade of C or better, and concurrent enrollment/previous credit in CHEM 2335.

CHEM 2321. ORGANIC CHEMISTRY I. 3 Hours. (TCCN = CHEM 2323)

The fundamentals of molecular structure, stereochemistry, and the reactions of aliphatic hydrocarbons. Electronic theory, synthetic methods, and mechanisms. Prerequisite: CHEM 1442 with a grade of C or better or ((CHEM 1342 with a grade C or better) and (CHEM 1182 with a grade C or better)) or Student Group CHEM 2321.

CHEM 2322. ORGANIC CHEMISTRY II. 3 Hours. (TCCN = CHEM 2325)

Organic spectroscopic analysis. The chemistry of aromatic hydrocarbons, alcohols and ethers, aldehydes, ketones, carboxylic acids and derivatives, amines, amino acid, carbohydrates, and other functional groups. Mechanisms and synthesis. Prerequisite: CHEM 2321 with a grade of C or better.

CHEM 2335. QUANTITATIVE CHEMISTRY. 3 Hours.

Basic methods of error analysis, simple and advanced methods for the solution of complex equilibria, fundamentals of titrimetric, spectrophotometric and chromatographic instrumental analysis. Prerequisite: (CHEM 1442 or CHEM 1342 or equivalent) and (MATH 1324 or MATH 1325 or MATH 1421 or MATH 1426 or equivalent or higher) and (CHEM 2285 or CHEM 2283 concurrent enrollment or previous credit).

CHEM 2380. UNDERGRADUATE RESEARCH. 3 Hours.

Research in chemistry supervised by a faculty member of the department. May be repeated. Graded pass/fail only. Prerequisite: written permission of the instructor. Students may take a maximum of 12 hours credit on a pass/fail basis.

CHEM 3101. CHEMICAL INFORMATICS II. 1 Hour.

This course provides a succinct overview of the emerging discipline of Chemical Informatics at the intersection of chemistry, computational science, and information science. Efficient and reliable analysis of chemical analytical data is a great challenge due to the increase in data size, variety and velocity. Attention in this class is drawn to specific opportunities afforded by this new field in accelerating discovery and understanding of cause and effect. The class is delivered as a practical tour with hands-on practice. Good number skills, basic knowledge of coding and handling of computers is required. Prerequisite: (CHEM 2101 with a grade C or better) or (Instructor's permission).

CHEM 3131. CHEMISTRY COMMUNITY SERVICE LEARNING. 1 Hour.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

CHEM 3175. BIOPHYSICAL CHEMISTRY LABORATORY. 1 Hour.

Introduction to the physical experimental techniques used in quantitative biochemical practice. Prerequisite: CHEM 3315 or concurrent enrollment.

CHEM 3181. PHYSICAL CHEMISTRY I LABORATORY. 1 Hour.

The physical and thermodynamic properties of substances, experimentally determined. Prerequisite: Grade of C or better in CHEM 2285 or CHEM 2343, CHEM 2335, and CHEM 3321 or concurrent enrollment.

CHEM 3182. PHYSICAL CHEMISTRY II LABORATORY. 1 Hour.

Experiments in kinetics, equilibria, spectroscopy, and electrochemistry. Modern instrumental techniques. Prerequisite: Grade C or better in CHEM 2285 or CHEM 2343, CHEM 2335, and CHEM 3322 or concurrent enrollment.

CHEM 3231. CHEMISTRY/BIOCHEMISTRY COMMUNITY SERVICE LEARNING. 2 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

CHEM 3307. INTRODUCTION TO POLYMER CHEMISTRY. 3 Hours.

The chemistry and technology of polymeric systems. The chemistry of natural systems such as proteins as well as the synthesis of fibers, films, plastics, and elastomers. Discussion of the characterization of polymers by modern techniques using instrumental analysis is followed by a summary of end-use and processing techniques. Prerequisite: CHEM 2322 with a grade of C or better or permission of instructor.

CHEM 3315. INTRODUCTION TO BIOPHYSICAL CHEMISTRY. 3 Hours.

A basic course introducing the physical principles that govern biological systems and processes, and the methods used for their investigation. Topics include solution thermodynamics, biomolecular interactions, enzyme kinetics, transport processes (diffusion, sedimentation, electrophoresis, viscous flow), and the applications of spectroscopic methods (absorption, emission and scattering of radiation, and the utilization of polarized light). Prerequisites, a grade of C or better in each of the following: CHEM 2335, MATH 2425, and 8 hours of college level physics.

CHEM 3317. INORGANIC CHEMISTRY. 3 Hours.

An overview of descriptive main group chemistry, solid state structures and the energetics of ionic, metallic, and covalent solids, acid-base chemistry and the coordination chemistry of the transition metals. The course is intended to explore and describe the role of inorganic chemistry in other natural sciences with an emphasis on the biological and geological sciences. Important compounds and reactions in industrial chemistry are also covered. Intended for both chemistry and non-chemistry majors. Prerequisite: Grade of C or better in CHEM 2322 or concurrent enrollment.

CHEM 3321. PHYSICAL CHEMISTRY I. 3 Hours.

Thermodynamics, gases, First and Second Law, pure substances, mixtures and solutions, equilibrium; Statistical Thermodynamics; Kinetics, rates, mechanisms, transitions state theory. In this class you will learn to understand the basic principles of Chemistry as the Science of Transformation and Change. We emphasize conceptual understanding and will become skilled in a quantitative description of the phenomena we study. The goal is that at the end of the course every student can outline the basic principles of Thermodynamics, has a sound understanding of ideal and approximate systems, and can apply the tools to engage in self-driven investigations. Prerequisites: CHEM 2335, MATH 2326, both with a grade of C or better and PHYS 1443 and PHYS 1444. MATH 3318 concurrent enrollment recommended.

CHEM 3322. PHYSICAL CHEMISTRY II. 3 Hours.

Quantum theory, introduction, principles. Schrödinger Equation, wavefunction; particle in a box, uncertainty; postulates of quantum mechanics; hydrogen atom, orbitals, structure of multi-electron atoms, atomic spectra and selection rules; molecular structure of diatomic molecules; introduction to molecular spectroscopy; materials and structure: lattices, diffraction methods, properties of solids. In this class you will learn to understand the principles of Quantum Chemistry and how it applies to atoms, molecules, and solids. We emphasize conceptual understanding and will become skilled in quantitative descriptions. The goal is that at the end of the course every student can outline the basic principles of Quantum Chemistry, both qualitatively and quantitatively. Students will obtain a sound understanding of probability, wavefunctions, orbitals, and spectroscopy, and can apply the learned concepts and tools to engage in self-driven investigations. This course is designated as the capstone course. Prerequisite: CHEM 2335, MATH 2326, both with a grade of C or better and PHYS 1443 and PHYS 1444. MATH 3318 concurrent enrollment recommended.

CHEM 3331. CHEMISTRY/BIOCHEMISTRY COMMUNITY SERVICE LEARNING. 3 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

CHEM 4080. UNDERGRADUATE RESEARCH. 0 Hours.

Research problems on an individual basis, conducted on a selected topic under the direction of a member of the chemistry and biochemistry faculty. May be repeated. This is a non-credit course and cannot be used to meet degree requirements. Prerequisite: Permission of the instructor.

CHEM 4101. SEMINAR IN CHEMISTRY. 1 Hour.

Oral and written communication of chemical information. Seminars will be presented by students on topics from the current chemical literature. A term paper is required. The use of the library for researching the chemical literature will be emphasized. May be repeated for a total of two semester hours of credit. Students must be within 12 credits hours from the degree completion. Departmental permission required.

CHEM 4180. UNDERGRADUATE RESEARCH. 1 Hour.

Research under the direction of a member of the department. No more than six hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: Written permission of the instructor and a minimum grade point average of 2.5.

CHEM 4181. COMPUTATIONAL CHEMISTRY LABORATORY. 1 Hour.

Molecular modeling. Application of various computational techniques to chemical problems, including determination of molecular geometry, conformational analysis, and molecular energetics. Prerequisite: CHEM 3321 or CHEM 3322 with a grade C or better.

CHEM 4191. READINGS IN CHEMISTRY. 1 Hour.

May be repeated for a maximum of six hours credit. Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper. Prerequisite: permission of department chair. Graded pass/fail only.

CHEM 4203. COMPUTATIONAL CHEMISTRY. 2 Hours.

A course emphasizing molecular quantum mechanics. Topics include the basic postulates of quantum mechanics, many electron wave functions, the variation method, and molecular orbital theory at various levels of approximation (Hueckel, Extended Hueckel, semi-empirical, ab initio, etc.). Related methods, such as force-field approaches and molecular dynamics, will be discussed. Prerequisite: CHEM 3322, with a grade of "C" or better.

CHEM 4242. LABORATORY TECHNIQUES IN BIOCHEMISTRY. 2 Hours.

Designed to introduce the student to biochemical laboratory methods; a practical approach to the properties of carbohydrates, proteins, enzymes, and nucleotides. Prerequisite CHEM 4311, with a grade of "C" or better.

CHEM 4280. UNDERGRADUATE RESEARCH. 2 Hours.

Research under the direction of a member of the department. No more than six hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: Written permission of the instructor and a minimum grade point average of 2.5.

CHEM 4291. READINGS IN CHEMISTRY. 2 Hours.

May be repeated for a maximum of six hours credit. Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper. Prerequisite: permission of department chair. Graded pass/fail only.

CHEM 4311. BIOCHEMISTRY I. 3 Hours.

The chemistry of the sugars, amino acids, proteins, and nucleic acids, followed by an introduction to enzyme chemistry. The major metabolic pathways of the cell, glycolysis, TCA cycle, and pentose phosphate pathway. Auditing of this class is NOT permitted. Prerequisite: CHEM 2322, with a grade of "C" or better.

CHEM 4312. BIOCHEMISTRY II. 3 Hours.

A continuation of CHEM 4311. The breakdown and biosynthesis of fats and the synthesis of carbohydrates, including photosynthesis. Metabolic utilization of proteins and amino acids together with an introduction to protein synthesis. Prerequisite: CHEM 4311, with a grade of "C" or better, or equivalent.

CHEM 4313. METABOLISM AND REGULATION. 3 Hours.

Selected topics in advanced metabolism including biosynthesis of phospholipids, steroids, porphyrins and related molecules, and prostaglandins. Membranes and transport phenomena, regulation of glycogen and glucose metabolism in muscle and lipid metabolism in adipose tissue. Prerequisite: CHEM 4312 with a grade of C or better.

CHEM 4314. ENZYMOLOGY. 3 Hours.

A comprehensive study of enzymes including structures, reaction mechanisms, regulation, and kinetics. Prerequisite: CHEM 4311 with a grade of C or better.

CHEM 4316. BIOCHEMICAL GENETICS. 3 Hours.

Aspects of the biochemistry of gene expression in prokaryotic and eukaryotic organisms and its regulation, together with genetic manipulations and the methodology of recombinant DNA technology. Prerequisite: CHEM 4312 with a grade of C or better.

CHEM 4318. INORGANIC CHEMISTRY. 3 Hours.

An overview of the chemistry of the transition metals. Topics include symmetry and applications, bonding models, magnetism, synthesis of metal complexes, modern characterization techniques including IR, NMR, and electronic spectroscopy, organometallic compounds, reaction mechanisms, catalysis, and bioinorganic chemistry. Prerequisite: CHEM 2322 with a grade of C or better.

CHEM 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with four independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment; junior or senior standing.

CHEM 4346. ADVANCED SYNTHETIC METHODS. 3 Hours.

Methods and techniques for the synthesis and characterization of organic, inorganic, and organometallic compounds. Prerequisite: Grade of C or better in CHEM 2182, CHEM 2322, and CHEM 3317 or CHEM 4318.

CHEM 4380. UNDERGRADUATE RESEARCH. 3 Hours.

Research under the direction of a member of the department. No more than six hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: Written permission of the instructor and a minimum grade point average of 2.5.

CHEM 4381. HONORS RESEARCH. 3 Hours.

Research in chemistry under the direction of a member of the department, resulting in a written honors thesis. No more than 6 hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: CHEM 2322, CHEM 2182, and admission to the University Honors College.

CHEM 4385. INSTRUCTIONAL TECHNIQUES IN CHEMISTRY. 3 Hours.

Students participate in undergraduate laboratory instruction or recitation sessions under the supervision of a faculty member. No more than 6 hours of CHEM 4385 may be taken for a letter grade. Enrollment by departmental permission only.

CHEM 4387. UNIVERSITY-INDUSTRY CHEMISTRY COOPERATIVE. 3 Hours.

By special arrangement only. Cooperative study assignment doing chemical research in a local industrial chemical laboratory. Enrollment by departmental permission only. Graded pass/fail only.

CHEM 4391. READINGS IN CHEMISTRY. 3 Hours.

May be repeated for a maximum of six hours credit. Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper. Prerequisite: permission of department chair. Graded pass/fail only.

CHEM 4392. ADVANCED TOPICS IN CHEMISTRY. 3 Hours.

Topics arranged on an individual basis. May be repeated for credit as the topic varies. Prerequisite: permission of instructor.

CHEM 4461. INSTRUMENTAL ANALYSIS. 4 Hours.

The principles involved in the operation of modern analytical instruments and the laboratory use of such instruments. Students must be within 30 hours of completing their bachelor degrees. Prerequisite: Grades of C or better in CHEM 2285 or CHEM 2343 and CHEM 2335.

CHEM 5011. SEMINAR IN CHEMISTRY. 0 Hours.

Students will present a talk, prepare a poster, and engage in scientific writing and communication. Includes learning how to prepare, present, and defend an oral presentation. May not be counted for credit toward the degree requirements.

CHEM 5168. QUANTUM CHEMISTRY LABORATORY. 1 Hour.

Molecular modeling. Application of various computational techniques to chemical problems, including determination of molecular geometry, conformational analysis, and molecular energetics. Prerequisite: concurrent enrollment in CHEM 5262.

CHEM 5191. READINGS IN CHEMISTRY. 1 Hour.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5192. RESEARCH IN CHEMISTRY. 1 Hour.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5262. COMPUTATIONAL CHEMISTRY. 2 Hours.

Molecular quantum mechanics. Fundamental principles of quantum mechanics, with a special emphasis on molecular electronic structure theory. Topics covered include molecular mechanics, semi-empirical and ab initio molecular orbital theory, density functional theory, calculation of thermodynamic properties and molecular dynamics. Prerequisite: CHEM 5301 or permission of instructor. concurrent enrollment in CHEM 5168 required.

CHEM 5291. READINGS IN CHEMISTRY. 2 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5292. RESEARCH IN CHEMISTRY. 2 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5300. SELECTED TOPICS IN ADVANCED CHEMISTRY. 3 Hours.

The area may vary (typically analytical, applied, biological, colloid, environmental, inorganic, organic, physical, polymer, materials, theoretical, etc.) and will be announced in advance. More than one area may be covered simultaneously, in parallel courses offered under different section numbers. May be repeated for credit when area or topics vary. Prerequisite: permission of instructor.

CHEM 5324. ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY. 3 Hours.

This course covers modern aspects of atomic and molecular mass spectrometry, as well as spectrochemical analysis. Upon completion of this course, the student will be able to: describe the basic setup and operation of mass spectrometric and spectroscopic instrumentation; interpret spectra from various instruments as a means for qualitative and quantitative analysis; apply basic knowledge of mass spectrometry and spectroscopy for practical problem solving; relate the use of mass spectrometry and spectroscopy to his or her own research interests; and compile, present, and explain modern techniques for analytical research. Written and oral presentations, as well as traditional classroom examinations, homework, and quizzes will be used to assess student performance. Prerequisite includes CHEM 4461 or equivalent; or permission of instructor.

CHEM 5325. SEPARATION SCIENCE. 3 Hours.

A comprehensive examination of most areas involving the separation of molecules and ions. Theoretical, practical and historical aspects of: distillation, sublimation, liquid-liquid extraction, solid phase extraction, chromatography, electrophoresis, field flow fractionation, membrane/barrier processes, and crystallization will be considered. Students taking this course must have a good basic background in organic chemistry and physical chemistry.

CHEM 5326. ANALYTICAL CHEMISTRY - CONCEPTS AND IMPLEMENTATION. 3 Hours.

This course familiarizes students with basic electronic design in analytical instrumentation. Familiarization with active and passive components, operational amplifiers, timers, logic gates, and designing analytical instrumentation based on such components, especially in Wet Chemistry. The course covers ionic equilibria and acid-base equilibria and solving complex problems by iterative numerical methods and nonlinear curve fitting using programming in BASIC and MS Excel Solver™. The course covers present day applications of wet chemical analysis, specific methods and instrumentation, practical aspects of automated liquid phase analytical methods including component availability and cost. A design problem, chosen by lottery, will be given to each student early in the semester. The newly acquired knowledge of chemistry and electronics will be used to design a new instrument and present it. Prerequisite: CHEM 4461 or equivalent undergraduate instrumental analysis course.

CHEM 5327. ANALYTICAL ELECTROCHEMISTRY. 3 Hours.

This course covers modern aspects of electroanalytical chemistry. Upon completion of this course, the student will be able to: understand the concepts of redox potentials and their role in electron transfer, the thermodynamic aspects of electrochemical cells, mass transport in electrochemical systems, and the principles underlying various electroanalytical techniques such as potentiometry, amperometry, coulometry and voltammetry. The instrumental aspects of these techniques will also be addressed, including specialized approaches such as spectroelectrochemistry. The student will be able to relate the use of these analytical techniques to his or her own research needs and interests. Written and oral examinations, as well as traditional classroom examinations, will be used to assess student performance. Prerequisite includes CHEM 4461 or equivalent; or permission of instructor.

CHEM 5328. ANALYTICAL SPECTROSCOPY. 3 Hours.

This course covers many of the methods of spectrochemical analysis used in the analytical laboratory. At the end of this course, students should be able to: explain the fundamental theory of many spectroscopy methods, including atomic spectroscopy, molecular spectroscopy, UV/Vis spectroscopy, molecular luminescence, and infrared spectrometry, among others; describe basic instrumental components; apply basic statistics (e.g., measurement errors, and calibration methods) for data analysis; and understand the fundamental use and applications of spectroscopy methods for basic research and laboratory measurements. Student performance will be evaluated based on homework assignments, exams, quizzes, and presentations. Prerequisite includes CHEM 4461 or equivalent, or permission of instructor.

CHEM 5331. ADVANCED BIOCHEMISTRY I. 3 Hours.

Vocabulary and conceptual understanding of biochemical processes by which cells break down organic molecules and trap some of the released energy in the form of reactive nucleotides; use these reactive nucleotides to drive the synthesis of organic building blocks such as sugars, lipids, amino acids and nucleic acids from simpler molecules that serve as precursors; critical review of primary research articles in biochemistry related to proteins, expression and purification, kinetics, and metabolism; preparing and presenting an NIH R15 proposal/paper; understanding structures and functions of biological molecules, of intermediary metabolism and its control, and of molecular genetics.

CHEM 5332. ADVANCED BIOCHEMISTRY II. 3 Hours.

The course will cover various aspects of advanced studies in Biochemistry, Metabolism, and Cell Signaling. Selected topics may include gene expression regulation in prokaryotes and eukaryotes, epigenetics, cancer biology, lipid metabolism, cofactors, enzyme kinetics, cell signaling, redox signaling, nitric oxide signaling, metallo-enzyme mechanism and function, unnatural amino acids, protein engineering, and proteomics.

CHEM 5334. GENES, GENOME, AND REACTION MECHANISM. 3 Hours.

Concepts of Gene and genome in prokaryotes and eukaryotes; Gene regulation and epigenetics; Promoter architecture, transcription, mRNA processing and translation Histone modification, chromatin organization and non-coding RNA; Vitamins, hormones and Cell signaling; Transition states/Steady state; Pre-steady state kinetics; Mechanisms (ping-poning, bi-bi). Discuss current literature. Prerequisite: passing of ACS-test in Biochemistry.

CHEM 5335. METHODS AND ENZYMOLOGY. 3 Hours.

A variety of spectroscopic, physical methods and microscopy techniques are employed to solve biological problems at the atomic and molecular level. The focus of this module is to present the basic theory behind the use and interpretation of such methods. Topics include electronic, infrared and fluorescence absorption spectroscopy, circular dichroism, x-ray diffraction (XRD), multidimensional nuclear magnetic resonance, and electron paramagnetic resonance. Exploration of enzyme properties that include enzyme kinetics, structure, and their function. Evaluation of enzyme functions associated with others, and their significance with respect to human health and diseases; A scope of emerging scientific advances and challenges associated with enzyme actions will also be discoursed through lecture and students' paper presentation and their term paper proposal. Prerequisite: passed ACS-test in Biochemistry.

CHEM 5336. BIOINORGANIC CHEMISTRY, COFACTORS & COENZYMES. 3 Hours.

Many fundamental life processes (respiration, nitrogen fixation, photosynthesis, and replication) require transition metal ions and/or specialized cofactors to facilitate unique chemical transformations. In this course, all aspects of the bioinorganic chemistry will be covered, including the biosynthesis of complex metal clusters (as far as is known), the biochemical reactions they catalyze, their chemical and spectroscopic properties, and the mechanisms by which they facilitate biochemical reactions.

CHEM 5337. MEDICINAL CHEMISTRY AND DRUG Discovery. 3 Hours.

This course will provide students with an understanding of the history of the modern drug discovery process, drugs and drug ionization states, biological targets, lead molecule discovery and optimization, cell signaling and metabolism, the investigation of structure activity relationships, translation with preclinical models, intellectual property and commercialization, and the regulatory process from target/lead discovery to clinical use. History and introduction to Discovery; Foundations: predicting structural ionization states using concepts from pH/pKa/acids and bases/buffers; Biological Targets: Enzymes, Receptors, Oligonucleotides; Drug-Target Structures and Interactions, Lead identification and optimization, Structure Activity Relationships: Computational Approaches (ligand based; structure based); Cell signaling and Metabolism, cardiovascular diseases, diabetes, obesity, neurological disorders, and cancer; and current therapies; Translation and intellectual property; FDA regulations and clinical trials. To enroll students must have completed or be concurrently enrolled in CHEM 4311 or receive special permission of the instructor. Prerequisite: CHEM 4311 or permission of the instructor.

CHEM 5341. INORGANIC CHEMISTRY. 3 Hours.

Structures, bonding, and properties of main group and transition element compounds including: symmetry, coordination chemistry, reaction mechanisms, organometallic chemistry, and modern characterization techniques. Prerequisite: CHEM 4318 or permission of instructor.

CHEM 5342. SOLID STATE CHEMISTRY. 3 Hours.

Chemical synthesis and characterization methods of extended structures. Principles of solid-state synthesis, classical equilibrium approaches, diffusion and chemical transport, non-equilibrium and deposition methods; high temperature and high pressure synthesis; basic characterization techniques using X-rays, electrons, and neutrons; basic structure types and symmetry; optical, electrical and magnetic properties; examples will relate to materials used for energy harvesting, sensors, and catalysis.

CHEM 5344. X-RAY DIFFRACTION, SCATTERING AND ABSORPTION. 3 Hours.

The class will focus on modern applications of X-ray diffraction and absorption techniques in crystal and molecular structure determination. A practical component will address aspects of state of the art methods, including how to solve structures using data collected on powder and single-crystal diffractometers, X-ray photoelectron spectroscopy (XPS), etc.

CHEM 5351. ORGANIC CHEMISTRY I. 3 Hours.

Bonding, structure, stereochemistry, substituent effects, isotope effects, solvent effects, kinetics, and linear free-energy relationships in determining reaction mechanisms. Acids and bases, orbital symmetry, pericyclic reactions, photochemistry, and nucleophilic substitution reactions. Prerequisites: CHEM 2322 and CHEM 3322 or equivalent.

CHEM 5354. ORGANIC CHEMISTRY II. 3 Hours.

A survey of organic reaction mechanisms including addition and elimination reactions, nucleophilic carbon species, carbonyl reactions, electrophilic substitution reactions, rearrangement reactions, electron deficient species, and free radical reactions. Prerequisite: CHEM 5309 or permission.

CHEM 5355. ADVANCED ORGANIC SYNTHESIS. 3 Hours.

Synthetically important reactions, strategy in organic synthesis using retrosynthetic analysis and mechanistic understanding of reactions, synthons, asymmetric synthesis. Prerequisite: CHEM 5310 or permission of instructor.

CHEM 5356. ADVANCED POLYMER CHEMISTRY. 3 Hours.

Polymer synthesis and reactions including condensation, free-radical, ionic, and coordination polymerizations; principles of polymerization including thermodynamics and kinetic considerations; physical characterizations including determinations of absolute molecular weights, relative molecular weights, morphology, glass transitions, and polymer crystallinity; relationships between macromolecular structure, properties, and uses of polymeric materials. Also offered as MSE 5346. Prerequisite: CHEM 2321 and CHEM 2322 or permission of instructor.

CHEM 5358. DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS. 3 Hours.

The use of modern instrumental techniques to determine structure: infrared, ultraviolet, and magnetic resonance spectroscopy, mass spectrometry, optical rotatory dispersion. Emphasis on interpretation of spectra.

CHEM 5361. INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY. 3 Hours.

Classical thermodynamics and statistical thermodynamics. Equilibrium and kinetic processes. Reaction dynamics. Principles of quantum chemistry and its application to spectroscopy. Introduction to bonding in molecules and solids.

CHEM 5364. ADVANCED GRADUATE PHYSICAL CHEMISTRY. 3 Hours.

Statistical thermodynamics and its application to kinetics and spectroscopy. Quantum theory, ab initio methods and density functional theory. Advanced spectroscopic methods to investigate bonding in molecules and solids. Prerequisite: CHEM 5301 or permission of the instructor.

CHEM 5365. THERMODYNAMICS OF MATERIALS. 3 Hours.

Applications of thermodynamics to the study of materials, thermodynamic properties of liquid and solid solutions and their relationship to surface and crystalline defects.

CHEM 5366. CHEMICAL KINETICS. 3 Hours.

Experimental and theoretical aspects of chemical reaction kinetics. Classical and modern techniques for mechanistic characterization, methods for approximation, analysis and interpretation. Simple and complex reaction matrices are considered (gas, liquid, solid state). Specific topics include microscopic reversibility, transition state theory, homo/heterogenous catalysis, and quantum/statistical mechanical estimation of rate constants and chemical activation. Relevant examples relating to atmospheric and environmental, biological, organic, and inorganic reactions will be discussed.

CHEM 5381. ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY I. 3 Hours.

The course will introduce to advanced laboratory techniques used in research laboratories in the Chemistry department. Handling of chemicals, synthesis procedures, characterization methods, data analysis, and safety regulations. Student will engage in reading primary literature and detailed process descriptions. Goal is to prepare students for successful work on their initial research project.

CHEM 5382. ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY II. 3 Hours.

The course will continue to provide up-to-date laboratory techniques used in research laboratories in the Chemistry department. Synthesis procedures, analytical instrumentation, characterization methods, and data analysis. Free literature studies and assignments by instructor will prepare student for research and development. Goal is to support the research progress of students towards their comprehensive exam. Prerequisite: CHEM 5381.

CHEM 5383. ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY III. 3 Hours.

The course will complete exposure to advanced laboratory techniques used in research laboratories in the Chemistry department and will make students ready for developing their own project proposal. Synthesis procedures, analytical instrumentation, characterization methods, and data analysis. Literature studies and explicit writing of scientific notes will prepare students for their comprehensive exam. Prerequisite: CHEM 5381, CHEM 5382.

CHEM 5391. READINGS IN CHEMISTRY. 3 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5392. RESEARCH IN CHEMISTRY. 3 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5398. THESIS. 3 Hours.

Graded R/F only. Prerequisite: permission of instructor.

CHEM 5421. ANALYTICAL INSTRUMENTATION. 4 Hours.

Theory of instrumentation and chemical signal source. Practical experiments utilizing atomic and molecular absorption and emission spectroscopy, chromatographic analysis, and electrochemical techniques.

CHEM 5491. READINGS IN CHEMISTRY. 4 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5492. RESEARCH IN CHEMISTRY. 4 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5591. READINGS IN CHEMISTRY. 5 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5592. RESEARCH IN CHEMISTRY. 5 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5691. READINGS IN CHEMISTRY. 6 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5692. RESEARCH IN CHEMISTRY. 6 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5698. THESIS. 6 Hours.

Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5998. THESIS. 9 Hours.

Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 6011. TOPICS IN GRADUATE RESEARCH. 0 Hours.

Lectures by departmental and university faculty on current chemical research at U.T. Arlington. All graduate students are required to take this course once. May not be counted toward degree requirements. Graded P/F only.

CHEM 6012. ISSUES IN MODERN CHEMICAL RESEARCH. 0 Hours.

Topics to be discussed include the use of the library, maintenance of a research notebook, ethics in research, aspects of technical writing and presentations, and how research is funded. May not be counted toward degree requirements.

CHEM 6104. CHEMISTRY CAREER DEVELOPMENT. 1 Hour.

Every PhD-bound student is required to spend time for professional development outside his UTA laboratory. Possible opportunities include traditional internships in an industrial setting, working at a national laboratory, international exchange programs, extended collaborative visits, teaching engagements and other educational projects outside UTA. The career advancement may consist of one or multiple portions, in total time no less than three and not more than six months. Prerequisite: Permission of research supervisor and graduate advisor.

CHEM 6202. PRINCIPLES OF INDUSTRIAL CHEMISTRY. 2 Hours.

Survey of industrial inorganic and organic chemical processes. Prerequisite: permission of instructor.

CHEM 6203. REGULATORY ASPECTS OF THE CHEMICAL INDUSTRY. 2 Hours.

Survey of chemical toxicology, regulatory aspects involved in the chemical industry, industrial safety, patents and patent law.

CHEM 6304. CHEMISTRY CAREER DEVELOPMENT. 3 Hours.

Every PhD-bound student is required to spend time for professional development outside his UTA laboratory. Possible opportunities include traditional internships in an industrial setting, working at a national laboratory, international exchange programs, extended collaborative visits, teaching engagements and other educational projects outside UTA. The career advancement may consist of one or multiple portions, in total time no less than three and not more than six months. Prerequisite: Permission of the research supervisor and Graduate Advisor.

CHEM 6399. DISSERTATION. 3 Hours.

Graded R/F only. Prerequisite: admission to candidacy for the degree of Ph.D. in Applied Chemistry.

CHEM 6699. DISSERTATION. 6 Hours.

Graded R/F/P/W. Prerequisite: admission to candidacy for the degree of Ph.D. in Applied Chemistry.

CHEM 6904. CHEMISTRY CAREER DEVELOPMENT. 9 Hours.

Every PhD-bound student is required to spend time for professional development outside his UTA laboratory. Possible opportunities include traditional internships in an industrial setting, working at a national laboratory, international exchange programs, extended collaborative visits, teaching engagements and other educational projects outside UTA. The career advancement may consist of one or multiple portions, in total time no less than three and not more than six months. Prerequisite: Permission of Graduate Advisor and research supervisor.

CHEM 6999. DISSERTATION. 9 Hours.

Graded P/F/R only. Prerequisite: admission to candidacy for the degree of Ph.D. in Applied Chemistry.

CHEM 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Chemistry and Biochemistry - Graduate Programs

Objective: Master of Science

The objectives of the Chemistry and Biochemistry Department's program leading to the Master of Science degree include:

1. developing the individual's ability to do independent research,
2. preparing students for more advanced study in chemistry and
3. providing advanced training to professional chemists and those employed in technical and business areas in which chemistry at this level is necessary for efficient performance.

Research areas include analytical chemistry, biochemistry, bioinorganic chemistry, colloid and surface chemistry, electrochemistry, inorganic chemistry, medicinal chemistry, organic chemistry, physical chemistry, polymer chemistry, and theoretical chemistry.

Objective: Ph.D. in Chemistry

The program leading to the Doctor of Philosophy degree in Chemistry is designed primarily to prepare doctoral-level chemists for industrial research careers. The student must:

1. demonstrate the ability to carry out independent research and
2. acquire the practical knowledge of the type of research conducted in industry and of the constraints (both practical and philosophical) under which such research is conducted.

The areas of research include analytical chemistry, biochemistry, bioinorganic chemistry, colloid and surface chemistry, electrochemistry, inorganic chemistry, medicinal chemistry, organic chemistry, organometallic chemistry, physical chemistry, polymer chemistry, and theoretical chemistry.

Admission Criteria

In evaluating candidates for admission to its graduate degree programs, the Department of Chemistry and Biochemistry emphasizes the preparedness of the student as evidenced by quality and quantity of coursework and the student's previous research experience. Recommendations from our own faculty, based on firsthand knowledge of the applicant or a faculty member at the applicant's institution, are also very important.

UNCONDITIONAL ADMISSION

Unconditional admission may be granted under any one of the following options. The minimum undergraduate GPA requirement for all options is 3.0, as calculated by Graduate Admissions.

Option 1

A satisfactory completion of a Bachelor's degree or equivalent, official transcripts, and GRE scores, and three letters of recommendation.

Option 2

A satisfactory completion of a Bachelor's degree or equivalent, official transcripts, and a letter of recommendation from a faculty member at the applicant's undergraduate institution, *plus a recommendation from a UT Arlington Chemistry and Biochemistry faculty member.*

Option 3

A satisfactory completion of a bachelor's degree or equivalent, official transcripts, and a letter of recommendation from a faculty member at the undergraduate institution, *plus a recommendation from a UT Arlington Chemistry and Biochemistry faculty member based on a face-to-face interview.*

Language Requirements

An applicant whose native language is not English must submit a TOEFL score of at least 550 or a score of at least 213 on the computer-based test. A TSE-A score of 45 or higher can be substituted for the TOEFL. Those who have completed their undergraduate education in English may be *eligible for a TOEFL waiver* based on the recommendation letters.

PROVISIONAL ADMISSION

An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate.

PROBATIONARY ADMISSION

In rare cases, probationary admission may be granted as the result of a substandard performance on one or more of the admission criteria. In this case, the Graduate Advisor will set additional conditions for admission including, but not limited to, additional undergraduate coursework and/or achieving a B or better in the first 9 hours of graduate coursework.

DENIAL OF ADMISSION

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

ELIGIBILITY FOR SCHOLARSHIPS/FELLOWSHIPS

Students that have no provisional admission conditions to meet will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by Graduate Admissions!, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships. (Students with graduate teaching or research assistantships, however, must be enrolled in a minimum of 9 hours of coursework in both long semesters and 6 hours of coursework in the summer sessions.)

Master's Degree Requirements

A candidate for graduate study must satisfy the general admission requirements of the program.

MASTER'S DEGREE WITH THESIS

This degree requires a minimum of 24 credit hours in course work plus a 6 credit hour thesis class. A minimum of 18 hours in chemistry from courses listed in the Graduate Catalog will be required. Twelve of these hours will be taken from at least four (4) of the chemistry disciplines (Analytical, Biochemistry, Inorganic, Organic, Physical); suggested classes include:

CHEM 5331 or CHEM 5336	ADVANCED BIOCHEMISTRY I BIOINORGANIC CHEMISTRY, COFACTORS & COENZYMES	3
CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5351	ORGANIC CHEMISTRY I	3
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	3
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	3
CHEM 5325	SEPARATION SCIENCE	3

Electives (6 hours) shall be graduate division courses in a science or engineering subject selected by the candidate; any elective requires the approval of the graduate advisor.

The 6 credit hour thesis class (CHEM 5698) is a completion course and must be taken in the final semester.

MASTER'S DEGREE WITH THESIS SUBSTITUTE

This degree is available for students with at least five years of professional experience in an industrial, government, or other chemistry laboratory at the time the degree is awarded. Admission to the program requires specific approval of the Graduate Studies Committee.

The degree plan requires a minimum of 30 credit hours, of which at least 24 must be in coursework and at least 3 in a suitable research project (CHEM 5392). A minimum of 18 hours in chemistry from courses listed in the Graduate Catalog will be required. Twelve of these hours will be taken from at least four (4) of the chemistry disciplines (Analytical, Biochemistry, Inorganic, Organic, Physical); suggested classes include:

CHEM 5331 or CHEM 5336	ADVANCED BIOCHEMISTRY I BIOINORGANIC CHEMISTRY, COFACTORS & COENZYMES	3
CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5351	ORGANIC CHEMISTRY I	3
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	3
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	3
CHEM 5325	SEPARATION SCIENCE	3

Additional electives II be graduate division courses in a science or engineering subject selected by the candidate; any elective requires the approval of the graduate advisor.

MASTER'S DEGREE NON-THESIS

This option requires a minimum of 30 hours of coursework of which at least 24 hours must be in chemistry. Courses in chemistry will be taken from at least four (4) of the chemistry disciplines (Analytical, Biochemistry, Inorganic, Organic, Physical). Suggested classes include:

CHEM 5331 or CHEM 5336	ADVANCED BIOCHEMISTRY I BIOINORGANIC CHEMISTRY, COFACTORS & COENZYMES	3
CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5351	ORGANIC CHEMISTRY I	3
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	3
CHEM 5324 or CHEM 5325	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY SEPARATION SCIENCE	3

Elective courses (6 hours) shall be graduate division courses selected by the candidate. All courses taken for this degree plan including electives must be approved by the graduate advisor.

Admission Criteria

In evaluating candidates for admission to its graduate degree programs, the Department of Chemistry and Biochemistry emphasizes the preparedness of the student as evidenced by quality and quantity of coursework and the student's previous research experience. Recommendations from our own faculty, based on firsthand knowledge of the applicant or a faculty member at the applicant's institution, are also very important.

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Option 3

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Graduate Admissions, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships. (Students with graduate teaching or research assistantships, however, must be enrolled in a minimum of 9 hours of coursework in both long semesters and 6 hours of coursework in the summer sessions.)

Ph.D. Degree Requirements

To be admitted to the Ph.D. program, an applicant must satisfy the general admission requirements of the program and his or her academic record must show preparation for advanced work in chemistry.

Each candidate must complete the following program requirements:

1. Courses for students emphasizing analytical chemistry

Select three of the following:		9
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	3
CHEM 5325	SEPARATION SCIENCE	3
CHEM 5327	ANALYTICAL ELECTROCHEMISTRY	3
CHEM 5326	ANALYTICAL CHEMISTRY - CONCEPTS AND IMPLEMENTATION	3
Plus two (2) courses from two divisions outside of analytical chemistry (biochemistry, inorganic, organic, or physical). Suggestions include: ¹		
CHEM 5331	ADVANCED BIOCHEMISTRY I	3
CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5351	ORGANIC CHEMISTRY I	3
CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	3

Plus courses as indicated in items 7-11.

2. Courses for students emphasizing biochemistry:

CHEM 5331	ADVANCED BIOCHEMISTRY I	3
CHEM 5334	GENES, GENOME, AND REACTION MECHANISM	3
CHEM 5335	METHODS AND ENZYMOLOGY	3
Plus two (2) courses from two divisions outside of analytical chemistry (biochemistry, inorganic, organic, or physical). Suggestions include:		6
CHEM 5262 & CHEM 5168	COMPUTATIONAL CHEMISTRY and QUANTUM CHEMISTRY LABORATORY	3
CHEM 5336	BIOINORGANIC CHEMISTRY, COFACTORS & COENZYMES	3
CHEM 5351	ORGANIC CHEMISTRY I	3
CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	3
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	3

Plus courses as indicated in items 7-11.

3. Courses for students emphasizing inorganic chemistry:

CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	3
CHEM 5342	SOLID STATE CHEMISTRY	3
or CHEM 5336	BIOINORGANIC CHEMISTRY, COFACTORS & COENZYMES	
Plus two (2) courses from two divisions outside of analytical chemistry (biochemistry, inorganic, organic, or physical). Suggestions include: ¹		6
CHEM 5262 & CHEM 5168	COMPUTATIONAL CHEMISTRY and QUANTUM CHEMISTRY LABORATORY	3
CHEM 5351	ORGANIC CHEMISTRY I	3
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	3
CHEM 5331	ADVANCED BIOCHEMISTRY I	3

Plus courses as indicated in items 7-11.

4. Courses for students emphasizing organic chemistry:

CHEM 5358	DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS	3
CHEM 5351	ORGANIC CHEMISTRY I	3
CHEM 5354	ORGANIC CHEMISTRY II	3
CHEM 5355	ADVANCED ORGANIC SYNTHESIS	3
Plus two (2) courses from two divisions outside of analytical chemistry (biochemistry, inorganic, organic, or physical). Suggestions include: ¹		6
CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	3

CHEM 5331	ADVANCED BIOCHEMISTRY I	3
CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5262 & CHEM 5168	COMPUTATIONAL CHEMISTRY and QUANTUM CHEMISTRY LABORATORY	3

Plus courses as indicated in items 7-11.

5. Courses for students emphasizing physical chemistry:

CHEM 5361	INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY	3
CHEM 5364	ADVANCED GRADUATE PHYSICAL CHEMISTRY	3
CHEM 5300	SELECTED TOPICS IN ADVANCED CHEMISTRY	3

Plus two (2) courses from two divisions outside of analytical chemistry (biochemistry, inorganic, organic, or physical). Suggestions include: ¹

CHEM 5324	ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY	3
or CHEM 5326	ANALYTICAL CHEMISTRY - CONCEPTS AND IMPLEMENTATION	
CHEM 5331	ADVANCED BIOCHEMISTRY I	3
CHEM 5341	INORGANIC CHEMISTRY	3
CHEM 5351	ORGANIC CHEMISTRY I	3

Plus courses as indicated in items 7-11.

6. Courses for students emphasizing polymer chemistry:

All required courses for any of the other emphasis areas 1-5 plus:

CHEM 5356	ADVANCED POLYMER CHEMISTRY	3
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Plus courses as indicated in items 7-11.

7. All PhD-bound students must complete a Career Development Course - Select one of the following: ²

CHEM 6104	CHEMISTRY CAREER DEVELOPMENT	
CHEM 6304	CHEMISTRY CAREER DEVELOPMENT	
CHEM 6904	CHEMISTRY CAREER DEVELOPMENT	

8. All PhD-bound students must take the following courses

CHEM 5011	SEMINAR IN CHEMISTRY	0
CHEM 6011	TOPICS IN GRADUATE RESEARCH	0
CHEM 6012	ISSUES IN MODERN CHEMICAL RESEARCH	0

9. All PhD-bound students will enroll in the lecture courses Advanced Laboratory Techniques in their respective 2nd (CHEM 5381), 3rd (CHEM 5382) and 4th (CHEM 5383) long semesters.

10. For successful completion of the doctoral degree program, every student must have taken at least 9 SCH dissertation courses.

11. Additional research and elective courses chosen according to the student's dissertation topic and area of specialization under the guidance of the supervising committee

¹ CHEM 5358 cannot be used to fulfill this requirement. Students who do not have a good instrumentation background should consider taking CHEM 5421.

² For guidance and options of "Career Development" (possible "Internship"), students will consult with their research supervisor and with the Graduate Advisor.

A course grade may be used to satisfy degree requirements for no more than seven years after the course has been completed.

After admission to the doctoral program, the student must successfully complete the appropriate examination(s) required by the faculty of the student's discipline.

A supplementary set of guidelines, published by the Department of Chemistry and Biochemistry, should be consulted.

Chemistry and Biochemistry - Undergraduate Programs

Academic Advising: 817-272-9687

Overview

The Department of Chemistry and Biochemistry offers four programs of study leading to a bachelor's degree and two leading to both a bachelor's and master's degree. They are the Bachelor of Arts in Chemistry, the Bachelor of Science in Chemistry - American Chemical Society certified, the Bachelor of Science in Biochemistry - American Chemical Society certified, the Bachelor of Science in Biological Chemistry a combined Bachelor of Science-Master of Science in Chemistry, and a Bachelor of Science in Biochemistry with a Master of Science in Biomedical Engineering.

- **Professional Chemist:** Students who wish to become professional chemists or whose goals include graduate education in chemistry should pursue the Bachelor of Science in Chemistry - American Chemical Society certified. Alternatively, students may choose the Bachelor of Science-Master of Science combined program. Prospective students should contact the departmental undergraduate advisor.
- **Professional Biochemist:** Students who wish to become professional biochemists or whose goals include graduate education in biochemistry, should pursue the Bachelor of Science in Biochemistry - American Chemical Society certified. Prospective students should contact the departmental undergraduate advisor.
- **Premedical and Predental Programs:** Students who wish to prepare for entry into medical or dental school may choose to major in chemistry or biochemistry. While any of the four bachelor's programs will meet the minimum requirements, the department recommends either the Bachelor of Arts in Chemistry or the Bachelor of Science in Biological Chemistry. Prospective students should contact both the departmental undergraduate advisor and the premedical advisor in the College of Science.
- **Preallied Health Programs:** Students who wish to prepare for entry into pharmacy or veterinary school, physical therapy, or occupational therapy may choose to major in chemistry. Prospective students should contact the departmental undergraduate advisor.
- **Chemistry as a Teaching Field:** Although students who intend to teach chemistry at the secondary school level may pursue any of the degrees, the Bachelor of Arts Degree offers the greatest flexibility.

Declaring a Major in Chemistry or Biochemistry

Beginning freshmen who intend to declare chemistry or biochemistry as a major must complete the following courses with a minimum GPA of 2.25 in chemistry and an overall GPA of 2.25.

- CHEM 1441 and CHEM 1442.
- Six hours of mathematics approved by the department.
- Three hours of biology or geology.
- 12 hours from courses in the University core curriculum other than science or mathematics (English, history, political science, social and cultural studies, and fine arts).

Transfer students who transfer part or all of the above requirements must complete a minimum of 11 hours of approved science and mathematics courses in residence with a minimum GPA of 2.25 to be eligible to major in chemistry or biochemistry.

All new students who intend to major in chemistry or biochemistry should schedule an appointment for advising with the departmental undergraduate advisor.

Declaring a Second Major in Chemistry

A person who satisfies the requirements for any other baccalaureate degree qualifies for having chemistry named as a second major upon completion of the following courses:

CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2285	QUANTITATIVE CHEMISTRY LABORATORY	2
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	3
CHEM 4311	BIOCHEMISTRY I	3
Chemistry Electives Chosen with the Chemistry Advisor		6
Total Hours		33

Please note that a second major in Chemistry is not the same as a double major in which students complete the requirements for a second degree.

Please see the undergraduate chemistry advisor for additional information.

Teacher Certification

Students interested in earning a Bachelor of Arts or Bachelor of Science degree with a major in chemistry with secondary teacher certification should refer to the "Bachelor of Arts Degree in Chemistry with UTeach Physical Science Certification" degree plan or the "Bachelor of Arts Degree in Chemistry with UTeach Chemistry Certification" degree plan for teacher certification requirements.

Calculation of Chemistry Grade Point Average

Only chemistry courses required in the degree program will be used in calculating the chemistry grade point average for chemistry degree candidates.

Honors Program

Students who qualify are encouraged to participate in the University Honors College. Students should enroll in honors sections of chemistry courses when available and should include CHEM 4381 as approved by the departmental undergraduate advisor.

Chemistry Course Registration & Requirements

Students may not be "pre-enrolled" in chemistry courses while pre-requisite courses at another institution are pending grades. Only UT Arlington credits may be used for pre-enrollment purposes.

Canvas grades (or other learning-management system grades) may not be used as proof of completion for a pre-requisite course. Students must submit either an official transcript to the registrar's office, or submit a transcript with a letter grade for the pre-requisite course to the undergraduate chemistry advisor in order to be enrolled in a chemistry course. If a student is submitting the transcript via email, the email must be sent from their UTA email address.

The ACS-certified degree programs (Bachelor of Science in Chemistry and Bachelor of Science in Biochemistry) require the capstone course CHEM 3322. The capstone course is meant to test students in their knowledge of Math, Physics, and Chemistry in order to assess their cumulative knowledge of the sciences needed for success in their profession. This course requirement may not be satisfied with transfer credit without the approval of the undergraduate curriculum committee of the Department of Chemistry and Biochemistry.

Department of Chemistry and Biochemistry Academic Regulations

All students pursuing a degree in one of the academic programs from the Department of Chemistry and Biochemistry must abide by the academic regulations of the University and the following additional rules established by the Department of Chemistry and Biochemistry.

Three-Attempt Rule: A student may not attempt a course (at UT Arlington and/or at any other institution) more than three times and apply that course toward a chemistry/biochemistry degree. Enrollment in a course for a period of time sufficient for assignment of a grade, including a grade of W, is considered an attempt.

Undergraduate Degrees

- Bachelor of Arts in Chemistry (p. 1150)
- Bachelor of Arts in Chemistry with UTeach Chemistry Teacher Certification (p. 1152)
- Bachelor of Arts in Chemistry with UTeach Physical Science Teacher Certification (p. 1154)
- Bachelor of Science in Chemistry - American Chemical Society certified (p. 1156)
- Bachelor of Science in Biochemistry - American Chemical Society certified (p. 1157)
- Bachelor of Science in Biological Chemistry (p. 1159)
- Fast-Track Program: Bachelor of Science-Master of Science in Chemistry (p. 1161)
- Fast-Track Program: Bachelor of Science in Biochemistry and Master of Science in Biomedical Engineering (p. 1162)

Requirements for a Bachelor of Arts Degree in Chemistry

This program is suitable preparation for admission to medical and dental schools, and other health-related professions.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Pre-Professional Courses

Recommended Core Requirements

UNIV 1131	STUDENT SUCCESS
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
See General Core Requirements for Creative Arts		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
See General Core Requirements for Language, Philosophy, and Culture		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
See General Core Requirements for Social and Behavioral Sciences		3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
See General Core Requirements for Foundational Component Area		3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4

Program Requirements

14 hours in a single modern/classical language or eight hours in a language plus six advanced hours from one liberal arts area cluster to be chosen with the guidance of the undergraduate advisor ^{1A} 14

Biology or Geology for science majors courses ^{1B} 8

Professional Courses

Major		
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY ^{1C}	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	3
CHEM 3175	BIOPHYSICAL CHEMISTRY LABORATORY	1
CHEM 3317	INORGANIC CHEMISTRY	3
CHEM 4101	SEMINAR IN CHEMISTRY	1
CHEM 4311	BIOCHEMISTRY I	3
Select one from the following:		2
CHEM 3307	INTRODUCTION TO POLYMER CHEMISTRY	
CHEM 4242	LABORATORY TECHNIQUES IN BIOCHEMISTRY	
CHEM 4312	BIOCHEMISTRY II	
CHEM 4318	INORGANIC CHEMISTRY	
CHEM 4346	ADVANCED SYNTHETIC METHODS	

Advanced electives at the 3000 or 4000 level sufficient to meet the 36 advanced hours requirement 17

All students are strongly encouraged to enroll in undergraduate research

Total Hours 120

The minimum biology requirement for premedical students is BIOL 1441 CELL AND MOLECULAR BIOLOGY and three additional courses. Specifically, BIOL 2444 GENERAL MICROBIOLOGY and BIOL 3442 HUMAN PHYSIOLOGY are recommended plus three additional hours.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
MATH 1426		4 MATH 2425	4
BIOL 1441 or GEOL 1301 ^{1C}		4 BIOL 1442 or GEOL 1302 ^{1C}	4

ENGL 1301		3 ENGL 1302	3
UNIV 1131 or 1101		1	
		16	15
Second Year			
First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2283		2 CHEM 2335	3
PHYS 1441		4 CHEM 2284	2
Language, Philosophy, and Culture		3 PHYS 1442	4
Modern/Classical Language ^{1A}		4 Modern/Classical Language ^{1A}	4
		16	16
Third Year			
First Semester	Hours	Second Semester	Hours
CHEM 3315		3 CHEM 4311	3
CHEM 3175		1 POLS 2312	3
POLS 2311		3 Modern/Classical Language ^{1A}	3
Modern/Classical Language ^{1A}		3 Creative Arts	3
Advanced Elective		6 Advanced Elective	3
		16	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
CHEM 3317		3 CHEM 3000 level or above (can be up to 3 hrs)	2
CHEM 4101		1 HIST 1302	3
HIST 1301		3 Social and Behavioral Sciences	3
Foundational Component Area		3 Advanced Electives	3
Advanced Electives		5	
		15	11
Total Hours: 120			

1A See approved list of courses (p. 1094) for the College of Science's liberal arts area clusters.

1B Student may take GEOL 1301 and 1302 to meet degree requirement. This will affect the number of electives needed to reach 120 hours.

1C Completion of CHEM 2335 with the grade of "C" or above will satisfy the computer proficiency requirement.

Requirements for a Bachelor of Arts Degree in Chemistry with Chemistry Teacher Certification (UTeach Program)

This program is suitable preparation for students who desire certification with a teaching field in chemistry and/or physical science.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Pre-Professional Courses

Recommended Core Requirements

UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
See General Core Requirements for Creative Arts		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
See General Core Requirements for Social and Behavioral Sciences		3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
PHYS 1441	GENERAL COLLEGE PHYSICS I	4

PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
MODL 1442	TOPICS IN MODERN LANGUAGE LEVEL II	4
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
Elective Course		2
Professional Courses		
SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
SCIE 4107	CLINICAL TEACHING SEMINAR	1
SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3
Major		
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	3
CHEM 3175	BIOPHYSICAL CHEMISTRY LABORATORY	1
CHEM 3317	INORGANIC CHEMISTRY	3
CHEM 4101	SEMINAR IN CHEMISTRY	1
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4343	RESEARCH METHODS - UTEACH	3
CHEM 4461	INSTRUMENTAL ANALYSIS	4
Select one from the following:		3
CHEM 3307	INTRODUCTION TO POLYMER CHEMISTRY	
CHEM 4312	BIOCHEMISTRY II	
CHEM 4318	INORGANIC CHEMISTRY	
CHEM 4346	ADVANCED SYNTHETIC METHODS	
All students are strongly encouraged to enroll in undergraduate research.		
Total Hours		120

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
MATH 1426		4 MATH 2425	4
SCIE 1201		2 SCIE 1202	2
ENGL 1301		3 PHYS 1441	4
POLS 2311		3 ENGL 1302	3
UNIV 1131 or 1101		1	
		17	17

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2335		3 CHEM 2284	2

CHEM 2283		2 PHYS 1442	4
EDUC 4331		3 EDUC 4332	3
HIST 1301		3 MODL 1442	4
		14	16
Third Year			
First Semester	Hours	Second Semester	Hours
POLS 2312		3 CHEM 4311	3
HIST 1302		3 CHEM 4343	3
CHEM 3315		3 CHEM 4461	4
CHEM 3175		1 PHIL 2314	3
CHEM 3317		3 Elective Course	2
		13	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
EDUC 4333		3 SCIE 4107	1
BIOL 1441		4 SCIE 4607	6
CHEM 4101		1 BIOL 1442	4
Social and Behavioral Sciences		3 Creative Arts	3
Advanced Chemistry Elective		3	
		14	14
Total Hours: 120			

Requirements for a Bachelor of Arts Degree in Chemistry with Physical Science Teacher Certification (UTeach Program)

This program is suitable preparation for students who desire certification with a teaching field in chemistry and/or physical science.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Pre-Professional Courses

Recommended Core Requirements

UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
See General Core Requirements for Creative Arts		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
See General Core Requirements for Social and Behavioral Sciences		3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4

Program Requirements

PHYS 2315	INTRODUCTORY ASTROPHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3445	OPTICS	4
PHYS 3455	ELECTRONICS	4
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4

Professional Courses

SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2

SCIE 4107	CLINICAL TEACHING SEMINAR	1
SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3
Major		
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	3
CHEM 3175	BIOPHYSICAL CHEMISTRY LABORATORY	1
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4343	RESEARCH METHODS - UTEACH	3
CHEM 3317	INORGANIC CHEMISTRY	3
or CHEM 4318	INORGANIC CHEMISTRY	

All students are strongly encouraged to enroll in undergraduate research.

Total Hours	120
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SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
MATH 1426		4 MATH 2425	4
SCIE 1201		2 PHYS 1443	4
ENGL 1301		3 SCIE 1202	2
POLS 2311		3 ENGL 1302	3
UNIV 1131 or 1101		1	
		17	17

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2335		3 CHEM 2284	2
CHEM 2283		2 EDUC 4332	3
EDUC 4331		3 PHYS 2315	3
PHYS 1444		4 HIST 1301	3
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
CHEM 4311		3 CHEM 3317	3
POLS 2312		3 CHEM 3315	3
PHYS 3313		3 CHEM 3175	1
PHIL 2314		3 PHYS 3445	4
HIST 1302		3 CHEM 4343	3
		15	14

Fourth Year

First Semester	Hours	Second Semester	Hours
EDUC 4333		3 SCIE 4107	1
BIOL 1441		4 SCIE 4607	6
PHYS 3455		4 BIOL 1442	4

Social and Behavioral Sciences	3 Creative Arts	3
	14	14
Total Hours: 120		

Requirements for a Bachelor of Science Degree in Chemistry - American Chemical Society Certified

This program meets the standards for professional baccalaureate programs established by the American Chemical Society. It is recommended to students who plan to enter into graduate study in chemistry and for those who anticipate professional careers as chemists.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Pre-Professional Courses

Recommended Core Requirements

UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
See General Core Requirements for Creative Arts		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
See General Core Requirements for Language, Philosophy, and Culture		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
See General Core Requirements for Social and Behavioral Sciences		3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
See General Core Requirements for Foundational Component Area		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4

Program Requirements

MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
or MATH 3318	DIFFERENTIAL EQUATIONS	
Advanced PHYS course at 3000 level or above:		3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	
Biology or Geology for science majors courses ^{2A}		8

Professional Courses

Major		
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY ^{2B}	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3321	PHYSICAL CHEMISTRY I	3
CHEM 3181	PHYSICAL CHEMISTRY I LABORATORY	1
CHEM 3322	PHYSICAL CHEMISTRY II	3
CHEM 3182	PHYSICAL CHEMISTRY II LABORATORY	1
CHEM 3317	INORGANIC CHEMISTRY	3
CHEM 4101	SEMINAR IN CHEMISTRY	1

CHEM 4311	BIOCHEMISTRY I	3
CHEM 4318	INORGANIC CHEMISTRY	3
CHEM 4346	ADVANCED SYNTHETIC METHODS	3
CHEM 4461	INSTRUMENTAL ANALYSIS	4
CHEM 3000 level or above pre-approved by the undergraduate advisor		3
Advanced electives at the 3000 or 4000 level sufficient to meet the 36 advanced hours requirement		2
Electives sufficient to complete the total hours required for the degree		5
All students are strongly encouraged to enroll in undergraduate research		
Total Hours		120

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
MATH 1426		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
BIOL 1441 or GEOL 1301 ^{2A}		4 BIOL 1442 or GEOL 1302 ^{2A}	4
UNIV 1131 or 1101		1	
		16	15

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2335		3 PHYS 1444	4
CHEM 2283		2 CHEM 2284	2
MATH 2326		3 MATH 3319 or 3318	3
PHYS 1443		4 Language, Philosophy, and Culture	3
		15	15

Third Year

First Semester	Hours	Second Semester	Hours
CHEM 3321		3 CHEM 3322	3
CHEM 3181		1 CHEM 3182	1
CHEM 3317		3 CHEM 4318	3
PHYS 3313		3 POLS 2312	3
POLS 2311		3 Creative Arts	3
Social and Behavioral Sciences		3 Foundational Component Area	3
		16	16

Fourth Year

First Semester	Hours	Second Semester	Hours
CHEM 4311		3 CHEM 4346	3
CHEM 4101		1 CHEM 3000 level or above	3
CHEM 4461		4 HIST 1302	3
HIST 1301		3 Electives	5
Advanced Electives		2	
		13	14

Total Hours: 120

2A Student may take GEOL 1301 and 1302 to meet requirement. This will affect the number of electives needed to reach 120 hours.

2B Completion of CHEM 2335 with the grade of "C" or above will satisfy the computer proficiency requirement.

Requirements for a Bachelor of Science Degree in Biochemistry - American Chemical Society Certified

This program is recommended to students who plan to enter into graduate study in biochemistry and for those who anticipate professional careers as biochemists. This program is also suitable for premedical and predental students and for training in allied health sciences.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Pre-Professional Courses**Recommended Core Requirements**

UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
See General Core Requirements for Creative Arts		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
See General Core Requirements for Language, Philosophy, and Culture		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
See General Core Requirements for Social and Behavioral Sciences		3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
See General Core Requirements for Foundational Component Area		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4

Program Requirements

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 3315	GENETICS	3
BIOL 2444	GENERAL MICROBIOLOGY	4

Professional Courses

Major		
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY ^{3A}	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3321	PHYSICAL CHEMISTRY I	3
CHEM 3181	PHYSICAL CHEMISTRY I LABORATORY	1
CHEM 3322	PHYSICAL CHEMISTRY II	3
CHEM 3182	PHYSICAL CHEMISTRY II LABORATORY	1
CHEM 4242	LABORATORY TECHNIQUES IN BIOCHEMISTRY	2
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4312	BIOCHEMISTRY II	3
CHEM 4313	METABOLISM AND REGULATION	3
or CHEM 4316	BIOCHEMICAL GENETICS	
CHEM 4314	ENZYMOLGY	3
CHEM 3317	INORGANIC CHEMISTRY	3
or CHEM 4318	INORGANIC CHEMISTRY	
CHEM 4346	ADVANCED SYNTHETIC METHODS	3
CHEM 4461	INSTRUMENTAL ANALYSIS	4
Advanced electives at the 3000 or 4000 level sufficient to meet the 36 advanced hours requirement		1
Electives sufficient to complete the total hours required for the degree		5

All students are strongly encouraged to enroll in undergraduate research

Total Hours 120

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
MATH 1426		4 MATH 2425	4
BIOL 1441		4 ENGL 1302	3
ENGL 1301		3 Creative Arts	3
UNIV 1131 or 1101		1	
		16	14

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2335		3 CHEM 2284	2
CHEM 2283		2 PHYS 1444	4
PHYS 1443		4 BIOL 3315	3
MATH 2326		3 Language, Philosophy, and Culture	3
		15	15

Third Year

First Semester	Hours	Second Semester	Hours
CHEM 3321		3 CHEM 3322	3
CHEM 3181		1 CHEM 3182	1
CHEM 4311		3 CHEM 4312	3
BIOL 2444		4 CHEM 4242	2
HIST 1301		3 HIST 1302	3
Social and Behavioral Science		3 Foundational Component Area	3
		17	15

Fourth Year

First Semester	Hours	Second Semester	Hours
CHEM 4313 or 4316		3 CHEM 4346	3
CHEM 3317 or 4318		3 CHEM 4314	3
CHEM 4461		4 POLS 2312	3
POLS 2311		3 Advanced Elective	1
Electives		3 Electives	2
		16	12

Total Hours: 120

3A Completion of CHEM 2335 with the grade of "C" or above will satisfy the computer proficiency requirement.

Requirements for a Bachelor of Science Degree in Biological Chemistry

This program is recommended to students who plan to enter into medical and dental school and for training in allied health sciences. This program is also suitable for students who anticipate professional careers in the field of biotechnology or graduate training in biochemistry.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Pre-Professional Courses

Recommended Core Requirements

UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
See General Core Requirements for Creative Arts		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3

See General Core Requirements for Language, Philosophy, and Culture		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
See General Core Requirements for Social and Behavioral Sciences		3
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
See General Core Requirements for Foundational Component Area		3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
Program Requirements		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 2444	GENERAL MICROBIOLOGY	4
Select two of the following:		6
BIOL 3301	CELL PHYSIOLOGY	
BIOL 3312	IMMUNOLOGY	
BIOL 3315	GENETICS (recommended)	
BIOL 3442	HUMAN PHYSIOLOGY ^{4B}	
Professional Courses		
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY ^{4A}	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	3
CHEM 3175	BIOPHYSICAL CHEMISTRY LABORATORY	1
CHEM 4242	LABORATORY TECHNIQUES IN BIOCHEMISTRY	2
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4312	BIOCHEMISTRY II	3
CHEM 4313	METABOLISM AND REGULATION	3
or CHEM 4316	BIOCHEMICAL GENETICS	
CHEM 4314	ENZYMOLGY	3
CHEM 3317	INORGANIC CHEMISTRY	3
or CHEM 4318	INORGANIC CHEMISTRY	
CHEM 4461	INSTRUMENTAL ANALYSIS	4
Advanced electives at the 3000 or 4000 level sufficient to meet the 36 advanced hours requirement ^{4B}		4
Electives sufficient to complete the total hours required for the degree		1
All students are strongly encouraged to enroll in undergraduate research		
Total Hours		120

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
BIOL 1441		4 BIOL 1442	4
ENGL 1301		3 MATH 1426	4
MATH 1421		4 ENGL 1302	3

UNIV 1131 or 1101	1		
	16		15
Second Year			
First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2335		3 CHEM 2284	2
CHEM 2283		2 PHYS 1442	4
PHYS 1441		4 BIOL 3315	3
MATH 2425		4 Language, Philosophy, and Culture	3
	16		15
Third Year			
First Semester	Hours	Second Semester	Hours
CHEM 3315		3 CHEM 4242	2
CHEM 3175		1 CHEM 4312	3
CHEM 4311		3 BIOL 3301, 3312, or 3442 ^{4B}	3
BIOL 2444		4 HIST 1302	3
HIST 1301		3 Foundational Component Area	3
Social and Behavioral Sciences	3		
	17		14
Fourth Year			
First Semester	Hours	Second Semester	Hours
CHEM 3317 or 4318		3 CHEM 4461	4
CHEM 4313 or 4316		3 CHEM 4314	3
POLS 2311		3 POLS 2312	3
Elective		1 Creative Arts	3
		Advanced Elective ^{4B}	4
	10		17

Total Hours: 120

4A Completion of CHEM 2335 with the grade of "C" or above will satisfy the computer proficiency requirement.

4B When you choose BIOL 3442, you need the three credit hours of an advanced elective.

Requirements for Fast-Track Program: Bachelor of Science and Master of Science in Chemistry

This program is recommended for students who wish to earn graduate level course credit and who wish to obtain graduate level research experience. This program is suitable for those students who plan to pursue doctoral graduate studies in chemistry and for those who anticipate professional careers as chemists. **B.S. in Chemistry degree of this Fast-Track program is an American Chemical Society Certified degree.**

FOUNDATION COURSES

Students must take the following 4 specific undergraduate CHEM courses in order to be admitted into the Fast Track program. The cumulative GPA required for the foundation courses is a 3.25. Students must also maintain a 3.3 GPA or higher in all CHEM courses completed at UTA, and have a cumulative GPA of a 3.3 or higher.

CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY	3
One of the following two courses		3
CHEM 3317	INORGANIC CHEMISTRY	
CHEM 4318	INORGANIC CHEMISTRY	
One of the following two courses		3
CHEM 3321	PHYSICAL CHEMISTRY I	
CHEM 3322	PHYSICAL CHEMISTRY II	

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Pre-Professional Courses

Recommended Core Requirements

UNIV 1131	STUDENT SUCCESS	1
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or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
See General Core Requirements for Creative Arts		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
See General Core Requirements for Language, Philosophy, and Culture		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
See General Core Requirements for Social and Behavioral Sciences		3
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
See General Core Requirements for Foundational Component Area		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
Program Requirements		
MATH 3318	DIFFERENTIAL EQUATIONS	3
or MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	
Advanced PHYS course at 3000 level or above:		3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	
Biology or Geology for science majors courses ^{5A}		8
Professional Courses		
CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY ^{5B}	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3317	INORGANIC CHEMISTRY	3
CHEM 3321	PHYSICAL CHEMISTRY I	3
CHEM 3322	PHYSICAL CHEMISTRY II	3
CHEM 3182	PHYSICAL CHEMISTRY II LABORATORY	1
CHEM 3181	PHYSICAL CHEMISTRY I LABORATORY	1
CHEM 4101	SEMINAR IN CHEMISTRY	1
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4318	INORGANIC CHEMISTRY	3
CHEM 4346	ADVANCED SYNTHETIC METHODS	3
CHEM 4461	INSTRUMENTAL ANALYSIS	4
CHEM 4380	UNDERGRADUATE RESEARCH	3
Advanced electives at the 3000 or 4000 level sufficient to meet the 36 advanced hours requirement.		2
Electives sufficient to complete the total hours requirement for the undergraduate degree.		5
Student's have the option of taking 9-10 hours worth of graduate courses for undergraduate credit that can also be used towards their master's in chemistry. Please see the Chemistry Advisor for possible graduate level coursework that can be used in place of undergraduate coursework.		
Refer to the Graduate Catalog and the graduate advisor for MS in Chemistry degree requirements (Master's Degree with Thesis).		30
Total Hours		150

SUGGESTED COURSE SEQUENCE

First Year			
First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
MATH 1426		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
POLS 2311		3 POLS 2312	3
UNIV 1131 or 1101		1	
		15	14
Second Year			
First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2335		3 CHEM 2384	2
CHEM 2283		2 MATH 2326	3
PHYS 1443		4 PHYS 1444	4
Elective Course		3 Language, Philosophy, and Culture Requirement	3
		15	15
Third Year			
First Semester	Hours	Second Semester	Hours
CHEM 3321		3 CHEM 3322 or 5361 ^{5C}	3
CHEM 3181		1 CHEM 3182	1
BIOL 1441		4 CHEM 4318	3
MATH 3319		3 PHYS 3313	3
HIST 1301		3 HIST 1302	3
		Elective Course	2
		14	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
CHEM 3317 or 5341 ^{5C}		3 CHEM 4311 or 5331 ^{5C}	3
CHEM 4101		1 CHEM 4346	3
CHEM 4461 or 5421 ^{5C}		4 CHEM 4380	3
BIOL 1442		4 Social and Behavioral Science	3
Creative Arts		3 Foundational Component Course	3
Advanced Elective Course		2	
		17	15

Total Hours: 120

- 5A Student may take GEOL 1301 and 1302 to meet degree requirement. This will affect the number of electives needed to reach 120 hours.
- 5B Completion of CHEM 2335 with the grade of "C" or above will satisfy the computer proficiency requirement.
- 5C Once admitted to this Fast-Track program, students will be allowed to take up to 9 credit hours of CHEM graduate courses (if CHEM 5461 is taken, 10 credit hours are allowed) that may be used to satisfy both bachelor's and master's degree requirements.

Requirements for Fast Track Program: Bachelor of Science in Biochemistry and Master of Science in Biomedical Engineering

This program is recommended for students who wish to earn graduate level course credit and who wish to obtain graduate level research experience. This program is suitable for those students who plan to pursue doctoral graduate studies in chemistry and for those who anticipate professional careers as chemists. **B.S. in Biochemistry degree of this Fast-Track program is an American Chemical Society Certified degree.**

FOUNDATION COURSES

Students must take the following 3 specific undergraduate courses in order to be admitted into the Fast Track program. The cumulative GPA required for the foundation courses is a 3.3. Students must also maintain a 3.3 GPA or higher in all CHEM courses completed at UTA, and have a cumulative GPA of a 3.3 or higher.

BE 3380	HUMAN PHYSIOLOGY IN BE	3
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 4311	BIOCHEMISTRY I	3

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

UNIV 1131	STUDENT SUCCESS	1
or UNIV 1101	CAREER PREPARATION AND STUDENT SUCCESS	

Communications Core Requirement:

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3

History Core Requirement:

HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3

Political Science Core Requirement:

POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3

See General Core Requirements for Social and Behavioral Sciences

See General Core Requirements for Language, Philosophy, and Culture

See General Core Requirements for Creative Arts

Degree Requirements:

Math:

MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3

Biology Requirements:

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 3315	GENETICS	3

Undergraduate Biomedical Engineering Requirements:

BE 3380	HUMAN PHYSIOLOGY IN BE	3
BE 4337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	3

Physics Requirements:

PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4

Chemistry Requirements:

CHEM 1341	GENERAL CHEMISTRY I	3
CHEM 1181	GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 1342	GENERAL CHEMISTRY II	3
CHEM 1182	GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES	1
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2283	SYNTHESIS AND ANALYSIS LABORATORY I	2
CHEM 2284	SYNTHESIS AND ANALYSIS LABORATORY II	2
CHEM 3321	PHYSICAL CHEMISTRY I	3
CHEM 3181	PHYSICAL CHEMISTRY I LABORATORY	1
CHEM 3322	PHYSICAL CHEMISTRY II	3
CHEM 3182	PHYSICAL CHEMISTRY II LABORATORY	1
CHEM 3317	INORGANIC CHEMISTRY	3
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4242	LABORATORY TECHNIQUES IN BIOCHEMISTRY	2
CHEM 4312	BIOCHEMISTRY II	3

CHEM 4461	INSTRUMENTAL ANALYSIS	4
Choose 1 of the following two courses:		3
CHEM 4313	METABOLISM AND REGULATION	
CHEM 4314	ENZYMOLGY	
Graduate Level BE Coursework: ^{6A}		
BE 5333	NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION	3
BE 5365	TISSUE ENGINEERING LAB	3
BE 5372	DRUG DELIVERY	3
Electives sufficient to reach the 120 credit requirement.		1
For information regarding the master's portion of this degree plan, please see the biomedical engineering department.		
Total Hours		120

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
CHEM 1341		3 CHEM 1342	3
CHEM 1181		1 CHEM 1182	1
MATH 1426		4 MATH 2425	4
BIOL 1441		4 ENGL 1302	3
ENGL 1301		3 Creative Arts	3
UNIV 1131 or 1101		1	
		16	14

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 2321		3 CHEM 2322	3
CHEM 2335		3 CHEM 2284	2
CHEM 2283		2 MATH 3319	3
MATH 2326		3 PHYS 1444	4
PHYS 1443		4 Language, Philosophy, and Culture	3
		15	15

Third Year

First Semester	Hours	Second Semester	Hours
CHEM 3321		3 CHEM 3322	3
CHEM 3181		1 CHEM 3181	1
CHEM 3317		3 CHEM 4312	3
CHEM 4311		3 CHEM 4242	2
BE 3380		3 BE 4337	3
HIST 1301		3 HIST 1302	3
		16	15

Fourth Year

First Semester	Hours	Second Semester	Hours
CHEM 4461		4 BE 5333	3
Choose 1 of the following selected courses:		3 BE 5365	3
CHEM 4313		POLS 2312	3
CHEM 4314		Social and Behavioral Sciences	3
BE 5372		3 Electives	1
BIOL 3315		3	
POLS 2311		3	
		16	13

Total Hours: 120

^{6A} Undergraduate courses being satisfied by these graduate courses are CHEM 4313 (or CHEM 4314), CHEM 4346, and one hour advanced elective. One credit hour difference will be satisfied by other undergraduate courses.

Oral Communication and Computer Competency Requirements

For all chemistry degree programs except the UTeach certification degree programs, the university computer competency requirement will be met by: completion of CHEM 2335 QUANTITATIVE CHEMISTRY with the grade of "C" or above or taking CSE 1301 or by passing the University computer

proficiency examination. For the UTeach certification degree programs, completion of EDUC 4331 KNOWING AND LEARNING IN MATH AND SCIENCE fulfills the requirement.

The University oral communication competency requirement may be satisfied by taking CHEM 4101 (required for the Bachelor of Science degree in Chemistry, the Bachelor of Arts degree in Chemistry, and the combined BS-MS degree in Chemistry) or by taking CHEM 4313 or CHEM 4314 (required for the Bachelor of Science degree in Biochemistry and the Bachelor of Science degree in Biological Chemistry). For the UTeach certification degree programs, completion of SCIE 1201 or SCIE 1334 (required for the UTeach programs) fulfills the requirement.

Students should refer to the specific degree plans and the chemistry undergraduate advisor for details regarding these requirements.

Declaring a Minor in Chemistry

Students who wish to obtain a minor in Chemistry must take at least 18 semester hours of chemistry, of which at least 6 semester hours must be at the 3000/4000 level. Only lecture courses, which satisfy a degree requirement for one of the degrees offered by the Department of Chemistry and Biochemistry may be used. Research courses, Chemistry Readings, and Internship credits may not be used towards the chemistry minor.

Declaring a Minor in Biochemistry

Students who wish to obtain a minor in Biochemistry must take at least 18 semester hours of chemistry which must include CHEM 4311 and CHEM 4312. Only courses which satisfy a degree requirement for one of the degrees offered by the Department of Chemistry and Biochemistry may be used.

Data Science - Undergraduate Programs

Academic Advising: 406 Pickard Hall • 817-272-0939

Bachelor's Degrees in Data Science

The Bachelors of Science in Data Science requires students to select a Domain Concentration, where the Domain is one of the supported majors in the College of Science (Biology, Chemistry, Environmental Science, Geoscience, Mathematics, Physics, and Psychology). Beyond the UTA Core Curriculum requirements, the degree requires a sequences of courses in Mathematics, Data Science, and the chosen Domain Concentration. In addition, students must complete a year long Capstone project in collaboration with a supervisor within the College of Science or an Industry Partner.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

Core Data Science Course Requirements

Regardless of the chosen concentration, all students seeking a Bachelors of Science in Data Science will be required to complete the following courses.

DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3

Math Requirements

All concentrations are required to take MATH 1426. The Math and Physics concentrations require either MATH 3330 or MATH 3319 and their prerequisites, while all other concentrations require DATA 3311.

All degrees are Bachelors of Science in Data Science with Domain Concentration. Possible domains are Biology, Chemistry, Earth and Environmental Science, Geoscience, Mathematics, Physics, and Psychology.

Requirements for a Bachelor of Science in Data Science with Biology Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		

Select one course from this area *

Mathematics		3
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4
Data Science Courses		
DATA 1301	INTRODUCTION TO DATA SCIENCE	3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
MATH 3316	STATISTICAL INFERENCE	3
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
Biology Requirements		
BIOL 3301	CELL PHYSIOLOGY	3
BIOL 3315	GENETICS	3
BIOL 3319	HUMAN GENETICS	3
BIOL 3322	BRAIN AND BEHAVIOR	3
BIOL 3339	INTRODUCTION TO EVOLUTION	3
BIOL 3340	BIOINFORMATICS	3
BIOL 3442	HUMAN PHYSIOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
Total Hours		120

* See General Core Requirements (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/>) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1421, Preparation for Calculus, in the first semester.

First Year			
Fall Semester	Hours	Spring Semester	Hours
UNIV 1131 or UNIV-SC 1101		1 Approved Communication Core	3
ENGL 1301		3 DATA 1301	3
HIST 1301		3 MATH 1426	4
BIOL 1441		4 BIOL 1442	4
MATH 1421		4 POLS 2311	3
		15	17
Second Year			
Fall Semester	Hours	Spring Semester	Hours
HIST 1302		3 Approved Creative Arts Core	3
POLS 2312		3 CHEM 1442	4
CHEM 1441		4 DATA 3311	3
DATA 3401		4 DATA 3402	4
MATH 3316		3	
		17	14

Third Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 3315		3 BIOL 3339	3
CHEM 2321		3 DATA 3442	4
CHEM 2181		1 DATA 3461	4
DATA 3421		4 DATA 4380	3
DATA 3441		4	
		15	14

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
Approved Social & Behavioral Core		3 Approved Language, Philosophy, Culture Core	3
BIOL 3301		3 BIOL 3442	4
BIOL 3322		3 BIOL 3319	3
BIOL 3340		3 DATA 4382	3
DATA 4381		3	
		15	13

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Biological Chemistry Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement			
UNIV 1131	STUDENT SUCCESS		1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS		
Communication			
ENGL 1301	RHETORIC AND COMPOSITION I		3
Select one additional communication area course *			3
Life and Physical Science			
BIOL 1441	CELL AND MOLECULAR BIOLOGY		4
BIOL 1442	EVOLUTION AND ECOLOGY		4
Language, Philosophy, Culture			
Select one course from this area *			3
Creative Arts			
Select one course from this area *			3
U.S. History			
HIST 1301	HISTORY OF THE UNITED STATES TO 1865		3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT		3
Government/Political Science			
POLS 2311	GOVERNMENT OF THE UNITED STATES		3
POLS 2312	STATE AND LOCAL GOVERNMENT		3
Social and Behavioral Sciences			
Select one course from this area *			3
Mathematics			
MATH 1426	CALCULUS I		4
MATH 2425	CALCULUS II		4
Data Science Courses			
DATA 1301	INTRODUCTION TO DATA SCIENCE		3
DATA 3311	MATHEMATICS FOR DATA SCIENCE		3
MATH 3316	STATISTICAL INFERENCE		3
DATA 3401	PYTHON FOR DATA SCIENCE 1		4
DATA 3402	PYTHON FOR DATA SCIENCE 2		4
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION		4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1		4

DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
Chemistry Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2285	QUANTITATIVE CHEMISTRY LABORATORY	2
CHEM 3317	INORGANIC CHEMISTRY	3
CHEM 4311	BIOCHEMISTRY I	3
CHEM 4312	BIOCHEMISTRY II	3
CHEM 4461	INSTRUMENTAL ANALYSIS	4
Total Hours		120

*See General Core Requirements (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/>) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426, Calculus I, in the first semester.

First Year			
Fall Semester	Hours	Spring Semester	Hours
ENGL 1301		3 Approved Communication Core	3
CHEM 1441		4 CHEM 1442	4
HIST 1301		3 HIST 1302	3
UNIV 1131 or UNIV-SC 1101		1 MATH 2425	4
MATH 1426		4 DATA 1301	3
		15	17
Second Year			
Fall Semester	Hours	Spring Semester	Hours
Approved Creative Arts Core		3 BIOL 1441	4
CHEM 2321		3 CHEM 2322	3
CHEM 2181		1 CHEM 2182	1
CHEM 2335		3 MATH 3316	3
CHEM 2285		2 DATA 3402	4
DATA 3401		4	
		16	15
Third Year			
Fall Semester	Hours	Spring Semester	Hours
BIOL 1442		4 CHEM 4312	3
CHEM 4311		3 DATA 3442	4
DATA 3421		4 DATA 3461	4
DATA 3441		4 DATA 3311	3
		15	14
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
CHEM 3317		3 POLS 2312	3
POLS 2311		3 Approved Social and Behavioral Core	3
Approved Language, Philosophy, Culture Core		3 CHEM 4461 or 4318	4
DATA 4380		3 DATA 4382	3

DATA 4381

3

15

13

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Physical Chemistry Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
Mathematics		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Data Science Courses		
DATA 1301	INTRODUCTION TO DATA SCIENCE	3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
MATH 3316	STATISTICAL INFERENCE	3
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
Chemistry Requirements		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1

CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2285	QUANTITATIVE CHEMISTRY LABORATORY	2
CHEM 4311	BIOCHEMISTRY I	3
CHEM 3317	INORGANIC CHEMISTRY	3
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	3
CHEM 3175	BIOPHYSICAL CHEMISTRY LABORATORY	1
APPROVED CHEMISTRY ELECTIVE (CHEM 33xx)		3
Total Hours		120

* See General Core Requirements (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/>) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426, Calculus I, in the first semester.

First Year			
Fall Semester	Hours	Spring Semester	Hours
ENGL 1301		3 Approved Communication Core	3
CHEM 1441		4 CHEM 1442	4
HIST 1301		3 MATH 2425	4
UNIV 1131 or UNIV-SC 1101		1 DATA 1301	3
MATH 1426		4	
		15	14
Second Year			
Fall Semester	Hours	Spring Semester	Hours
CHEM 2321		3 PHYS 1443	4
CHEM 2181		1 CHEM 3317	3
CHEM 2335		3 CHEM 2322	3
CHEM 2285		2 CHEM 2182	1
Approved Creative Arts Core		3 DATA 3402	4
DATA 3401		4	
		16	15
Third Year			
Fall Semester	Hours	Spring Semester	Hours
PHYS 1444		4 CHEM 3315	3
MATH 3316		3 CHEM 3175	1
DATA 3421		4 DATA 3442	4
DATA 3441		4 DATA 3461	4
		DATA 3311	3
		15	15
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
HIST 1302		3 Approved Social and Behavioral Core Course	3
POLS 2311		3 POLS 2312	3
Approved CHEM Elective		3 Approved Language, Philosophy, Culture Core Course	3
DATA 4380		3 CHEM 4311	3
DATA 4381		3 DATA 4382	3
		15	15
Total Hours: 120			

Requirements for a Bachelor of Science in Data Science with Environmental Science Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement

UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
Mathematics		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Data Science Courses		
DATA 1301	INTRODUCTION TO DATA SCIENCE	3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
Environmental Science Requirements		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
ENVR 1301	INTRODUCTION TO ENVIRONMENTAL SCIENCE	3
ENVR 1330	GLOBAL WARMING	3
ENVR 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
ENVR 4455	MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS	4
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 4405	METEOROLOGY AND CLIMATOLOGY	4
or GEOL 4456	ENVIRONMENTAL RISK ASSESSMENT	
ENVR 4303	TOPICS IN SUSTAINABILITY	3
or GEOL 4331	ANALYSIS OF SPATIAL DATA	
ELECTIVE OR GENERAL ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE OR GENERAL ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE OR GENERAL ELECTIVE (GEOL or ENVR 33xx+)		3
Total Hours		120

* See General Core Requirements (<https://catalog.uta.edu/degree requirements/generalcore requirements/>) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426, Calculus I, in the first semester.

First Year			
Fall Semester	Hours	Spring Semester	Hours
ENGL 1301		3 Approved Communication Core	3
CHEM 1441		4 CHEM 1442	4
HIST 1301		3 MATH 2425	4
UNIV-SC 1101 or 1131		1 DATA 1301	3
MATH 1426		4 POLS 2311	3
		15	17
Second Year			
Fall Semester	Hours	Spring Semester	Hours
BIOL 1441		4 ENVR 1301	3
GEOL 4405 or 4456		4 Approved Creative Arts Core	3
Approved Language, Philosophy, Culture Core		3 HIST 1302	3
DATA 3401		4 POLS 2312	3
		DATA 3402	4
		15	16
Third Year			
Fall Semester	Hours	Spring Semester	Hours
ENVR 1330		3 GEOL/ENVR Elective 33xx+	3
ENVR 3454		4 DATA 3442	4
DATA 3421		4 DATA 3461	4
DATA 3441		4 DATA 4380	3
		15	14
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
ENVR 4455		4 ENVR 4303 or GEOL 4331	3
GEOL 4330		3 GEOL/ENVR/Elective 33xx+	3
GEOL/ENVR/Elective 33xx+		3 DATA 4382	3
DATA 3311		3 Approved Social & Behavioral Core	3
DATA 4381		3	
		16	12

Total Hours: 120

Requirements for a Bachelor of Science in Data Science with Geoscience Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement			
UNIV 1131	STUDENT SUCCESS		1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS		
Communication			
ENGL 1301	RHETORIC AND COMPOSITION I		3
Select one additional communication area course *			3
Life and Physical Science			
GEOL 1301	EARTH SYSTEMS		3
GEOL 1302	EARTH HISTORY		3
Language, Philosophy, Culture			
Select one course from this area *			3
Creative Arts			
Select one course from this area *			3
U.S. History			
HIST 1301	HISTORY OF THE UNITED STATES TO 1865		3

HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
Select one course from this area *		3
Mathematics		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Data Science Courses		
DATA 1301	INTRODUCTION TO DATA SCIENCE	3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
or PHYS 1443	GENERAL TECHNICAL PHYSICS I	
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
Geology Requirements		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
GEOL 2445	MINERALOGY	4
GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 4199	TECHNICAL SESSIONS	1
or GEOL 4190	GEOSCIENCE INTERNSHIP	
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE (GEOL or ENVR 33xx+)		3
ELECTIVE (GEOL or ENVR 33xx+)		3
Total Hours		122

* See General Core Requirements (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/>) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426, Calculus I, in the first semester.

First Year			
Fall Semester	Hours	Spring Semester	Hours
ENGL 1301		3 Approved Communication Core	3
CHEM 1441		4 CHEM 1442	4
HIST 1301		3 MATH 2425	4
UNIV-SC 1131 or 1101		1 DATA 1301	3
MATH 1426		4 POLS 2311	3
		15	17

Second Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 1441		4 PHYS 1441 or 1443	4
GEOL 2445		4 HIST 1302	3
GEOL or ENVR 33xx+ ELECTIVE (GEOL 4405 preferred)		3 GEOL 1302	3
GEOL 1301		3 DATA 3402	4
DATA 3401		4	
		18	14

Third Year

Fall Semester	Hours	Spring Semester	Hours
GEOL 3454		4 GEOL 3443	4
POLS 2312		3 DATA 3442	4
DATA 3421		4 DATA 3461	4
DATA 3441		4 DATA 4380	3
		15	15

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
Approved Social & Behavioral Core		3 Approved Language, Philosophy, Culture Core	3
GEOL 4330		3 Approved Creative Arts Core	3
GEOL/ENVR/Elective 33xx+		3 GEOL 4189	1
DATA 3311		3 GEOL/ENVR/Elective 33xx+	3
DATA 4381		3 DATA 4382	3
		15	13

Total Hours: 122

Requirements for a Bachelor of Science in Data Science with Mathematics Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement			
UNIV 1131	STUDENT SUCCESS		1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS		
Communication			
ENGL 1301	RHETORIC AND COMPOSITION I		3
Select one additional communication area course *			3
Life and Physical Science			
Choose one of the following sequences:			8
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY		
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II		
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II		
Additional Science			
Select two additional science area courses *			6
Language, Philosophy, Culture			
Select one course from this area *			3
Creative Arts			
Select one course from this area *			3
U.S. History			
HIST 1301	HISTORY OF THE UNITED STATES TO 1865		3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT		3
Government/Political Science			
POLS 2311	GOVERNMENT OF THE UNITED STATES		3
POLS 2312	STATE AND LOCAL GOVERNMENT		3
Social and Behavioral Sciences			

Select one course from this area *

3

Component Area

Select one course from this area

3

Data Science Courses

DATA 1301	INTRODUCTION TO DATA SCIENCE	3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3

Mathematics Requirements

MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS	3
MATH 3302	MULTIVARIATE STATISTICAL METHODS	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
MATH 4311	STOCHASTIC MODELS AND SIMULATION	3
MATH 4313	MATHEMATICAL STATISTICS	3

Total Hours

122

* See General Core Requirements (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/>) for approved courses.**TYPICAL COURSE SEQUENCE**

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426, Calculus I, in the first semester.

First Year

Fall Semester	Hours	Spring Semester	Hours
ENGL 1301		3 Approved Communication Core	3
HIST 1301		3 POLS 2311	3
MATH 1426		4 MATH 2425	4
UNIV 1131 or UNIV-SC 1101		1 MATH 3316	3
Approved Life & Physical Science Sequence		4 DATA 1301	3
		15	16

Second Year

Fall Semester	Hours	Spring Semester	Hours
HIST 1302		3 Approved Creative Arts Core	3
POLS 2312		3 Approved Life & Physical Science Sequence	4
MATH 2326		3 MATH 3300	3
MATH 3330		3 MATH 3318	3
DATA 3401		4 DATA 3402	4
		16	17

Third Year

Fall Semester	Hours	Spring Semester	Hours
MATH 3313		3 Approved Additional Natural Science	3
MATH 3345		3 MATH 3302	3
DATA 3421		4 MATH 3321	3
DATA 3441		4 DATA 3442	4
		DATA 4380	3
		14	16

Fourth Year

Fall Semester	Hours	Spring Semester	Hours
Approved Social & Behavioral Core		3 Approved Language, Philosophy, Culture Core	3
Approved Additional Natural Science		3 MATH 4311	3
ELECTIVE (23xx+)		3 MATH 4313	3
DATA 3461		4 DATA 4382	3
DATA 4381		3	
		16	12

Total Hours: 122

Requirements for a Bachelor of Science in Data Science with Physics Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement			
UNIV 1131	STUDENT SUCCESS		1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS		
Communication			
ENGL 1301	RHETORIC AND COMPOSITION I		3
Select one additional communication area course *			3
Life and Physical Science			
PHYS 1443	GENERAL TECHNICAL PHYSICS I		4
PHYS 1444	GENERAL TECHNICAL PHYSICS II		4
Language, Philosophy, Culture			
Select one course from this area *			3
Creative Arts			
Select one course from this area *			3
U.S. History			
HIST 1301	HISTORY OF THE UNITED STATES TO 1865		3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT		3
Government/Political Science			
POLS 2311	GOVERNMENT OF THE UNITED STATES		3
POLS 2312	STATE AND LOCAL GOVERNMENT		3
Social and Behavioral Sciences			
Select one course from this area *			3
Component Area			
Select one course from this area			3
Mathematics			
MATH 1426	CALCULUS I		4
MATH 2425	CALCULUS II		4
Data Science Courses			
DATA 1301	INTRODUCTION TO DATA SCIENCE		3
DATA 3401	PYTHON FOR DATA SCIENCE 1		4
DATA 3402	PYTHON FOR DATA SCIENCE 2		4
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION		4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1		4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2		4

DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
MATH 2326	CALCULUS III	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
Physics Requirements		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 2321	COMPUTATIONAL PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 3341	INTRODUCTION TO BIOLOGICAL PHYSICS	3
PHYS 3455	ELECTRONICS	4
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
Total Hours		121

* See General Core Requirements (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/>) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426, Calculus I, in the first semester.

First Year			
Fall Semester	Hours	Spring Semester	Hours
ENGL 1301		3 Approved Communication Core	3
PHYS 1443		4 PHYS 1444	4
HIST 1301		3 POLS 2311	3
UNIV 1131 or UNIV-SC 1101		1 MATH 2425	4
MATH 1426		4 DATA 1301	3
		15	17
Second Year			
Fall Semester	Hours	Spring Semester	Hours
HIST 1302		3 Approved Creative Arts Core	3
MATH 2326		3 PHYS 3183	1
MATH 3319		3 MATH 3316	3
PHYS 3313		3 PHYS 2311	3
DATA 3401		4 DATA 3402	4
		16	14
Third Year			
Fall Semester	Hours	Spring Semester	Hours
MATH 3313		3 POLS 2312	3
PHYS 3321		3 PHYS 2321	3
DATA 3421		4 PHYS 3341	3
DATA 3441		4 DATA 4380	3
		DATA 3442	4
		14	16
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
Approved Social & Behavioral Core		3 Approved Language, Philosophy, Culture Core	3
PHYS 4315		3 ELECTIVE (23xx+)	3
PHYS 4326		3 PHYS 3455	4
DATA 3461		4 DATA 4382	3

DATA 4381	3	
	16	13
Total Hours: 121		

Requirements for a Bachelor of Science in Data Science with Psychology Concentration

Recommended Pre-Professional Courses

Freshman/Transfer Requirement		
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
Communication		
ENGL 1301	RHETORIC AND COMPOSITION I	3
Select one additional communication area course *		3
Life and Physical Science		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
Language, Philosophy, Culture		
Select one course from this area *		3
Creative Arts		
Select one course from this area *		3
U.S. History		
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Government/Political Science		
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Social and Behavioral Sciences		
PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
Component Area		
Select one course from this area		3
Mathematics		
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1426	CALCULUS I	4
Data Science Courses		
DATA 1301	INTRODUCTION TO DATA SCIENCE	3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3311	MATHEMATICS FOR DATA SCIENCE	3
MATH 3316	STATISTICAL INFERENCE	3
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4
DATA 4380	DATA PROBLEMS	3
DATA 4381	DATA CAPSTONE PROJECT 1	3
DATA 4382	DATA CAPSTONE PROJECT 2	3
Psychology Requirements		
PSYC 3200	EXPERIENCING RESEARCH IN PSYCHOLOGY	2
PSYC 3300	RESEARCH METHODS IN PSYCHOLOGY	3
PSYC 3315	SOCIAL PSYCHOLOGY	3
PSYC 3322	BRAIN AND BEHAVIOR	3
PSYC 3334	COGNITIVE PROCESSES	3

PSYC 4281	RESEARCH IN PSYCHOLOGY	2
ADVANCED COURSE GROUP 1 (PSYC 33xx+)		3
ADVANCED COURSE GROUP 2 (PSYC 33xx+)		3
ADVANCED COURSE GROUP 3 (PSYC 33xx+)		3
ADVANCED COURSE GROUP 1, 2 or 3 (PSYC 33xx+)		3
ELECTIVE (PSYC 33xx+)		3
Total Hours		120

* See General Core Requirements (<https://catalog.uta.edu/degree/requirements/generalcore/requirements/>) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Data Science undergraduate advisor, particularly since many courses are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1421, Preparation for Calculus, in the first semester.

First Year			
Fall Semester	Hours	Spring Semester	Hours
ENGL 1301		3 Approved Communication Core	3
BIOL 1441		4 BIOL 1442	4
UNIV 1131 or UNIV-SC 1101		1 MATH 1426	4
MATH 1421		4 DATA 1301	3
PSYC 1315		3	
		15	14
Second Year			
Fall Semester	Hours	Spring Semester	Hours
HIST 1301		3 HIST 1302	3
POLS 2311		3 POLS 2312	3
MATH 3316		3 DATA 3311	3
DATA 3401		4 DATA 3402	4
		PSYC 3300	3
		13	16
Third Year			
Fall Semester	Hours	Spring Semester	Hours
Approved Creative Arts Core		3 Approved Language, Philosophy, Culture Core	3
ELECTIVE (11xx+)		3 DATA 3442	4
DATA 3461		4 DATA 4380	3
DATA 3421		4 PSYC 3315	3
DATA 3441		4 PSYC 3334	3
		18	16
Fourth Year			
Fall Semester	Hours	Spring Semester	Hours
DATA 4381		3 DATA 4382	3
PSYC 3200		2 ADVANCED COURSE GROUP 3 (PSYC 33xx+)	3
PSYC 3322		3 ADVANCED COURSE GROUP 1, 2 or 3 (PSYC 33xx+)	3
ADVANCED COURSE GROUP 1 (PSYC 33xx+)		3 ELECTIVE (PSYC 33xx+)	3
ADVANCED COURSE GROUP 2 (PSYC 33xx+)		3	
PSYC 4281		2	
		16	12
Total Hours: 120			

Minor in Data Science

The College of Science also offers a Minor in Data Science to pair with an existing major. Course schedule may vary based on transferable credits or credits earned.

Students must gain advising and approval from both the department that offers the minor and from their major department. Failure to gain Major Department approval can result in no minor applied at graduation and final transcripts.

Students who wish to obtain a minor in Data Science must take at least 19-20 semester hours of DATA or related courses and maintain a minimum GPA of 2.0. Any substitutions to courses listed below must be approved by the department offering the minor.

COURSE REQUIREMENTS

Foundational Courses

Select 4 of the following courses:		16
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4

Elective Courses

Select 1 of the following courses:		4
DATA 1301	INTRODUCTION TO DATA SCIENCE	3
BIOL 3340	BIOINFORMATICS	3
ENVR/GEOL 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3316	STATISTICAL INFERENCE	3
PHYS 2321	COMPUTATIONAL PHYSICS	3
DATA 33xx Choose from foundational courses list		4

COURSES

DATA 1301. INTRODUCTION TO DATA SCIENCE. 3 Hours.

This course provides an introduction to the field of data science with a high level overview of basic concepts, data types, and techniques while introducing data-informed decision making.

DATA 3311. MATHEMATICS FOR DATA SCIENCE. 3 Hours.

This course covers techniques from linear algebra and probability with an emphasis on how they are used in data science. Working with real data sets will be emphasized, along with basics of Matlab or R programming. Prerequisite: MATH 1426.

DATA 3401. PYTHON FOR DATA SCIENCE 1. 4 Hours.

This is the first of a two course sequence offering the foundations of Python programming in the context of data science. It introduces the full syntax of the Python language as it overviews structured, functional, and object oriented programming methodologies. It also provides a basic conceptual understanding of computing and introduces Unix command-line tools, software employed in data science such as git and Jupyter, and Python libraries such as numpy, matplotlib, and Pandas. Prerequisite: MATH 1426 or concurrent enrollment in MATH 1426.

DATA 3402. PYTHON FOR DATA SCIENCE 2. 4 Hours.

This is the second of a two course sequence offering the foundations of Python programming in the context of data science. It reinforces concepts presented in DATA 3401 with greater depth with a focus on application to various problems in data science, while exploring the python library ecosystem. Prerequisite: DATA 3401, or consent of instructor.

DATA 3421. DATA MINING, MANAGEMENT, AND CURATION. 4 Hours.

This lecture and lab course will provide training in working with databases, including data mining techniques and principles and best practices in data management, storage, and curation. Prerequisite: DATA 3401 or consent of instructor.

DATA 3441. STATISTICAL METHODS FOR DATA SCIENCE 1. 4 Hours.

This lecture and lab course will provide an introduction to the fundamental building blocks of advanced data analysis, with emphasis on advanced linear algebra, optimization, statistical inference, and Monte Carlo methods. Working with real data sets will be emphasized, along with basics of R programming. Prerequisite: DATA 3401, DATA 3402 or consent of instructor.

DATA 3442. STATISTICAL METHODS FOR DATA SCIENCE 2. 4 Hours.

This lecture and lab course will provide an introduction to the principles and general methods for the analysis of categorical data. This type of data occurs extensively in both observational and experimental studies, as well as industrial applications. While some theoretical statistical detail is given, the primary focus will be on methods of data analysis. Topics include generalized regression models, logistic regression models, Poisson regression models, and multinomial regression models. Problems will be motivated from a scientific perspective. Prerequisite: DATA 3441.

DATA 3461. MACHINE LEARNING. 4 Hours.

This course introduces and surveys Machine Learning techniques and their application to various problems in data science. Prerequisite: DATA 3401, DATA 3402 or consent of instructor.

DATA 4380. DATA PROBLEMS. 3 Hours.

This course is intended for Junior-level Data Science students, and will enable them to identify, define, and explore a number of potential problems and projects, for follow-up in the capstone course sequence. Prerequisite: Permission of instructor.

DATA 4381. DATA CAPSTONE PROJECT 1. 3 Hours.

This is the first of a two-semester sequence that will involve deep engagement in a team or individual project in Data Science. Presentation of written and oral reports will be required. Prerequisite: DATA 4380.

DATA 4382. DATA CAPSTONE PROJECT 2. 3 Hours.

This is the second of a two-semester sequence that will involve deep engagement in a team or individual project in Data Science. Presentation of written and oral reports will be required. Prerequisite: DATA 4381.

Earth and Environmental Sciences

Undergraduate Degrees

- Bachelor of Science in Geology - Professional Option (p. 1201)
- Bachelor Science in Geology - Environmental Science Option (p. 1201)
- Bachelor of Science in Geology - Engineering Geology Option (p. 1201)
- Bachelor of Science in Environmental Science (p. 1201)
- Bachelor of Arts in Geology - General Option (p. 1201)
- Bachelor of Arts in Geology - Composite Science Teacher Certification Option (UTeach) (p. 1201)

Minors

- Minor in Geology (p. 1213)
- Minor in Data Science (for Majors in Earth and Environmental Sciences) (p. 1213)
- Minor in Biology (for Majors in Earth and Environmental Sciences) (p. 1213)

Undergraduate Certificates

- Certificate in Geographic Information Systems (p. 1214)

Graduate Degrees

- Earth and Environmental Science M.S. (p. 1196)
- Earth and Environmental Science, Ph.D. (p. 1199)

COURSES

EVSE 5100. SELECTED TOPICS IN ENVIRONMENTAL SCIENCE AND ENGINEERING. 1 Hour.

May be repeated for credit when topic changes.

EVSE 5120. ENVIRONMENTAL PROFESSIONAL MENTORING & BUSINESS ETHICS. 1 Hour.

Provides credit to students participating in an approved mentoring program with an experience environmental professional. May be repeated once for credit.

EVSE 5199. SEMINAR IN ENVIRONMENTAL & EARTH SCIENCES. 1 Hour.

Topics presented by faculty, students, and invited lecturers.

EVSE 5200. SELECTED TOPICS IN ENVIRONMENTAL & EARTH SCIENCES. 2 Hours.

May be repeated for credit when topic changes.

EVSE 5294. INDIVIDUAL PROBLEMS IN ENVIRONMENTAL & EARTH SCIENCES. 2 Hours.

Individual research projects supervised by a faculty member.

EVSE 5300. SELECTED TOPICS IN ENVIRONMENTAL & EARTH SCIENCE. 3 Hours.

May be repeated for credit when topic changes.

EVSE 5303. SUSTAINABILITY ISSUES SEMINAR III. 3 Hours.

Governmental and regulatory issues as they relate to sustainability.

EVSE 5309. ENVIRONMENTAL SYSTEMS-BIOLOGICAL ASPECTS. 3 Hours.

An introduction to the biological components of environmental systems. Population dynamics, species interactions, community structure, biodiversity, bioenergetics, nutrient cycling and human impacts are reviewed. Focus will be on natural processes and their engineering applications.

EVSE 5310. ENVIRONMENTAL SYSTEMS-CHEMICAL ASPECTS. 3 Hours.

An introduction to the chemistries of air at different altitudes, of water systems and of soils. Chemical and physico-chemical processes at phase boundaries, modeling for kinetics and mass transport, analytical techniques and disposal and recycling are included as well as their impact on engineering decisions.

EVSE 5311. ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS. 3 Hours.

Introduction to the tectonic, volcanic, atmospheric, climatic, hydrologic and geochemical processes and natural hazards of the earth, and their interaction with political, economic and engineering decisions.

EVSE 5312. ENVIRONMENTAL RISK BASED ACTION. 3 Hours.

This course offers an introduction to environmental risk-based actions including environmental laws and regulations, hazard identification, toxicology, common contaminants, chemical intake models, chemical fate and transport models, and vapor intrusions.

EVSE 5313. ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS. 3 Hours.

This course offers an introductory knowledge about regulations and management of environmental and life quality in relation to chemical pollution, waste disposal, energy/resources sustainability, public health threats, and food/consumer product safety. Prerequisite: CHEM 1441 or equivalent.

EVSE 5314. TOXICOLOGY FOR ENVIRONMENTAL SCIENTISTS. 3 Hours.

This course offers an introduction to environmental toxicology and methods of measuring and using data on the adverse effects of chemical substances in line with understanding chemical and biochemical phenomena that occur in water, air, terrestrial and living environments, and the impact to human population. Prerequisite: CHEM 1441 or equivalent.

EVSE 5315. PROFESSIONAL EXPERIENCE. 3 Hours.

Provides credit to students participating in an approved internship or part-time work experience.

EVSE 5320. TOXICOLOGY. 3 Hours.

An introduction to the general principles of toxicology with an emphasis on certain classes of toxic agents, their sources and toxic effects, as well as their environmental fate. Prerequisite: CHEM 2322.

EVSE 5321. HEALTH RISK ASSESSMENT. 3 Hours.

An introduction to health considerations relevant to environmental projects. Prepares students to take the Registered Environmental Health Specialist Examination.

EVSE 5322. ENVIRONMENTAL RISK ASSESSMENT. 3 Hours.

An introduction to the health assessment process, presenting methodologies and guidelines for conducting health assessments.

EVSE 5323. ISSUES IN ENVIRONMENTAL HEALTH. 3 Hours.

An introduction to health issues of current concern resulting from environmental exposures. Topics include: environmental asthma, endocrine disruptors, climate change and health, emerging contaminants, nanotechnology and health, airborne particles and pediatric health.

EVSE 5350. CONTAMINANT HYDROGEOLOGY. 3 Hours.

Sources and types of various organic and inorganic contaminants; the physical, chemical, and biological factors and processes that affect the transport and fate of contaminants in the subsurface; non-aqueous phase liquids and multiphase flow; and various remedial techniques of contaminated sites. Prerequisite: GEOL 4320 or GEOL 5328 (or concurrent enrollment).

EVSE 5351. GEOMORPHOLOGY AND QUATERNARY STRATIGRAPHY OF SEDIMENTARY SYSTEMS. 3 Hours.

This course examines those physical processes that sculpt the surface of the Earth and result in deposition of sediments. Surface systems covered include weathering, mass wasting, rivers, shorelines, eolian processes, and glaciers. The course also examines the stratigraphic techniques used to decode the recent (2 million to present) stratigraphic record of these systems. Course is designed for geologists, biologists, and other fields concerned with interpreting and/or managing modern environments.

EVSE 5357. MEDICAL GEOLOGY. 3 Hours.

Introduction to geoscience and health. Students will learn how the geologic and geochemical environment can impact health. The historic background to geoscience and health will be presented followed by discussions on the natural abundance of elements in the earth, and the nature of essential and toxic elements (dose-response). Students will then learn about health responses following exposures in specific geologic/geochemical situations.

EVSE 5394. INDIVIDUAL PROBLEMS IN ENVIRONMENTAL & EARTH SCIENCES. 3 Hours.

Individual research projects supervised by a faculty member. Prerequisite: consent of instructor.

EVSE 5395. MASTER'S PROJECT. 3 Hours.

May be used as elective for students in non-thesis program. Graded F, P.

EVSE 5398. THESIS. 3 Hours.

Graded F, R.

EVSE 5405. METEOROLOGY AND CLIMATOLOGY. 4 Hours.

A quantitative approach to the study of the structure, energy, and motions of the atmosphere.

EVSE 5454. STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of statistics and helps students apply statistics to analyze data and interpret results from the perspective of Earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in Earth and environmental sciences. Offered as EVSE 5454 and GEOL 5454. Credit will not be given for both.

EVSE 5455. MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS. 4 Hours.

This course is designed to introduce the process principles that govern contaminant transport and transformations in multimedia environments. This course will cover application of fate and transport models to evaluate pollutant interactions with the biosphere, particularly in the context of human exposure modeling and health risk assessment. Offered as EVSE 5455 and GEOL 5455. Credit will not be given for both.

EVSE 5456. ENVIRONMENTAL RISK ASSESSMENT. 4 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization. Offered as EVSE 5456 and GEOL 5456, credit will not be given for both.

EVSE 5457. ENVIRONMENTAL ANALYTICAL CHEMISTRY. 4 Hours.

This course offers an introduction to chemical and biochemical phenomena that occur in water, air, terrestrial and living environments, and the effects of human activity on them. Environmental chemistry can broaden as much as atmospheric chemistry, aquatic chemistry, chemistry of soil/geosphere, toxicological chemistry and industrial ecology. In this course, mainly chemical substances in diverse environmental compartments and interactions and exposure impact to human and wildlife receptors will be focus based on analytical chemistry principles and perspective. Prerequisite: CHEM 1442 or equivalent courses.

EVSE 5458. MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of machine learning and helps students apply machine learning to analyze data, predict outcomes and interpret results from the perspective of earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in earth and environmental sciences. Prerequisite: ENVR 3454 or GEOL 3454 or EVSE 5454 or GEOL 5454 or equivalent.

EVSE 5465. PHYSICAL OCEANOGRAPHY AND LIMNOLOGY. 4 Hours.

An introduction to physical processes in lakes and oceans. Changes in lakes and oceans influence heat, and momentum fluxes at the aquatic/oceanic and atmospheric interface. Topics include ocean/lake structure and circulation, and the impact of global climate change on lakes and oceans. Field excursions to nearby lakes combine theoretical knowledge and field measurements. Prerequisite: PHYS 1441 or PHYS 1443; and MATH 2425.

EVSE 5698. THESIS. 6 Hours.

Graded F, P, R.

EVSE 5998. THESIS. 9 Hours.

Graded F, P, R.

EVSE 6197. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCES. 1 Hour.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6297. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCES. 2 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6397. RESEARCH IN ENVIRONMENTAL AND EARTH SCIENCES. 3 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6399. DISSERTATION. 3 Hours.

Graded F, R.

EVSE 6697. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCE. 6 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6699. DISSERTATION. 6 Hours.

Graded F, R, P, W.

EVSE 6997. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCE. 9 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6999. DISSERTATION. 9 Hours.

Graded F, P, R.

EVSE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

COURSES

GEOL 1135. GEOLOGICAL LABORATORY. 1 Hour.

Experiments and exercises related to geological principles and problems. Prerequisite: Permission from department.

GEOL 1136. GEOLOGICAL LABORATORY II. 1 Hour.

Experiments and exercises related to geological principles and problems of earth history. Prerequisite: Permission from department.

GEOL 1137. GEOLOGICAL LABORATORY III. 1 Hour.

Experiments and exercises related to geological principles and problems of environmental science. Prerequisite: permission from department.

GEOL 1301. EARTH SYSTEMS. 3 Hours.

An integrated study of the earth, emphasizing interactions between plate tectonics, the atmosphere, the oceans, the biosphere, and human activity. Formerly listed as GEOL 1425, credit will not be given for both.

GEOL 1302. EARTH HISTORY. 3 Hours.

History of the earth and evolution of life emphasizing the co-evolution of the atmosphere, oceans, and biosphere. Formerly listed as GEOL 1426, credit will not be given for both.

GEOL 1315. METEORITES, ASTEROIDS, FLOOD VOLCANISMS AND MASS EXTINCTIONS. 3 Hours.

An introduction to the geology of the solar system from the perspectives of earth science, and the fascinating world of meteorites, asteroids, comets, and impact craters. Special emphasis is on the meteorite evidence for our understanding of planetary formation, the age and origin of the earth, and the role of near synchronous impacts and flood basalts in causing two of the largest mass extinctions in earth history. Weekly practicum with hands-on examination of solar system materials, including observations under polarizing light microscopy. Formerly listed as GEOL 1415, credit will not be given for both.

GEOL 1330. GLOBAL WARMING. 3 Hours.

Global environmental challenges confronting humanity such as pollution, depletion of natural resources, ecosystem deterioration, food production, and population growth. Offered as ENVR 1330 and GEOL 1330. Credit will not be given for both.

GEOL 1340. WEATHER AND CLIMATE. 3 Hours.

Nature and variability of weather and climate, including wind, temperature, clouds and precipitation, droughts and flooding. Storm systems, fronts, thunderstorms, tornadoes, hurricanes. Atmospheric chemistry and air pollution. Mean climate, seasonal variations and climatic change. Formerly listed as GEOL 2401, credit will not be given for both.

GEOL 1350. INTRODUCTION TO OCEANOGRAPHY. 3 Hours.

The study of ocean basins and their origin, ocean currents, waves and tides, properties of sea water, and marine ecosystems, emphasizing the role of the ocean in the Earth system. Discussion of weekly ocean news, and incorporation of web-delivered current oceanographic data into the course material. Formerly offered as GEOL 3301 and GEOL 3184 and GEOL 2412; credit will be granted only once. Formerly listed as GEOL 1450, credit will not be given for both.

GEOL 1360. GEOLOGIC HAZARDS. 3 Hours.

Processes producing earthquakes, floods, eruptions and landslides, and their effect on people. Formerly listed as GEOL 2404, credit will not be given for both.

GEOL 2406. NATURAL RESOURCES & SUSTAINABILITY. 4 Hours.

Energy, construction, agricultural, and hydrological resources are evaluated in terms of their production and use, including storage and disposal of waste. Emphasis is placed on the importance of preserving clean water, air and soils. The course will concentrate on what humans take from the Earth, the impacts it has on their environment, and what it takes to make the planet sustainable for human habitation.

GEOL 2410. PLANETARY GEOLOGY. 4 Hours.

The geology, history and landscapes of the terrestrial planets and satellites of the outer planets. Composition of the planets as a guide to the origin and evolution of the solar system.

GEOL 2445. MINERALOGY. 4 Hours. (TCCN = GEOL 2409)

Lectures discuss the physical and chemical principles governing the properties and formation of minerals. There are three major divisions of the subject matter: (a) geometric and optical crystallography; (b) crystal chemistry and properties of minerals, and (c) occurrence, origins, and pressure-temperature stabilities of the major rock-forming minerals. Laboratories are devoted to exercises in crystallography, X-ray diffraction, optical mineralogy and hand-specimen mineral identification. Prerequisites: CHEM 1442 and MATH 1323 or higher-level MATH.

GEOL 3100. GEOSCIENCE PROFESSIONAL ORIENTATION. 1 Hour.

Review of various careers in the Geosciences, and how to prepare a resume, network, and interview. Principles to follow for on-the-job success. Class will involve field trips and guest lectures.

GEOL 3316. ASTROBIOLOGY I. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include properties of life, origin and evolution of life on Earth, terrestrial geology and habitability, environmental forcings, extremophiles, mass extinctions, meteorites, searches for life in the solar system. Offered as BIOL 3316, GEOL 3316 and PHYS 3316; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent.

GEOL 3340. GEOLOGY FOR ENGINEERS. 3 Hours.

Introduction to geological materials and processes important to practice of civil engineering. Includes processes forming minerals and rocks; mechanics and deformation of rocks, weathering, erosion and soils; soil hazards, land subsidence and mass movements; groundwater hydrology, geochemistry and contamination; and rivers. Labs will include introduction to geologic materials and use of GIS software to store, analyze and display geologic and engineering data. Prerequisites: PHYS 1443 and CHEM 1465 or CHEM 1442.

GEOL 3358. ASTROBIOLOGY II. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include basic properties of life, habitability of Earth, studies of possible life regarding Mars, Europa & Titan, space missions, exoplanets and exomoons, stellar habitable zones, multistellar systems, exoEarths, biomarkers, SETI, Fermi paradox, Drake equation, cosmology. Offered as BIOL 3358, GEOL 3358, and PHYS 3358; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent. Note that Astrobiology I is strongly recommended to students to be taken prior to Astrobiology II, but is not a prerequisite.

GEOL 3387. FIELD GEOLOGY I. 3 Hours.

Stratigraphic and structural mapping and analysis of data collected in the field. Taught for three weeks only in the summer session. Special fee covers cost of transportation, room, and board while in the field. Prerequisite: GEOL 2445, GEOL 3442, and GEOL 3443.

GEOL 3388. FIELD GEOLOGY II. 3 Hours.

Mapping and analysis of igneous and metamorphic rock data as well as hydrologic, geochemical and mass wasting data collected in the field. Taught for three weeks after GEOL 3387 only in the summer session. Special fee covers cost of transportation, room, and board while in the field. Prerequisite: GEOL 2445, GEOL 3442, GEOL 3443, and GEOL 3387.

GEOL 3441. BIOSTRATIGRAPHY AND LIFE THROUGH TIME. 4 Hours.

Basic principles of bio- and chronostratigraphy including the classification of fossil groups, how index fossils are used to construct the geologic timescale and correlate strata. Prerequisite: GEOL 1302.

GEOL 3442. SEDIMENTOLOGY AND STRATIGRAPHY. 4 Hours.

An introduction to the description, origin, and historical interpretation of stratified rocks. Prerequisite: GEOL 2445.

GEOL 3443. STRUCTURAL GEOLOGY. 4 Hours.

The genesis, classification, and description of structural features resulting from deformation of the earth's crust. Prerequisite: GEOL 3445 and PHYS 1441 or PHYS 1443.

GEOL 3446. PETROLOGY AND GEOCHEMISTRY. 4 Hours.

Distribution, description, classification, plate-tectonic setting and origins of igneous and metamorphic rocks in the light of theoretical-experimental multicomponent phase equilibria studies; use of trace elements and radiogenic and stable isotopes as tracers in rock genesis; hand specimen and microscopic examinations of the major igneous-metamorphic rock types in the laboratory. Prerequisite: C or better in GEOL 2445.

GEOL 3454. STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of statistics and helps students apply statistics to analyze data and interpret results from the perspective of Earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in Earth and environmental sciences. Offered as ENVR 3454 and GEOL 3454, credit will not be given for both. Prerequisite: GEOL 3454: MATH 1426.

GEOL 4081. RESEARCH IN EARTH & ENVIRONMENTAL SCIENCES. 0 Hours.

Research problems on an individual or group basis, conducted on a selected topic under the direction of a member of the Earth & Environmental Sciences faculty. May be repeated. This is a non-credit course so cannot be used to meet degree requirements. Prerequisite: Permission of the instructor.

GEOL 4181. TOPICS IN ENERGY AND EARTH RESOURCES. 1 Hour.

Lectures will discuss the historical evolution and current status of major research thrusts in the environment, energy, and resources studies, including Superfund and groundwater remediation, carbon sequestration, tight sands and coalbed methane, petroleum production in shale gas and oil reservoirs, geological repository of high-level nuclear waste, geothermal energy exploitation, mining of critical minerals, and gas (methane) hydrate. Prerequisite: GEOL 1301 or equivalent.

GEOL 4189. RESEARCH IN GEOLOGY. 1 Hour.

Supervised undergraduate research in any one of the various fields of geology. May be repeated but will not meet Geology degree requirements. Prerequisite: permission from instructor.

GEOL 4190. GEOSCIENCE INTERNSHIP. 1 Hour.

Work in geoscience for a commercial concern at least 20 hours per week for three months. Requirements include: writing a resume, learning how to interview and function on the job, and a report describing the work. Prerequisite: 16 hours of Geology coursework.

GEOL 4199. TECHNICAL SESSIONS. 1 Hour.

Forum for presentation of results of undergraduate and graduate students and faculty research. Offered as ENVR 4199 and GEOL 4199. Credit will not be given for both. Prerequisite: For ENVR: ENVR 1301 or equivalent. For GEOL: GEOL 1301 or equivalent.

GEOL 4289. RESEARCH IN GEOLOGY. 2 Hours.

Supervised undergraduate research in any one of the various fields of geology. May be repeated but will not meet Geology degree requirements. Prerequisite: permission from instructor.

GEOL 4301. MARINE GEOLOGY & GEOCHEMISTRY. 3 Hours.

Geologic and geochemical processes of the oceans. Chemistry of seawater; geochemical and biogeochemical cycles; carbonate sediment production. Prerequisite: CHEM 1441 and CHEM 1442.

GEOL 4302. GEODYNAMICS. 3 Hours.

A comprehensive and quantitative study of fundamental aspects of plate tectonics. Introduction to heat flow, elasticity and flexure, fluid mechanics, faulting, gravity, and flow in porous media, with a wide range of geological applications. Includes collaborative problem solving. Prerequisite: GEOL 3443 and MATH 2425.

GEOL 4304. SOLID EARTH GEOMECHANICS. 3 Hours.

Application of continuum mechanics to understanding deformation in the earth, including mechanical analysis of natural geologic structures such as faults, folds, lava flows, and dikes, as well as practical problems related to reservoir geomechanics and mining applications. Prerequisites: GEOL 3443, MATH 2425, and PHYS 1444.

GEOL 4305. SELECTED TOPICS IN GEOLOGY. 3 Hours.

Geological topics not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for Geology elective credit as different topics are offered.

GEOL 4307. SEQUENCE STRATIGRAPHY. 3 Hours.

This course introduces sequence stratigraphy within context of all stratigraphy and history of sequence stratigraphy. Includes overview of sequence stratigraphy principles. Review of basic fundamental concepts of surface- and facies-based physical stratigraphy. Review of architectural element analysis, sequence stratigraphic in seismic, borehole expression of sequences and overview of subsurface stratigraphic techniques. Prerequisite: GEOL 3442.

GEOL 4308. ENVIRONMENTAL GEOCHEMISTRY. 3 Hours.

The geochemistry of natural waters with emphasis on processes that control solute concentrations including complexation reactions, oxidation and reduction reactions, biogeochemistry, and chemical weathering reactions. Prerequisites: CHEM 1442 or GEOL 2445.

GEOL 4309. INTRODUCTION TO GEOPHYSICS. 3 Hours.

Introduction to the fundamental physical principles, theory, and techniques of geophysics. Topics include gravity and magnetic fields, heat-flow, earthquakes and elastic wave propagation, and geodesy. Emphasis will be on how geophysical data are used to constrain plate tectonic processes as well as the internal structure and dynamics of the solid Earth. Prerequisites: GEOL 3443 and MATH 2425.

GEOL 4323. ISSUES IN ENVIRONMENTAL HEALTH. 3 Hours.

An introduction to health issues of current concern resulting from environmental exposures. Topics include: environmental asthma, endocrine disruptors, climate change and health, emerging contaminants, nanotechnology and health, airborne particles and pediatric health. Offered as ENVR 4323 and GEOL 4323. Credit will not be given for both.

GEOL 4330. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software. This course replaces GEOL 4352; credit will not be granted for both. This course is offered as GEOL 4330 and GEOG 4330. Prerequisite: Junior standing.

GEOL 4331. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3-D Analyst, topological surface analysis and modeling; 3-D visualization and viewscales; spatial statistics and data quality management. Course taught as GEOL 4331 and GEOG 4331. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4332. GLOBAL POSITIONING SYSTEM. 3 Hours.

Review of the NAVSTAR Global Positioning System and its segments: space, operational control, and GPS receivers. Mechanics of the satellite constellation; GPS signal structure; datums and coordinate systems; precision and accuracy; error factors; absolute (point) versus relative (differential) positioning. Various positioning techniques using several types of GPS receivers; field data collection and input into GIS programs for data analysis and presentation. Course taught as GEOL 4332 and GEOG 4332. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4333. REMOTE SENSING FUNDAMENTALS. 3 Hours.

The electromagnetic spectrum and the interaction of EM waves with matter; various types of sensing devices; spectral and spatial resolution parameters; airborne and satellite sensor platforms; aerial photographs and false-color images. The sequence of data acquisition, computer processing, and interpretation; sources of data; the integration of remote sensing data with other data types in GIS. Course taught as GEOL 4333 and GEOG 4333. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4334. GEOGRAPHIC DATA ANALYSIS. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with approval of the instructor. A written report of the results is required. Course taught as GEOL 4334 and GEOG 4334. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4335. TECTONICS AND ISOTOPES. 3 Hours.

Fundamentals of global tectonics, and the application of isotope geochemistry in sedimentary rocks to understanding tectonic questions. Emphasis will be given to the mechanisms of mountain formation, isotope paleoaltimetry, detrital geochronology, and thermochronology. Prerequisite: GEOL 3442, GEOL 3446.

GEOL 4342. MICROFOSSILS & THE CORRELATION OF SEDIMENTARY ROCKS. 3 Hours.

This course is an introduction to microfossil groups useful in the regional and global correlation of sedimentary rock strata throughout the Phanerozoic. Microfossils record plant, animal, and protist life forms including foraminifers, radiolarians, ostracodes, conodonts, algae and coccolithophorids. Morphology, taxonomy and biostratigraphy of these groups will be stressed along with the principles used in the correlation of sedimentary rocks. Prerequisite: GEOL 3441.

GEOL 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with four independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: C or better in SCIE 1201 or SCIE 1334, or concurrent enrollment; and junior or senior standing.

GEOL 4346. BASIN ANALYSIS. 3 Hours.

The classification and characteristics of sedimentary basins and the mechanisms forming them; and the tectonic, climatic, and eustatic controls on basin subsidence and the basin fill. Applications include the influence of basin evolution on petroleum generation, migration, and accumulation. Prerequisite: GEOL 3442 and MATH 1426.

GEOL 4350. STABLE ISOTOPE GEOCHEMISTRY. 3 Hours.

Principles governing the fractionation and distribution of stable isotopes (C, H, N, O, S) in nature, and application of stable isotope geochemistry to environmental problems and global climate change. Prerequisite: GEOL 2445 and CHEM 1442, or permission from instructor.

GEOL 4351. ENERGY RESOURCES FOR GEOSCIENTISTS. 3 Hours.

The course will review critical knowledges of minerals, rocks, stratigraphy, surface processes, geophysics, geochemistry, structures and tectonics, and connect these aspects of Earth system with Earth's six energy components: hydrocarbon, critical minerals, geothermal energy, CO₂ sequestration, waste management, and green energies. Prerequisite: GEOL 1301, GEOL 3340, or cons. inst.

GEOL 4352. ANALYTICAL METHODS IN GEOCHEMISTRY. 3 Hours.

Principles of geochemical analysis of waters, rocks and soils, and gases. Methods to be covered include x-ray fluorescence and diffraction, mass spectrometry, coulometry, inductively-coupled plasma, and gas/ion chromatography with various detection methods. Prerequisite: CHEM 1442.

GEOL 4353. VOLCANOLOGY. 3 Hours.

A broad survey of volcanic rocks, landforms, products, minerals, volatiles, and processes at a generally descriptive to semi-quantitative level. Introduces areas of interface with other branches of geology and with socioeconomic interest. Prerequisite: GEOL 2446.

GEOL 4356. ENVIRONMENTAL RISK ASSESSMENT. 3 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization.

GEOL 4357. MEDICAL GEOLOGY. 3 Hours.

Introduction to geoscience and health. Students will learn how the geologic and geochemical environment can impact health. The historic background to geoscience and health will be presented followed by discussions on the natural abundance of elements in the earth, and the nature of essential and toxic elements (dose-response). Students will then learn about health responses following exposures in specific geologic/geochemical situations. Prerequisite: GEOL 1301 or ENVR 1301, or equivalent.

GEOL 4360. GEOLOGICAL PROCESSES OF OCEANS. 3 Hours.

Sedimentation in the oceans, chemistry of seawater, geochemical cycles in the oceans, and physical and biological processes that relate to sediment production, origin of seafloor topography, and seafloor spreading. Prerequisite: GEOL 3442.

GEOL 4367. PALEO EARTH SYSTEMS. 3 Hours.

This course discusses the evolution of Earth's complex dynamic system that is controlled by feedback processes that are both non-linear and stochastic in nature. Prerequisite: GEOL 1301.

GEOL 4368. GEOLOGY OF THE PERMIAN BASIN. 3 Hours.

Overview of the geologic evolution of the Permian Basin of W Texas and SE New Mexico and its petroleum resources. Emphasis on student presentations and term paper. Prerequisite: GEOL 1301 or equivalent.

GEOL 4389. RESEARCH IN GEOLOGY. 3 Hours.

Supervised undergraduate research in any one of the various fields of geology. May be repeated but will not meet Geology degree requirements. Prerequisite: permission from instructor.

GEOL 4393. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project under the direction of a faculty member in the Earth and Environmental Sciences Department.

GEOL 4402. COMPUTER MODELING IN EARTH SCIENCE. 4 Hours.

An introduction to basic programming and computation in the earth sciences using Matlab®, with emphasis on development of univariate and bivariate statistical models, spatial and image analysis, time series analysis, and the development of basic deterministic physics-based models of geological processes. Prerequisite: MATH 2425.

GEOL 4405. METEOROLOGY AND CLIMATOLOGY. 4 Hours.

A quantitative approach to the study of the structure, energy, and motions of the atmosphere. Prerequisite: MATH 1426 and junior standing, or permission of instructor.

GEOL 4420. HYDROGEOLOGY. 4 Hours.

Hydrologic cycle, Darcy's law, hydraulic properties, aquifer types and materials, groundwater flow to wells, fracture flow, vadose zone flow, groundwater chemistry, and groundwater modeling. Prerequisite: PHYS 1441 or PHYS 1443.

GEOL 4421. GEOCHRONOLOGY. 4 Hours.

Introduction to dating techniques, applied to understand past climate and tectonics. Prerequisite: GEOL 1301 or equivalent.

GEOL 4422. CONTAMINANT HYDROGEOLOGY. 4 Hours.

Sources and types of organic and inorganic contaminants; the physical, chemical, and biological factors and processes that affect the transport and fate of contaminants in the subsurface; non-aqueous phase liquids and multiphase flow; and various remedial techniques of contaminated sites. Prerequisite: GEOL 1301, ENVR 1301, or equivalent.

GEOL 4425. PALEOCLIMATE & CLIMATE CHANGE. 4 Hours.

Climate change throughout geologic time, especially the last 100 million years: models of the climate system, reconstruction and modeling of past climates, abrupt climate change, warm climates, paleoclimatology, climate change and mass extinctions. Prerequisite: GEOL 1301, MATH 1426, and junior standing, or permission from instructor.

GEOL 4443. SEDIMENTARY SYSTEMS. 4 Hours.

Focuses on the processes transporting and archiving siliciclastic sediment, and the approaches using siliciclastic sedimentary rocks to reconstruct earth surface processes. This course includes a heavy component of student-led presentation and discussion. Prerequisite: GEOL 3442.

GEOL 4455. MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS. 4 Hours.

This course is designed to introduce the process principles that govern contaminant transport and transformations in multimedia environments. This course will cover application of fate and transport models to evaluate pollutant interactions with the biosphere, particularly in the context of human exposure modeling and health risk assessment. Offered as ENVR 4455 and GEOL 4455. Credit will not be given for both.

GEOL 4456. ENVIRONMENTAL RISK ASSESSMENT. 4 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization. Offered as ENVR 4456 and GEOL 4456. Credit will not be given for both.

GEOL 4458. MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of machine learning and helps students apply machine learning to analyze data, predict outcomes and interpret results from the perspective of earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in earth and environmental sciences. Offered as GEOL 4458 and ENVR 4458. Credit will be not given for both. Prerequisite: GEOL 3454 or ENVR 3454 or equivalent.

GEOL 4465. PHYSICAL OCEANOGRAPHY AND LIMNOLOGY. 4 Hours.

An introduction to physical processes in lakes and oceans. Changes in lakes and oceans influence heat, and momentum fluxes at the aquatic/oceanic and atmospheric interface. Topics include ocean/lake structure and circulation, and the impact of global climate change on lakes and oceans. Field excursions to nearby lakes combine theoretical knowledge and field measurements. Prerequisite: MATH 2425 and PHYS 1441 or PHYS 1443.

GEOL 5151. TOPICS IN ENERGY AND EARTH RESOURCES. 1 Hour.

This course will discuss the historical evolution and current status of major research thrusts in the environment, energy, and resources studies, including Superfund and groundwater remediation, carbon sequestration, tight sands and coalbed methane, petroleum production in shale gas and oil reservoirs, geological repository of high-level nuclear waste, geothermal energy exploitation, mining of critical minerals, and gas (methane) hydrate. Prerequisite: GEOL 1301 or equivalent.

GEOL 5180. PROFESSIONAL ORIENTATION AND BUSINESS ETHICS. 1 Hour.

A mentoring program using working professionals selected by the Earth and Environmental Sciences Department. Each participant meets at least once a month with a mentor who provides information on practices and skills necessary to succeed in the workplace. Course participants review business ethics statements provided by the mentor's company or other companies and write a critique based on materials from professional business ethics organizations such as the International Business Ethics Institute. Prerequisite or concurrent enrollment GEOL 5345.

GEOL 5181. RESEARCH IN GEOLOGY. 1 Hour.

Independent study in various areas of research including paleontology, stratigraphy, tectonics, structural geology, sedimentology, geochemistry, petrology, geophysics, and volcanology. May be repeated for credit. Graded P/F/R/W.

GEOL 5190. GEOSCIENCE INTERNSHIP. 1 Hour.

Work in geoscience for a commercial concern at least 20 hrs/wk for 3 months. Requirements include writing a resume, learning how to interview and function on the job, and a report describing the work. Prerequisite: GEOL 5345 or concurrent enrollment.

GEOL 5199. TECHNICAL SESSIONS. 1 Hour.

Forum for presentation of results of graduate students and faculty research. Required each semester of all graduate students.

GEOL 5265. TOPICS IN GEOL. 2 Hours.**GEOL 5281. RESEARCH IN GEOLOGY. 2 Hours.**

Independent study in various areas of research including paleontology, stratigraphy, tectonics, structural geology, sedimentology, geochemistry, petrology, geophysics, and volcanology. May be repeated for credit. Graded P/F/R/W.

GEOL 5301. ENVIRONMENTAL GEOCHEMISTRY. 3 Hours.

Fundamentals of low-temperature aqueous geochemistry, and anthropogenic impacts on natural water systems. Topics include equilibrium thermodynamics, kinetics, aqueous complexation, and oxidation/reduction processes that affect metals and organic matter in natural waters.

GEOL 5302. GEODYNAMICS. 3 Hours.

A comprehensive and quantitative study of fundamental aspects of plate tectonics. Introduction to heat flow, elasticity and flexure, fluid mechanics, faulting, gravity, and flow in porous media, with a wide range of geological applications. Includes collaborative problem solving. Prerequisite: GEOL 3443 and MATH 2425.

GEOL 5303. ROCK FRACTURE MECHANICS. 3 Hours.

Principles and tools of fracture mechanics are applied to the origins and physical behaviors of faults, dikes, joints, veins, and other natural structures in rock. Special emphasis will be given to combining field observations of fractures in rock with the elastic theory of cracks in order to explore the role of natural fractures in brittle rock deformation in the earth's crust with applications to crustal deformation, structural geology, engineering geology, and induced hydraulic fracture, i.e. Fracking. Prerequisite: GEOL 3443 and MATH 2425; or GEOL 3340 and CE 2313.

GEOL 5304. SOLID EARTH GEOMECHANICS. 3 Hours.

Application of continuum mechanics to understanding deformation in the earth, including mechanical analysis of natural geologic structures such as faults, folds, lava flows, and dikes, as well as practical problems related to reservoir geomechanics and mining applications. Prerequisite: GEOL 3443, MATH 2325, PHYS 1441 or PHYS 1443.

GEOL 5306. ENVIRONMENTAL GEOLOGY. 3 Hours.

Hydrological systems, water quality, and behavior of pollutants; atmospheric systems, air quality, and effects of pollutants; occurrence, prediction, and amelioration of natural environmental hazards including floods, earthquakes, volcanism, and landslides.

GEOL 5309. GEOMORPHOLOGY & QUATERNARY STRATIGRAPHY OF SEDIMENTARY SYSTEMS. 3 Hours.

This course examines those physical processes that sculpt the surface of the Earth and result in deposition of sediments. Surface systems covered include weathering, mass wasting, rivers, shorelines, eolian processes, and glaciers. The course also examines the stratigraphic techniques used to decode the recent (2 million to present) stratigraphic record of these systems. Course is designed for geologists, biologists, and other fields concerned with interpreting and/or managing modern environments.

GEOL 5312. SANDSTONE PETROLOGY. 3 Hours.

Petrographic examination of terrigenous clastics, including textural, compositional, and diagenetic aspects. Focus on paleogeographic, tectonic, and environmental interpretation. Prerequisite: GEOL 3442.

GEOL 5313. CARBONATE PETROLOGY. 3 Hours.

Nature and composition of ancient and modern carbonate sediments and rocks in terms of their genesis, depositional environments, biological constituents, and processes involved in transport, deposition, diagenesis, and lithification. Knowledge of stratigraphy and paleontology is necessary for success in this course. Prerequisite: GEOL 3442 or permission of the instructor.

GEOL 5320. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software.

GEOL 5321. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3D Analyst, topological surface analysis and modeling; 3D visualization and viewscales; spatial statistics and data quality management. Prerequisite: GEOL 4330 or GEOL 5320.

GEOL 5322. GLOBAL POSITIONING SYSTEM. 3 Hours.

Review of the NAVSTAR Global Positioning System and its segments: space, operational control, and GPS receivers. Mechanics of the satellite constellation; GPS signal structure; data and coordinate systems; precision and accuracy; error factors; absolute (point) versus relative (differential) positioning. Various positioning techniques using several types of GPS receivers; field data collection and input into GIS programs for data analysis and presentation. Prerequisite: GEOL 4330 or GEOL 5320.

GEOL 5323. REMOTE SENSING FUNDAMENTALS. 3 Hours.

The electromagnetic spectrum and the interaction of EM waves with matter; various types of sensing devices; spectral and spatial resolution parameters; airborne and satellite sensor platforms; aerial photographs and false-color images. The sequence of data acquisition, computer processing and interpretation; sources of data; the integration of remote sensing data with other data types in GIS. Prerequisite: GEOL 4330 or GEOL 5320.

GEOL 5324. GEOGRAPHIC DATA ANALYSIS PROJECT. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with the approval of the instructor. A written report of the results is required. Offered as GEOL 5324 and GEOG 5334. Credit will not be given for both. Prerequisite: For GEOL 5324: GEOL 5320.

GEOL 5332. STABLE ISOTOPE GEOCHEMISTRY. 3 Hours.

Principals governing the fractionation and distribution of stable isotopes (C, H, N, O, S) in nature, and application of stable isotope geochemistry to environmental problems and global climate change.

GEOL 5333. FIELD METHODS. 3 Hours.**GEOL 5334. ANALYTICAL METHODS IN ENVIRONMENTAL SCIENCE. 3 Hours.**

Principals of geochemical analysis of waters, rocks and soils, and gases. Methods to be covered include x-ray fluorescence and diffraction, mass spectrometry, coulometry, inductively-coupled plasma, and gas/ion chromatography with various detection methods.

GEOL 5335. ISOTOPES AND TECTONICS. 3 Hours.

An Introduction to the fundamentals of clumped isotopes, and major radiogenic and cosmogenic isotope systems and their applications to the study of earth system processes and Earth history; emphasis will be placed on applications to tectonics, geochronology, and thermochronology. Prerequisite: CHEM 1442 or GEOL 4302.

GEOL 5342. MICROFOSSILS AND CARBONATE ROCKS. 3 Hours.

Half of this course consists of an introduction to microfossil groups occurring in sedimentary rocks: foraminifers, conodonts, coccolithophorids and others, and their usefulness in regional and global correlation of Phanerozoic strata. The biostratigraphy of these groups will be discussed along with the principles used in the correlation of sedimentary rocks. The other half of the course consists of the analysis of the lithofacies and biofacies of carbonate rocks, their genesis, depositional environments, and diagenesis. Prerequisite: GEOL 3441 and GEOL 3442 or permission of the instructor.

GEOL 5344. DEPOSITIONAL ENVIRONMENTS: TERRIGENOUS CLASTICS. 3 Hours.

Depositional processes, physiographic and environmental components, and facies characteristics and relationships of alluvial, eolian, deltaic, clastic shoreline, shallow siliciclastic sea and deep sea clastic depositional systems. Emphasis on interpretation of ancient analogs. Prerequisite: GEOL 3442.

GEOL 5345. PETROLEUM GEOLOGY. 3 Hours.

Origin, generation and migration of petroleum; reservoirs, seals and traps; the subsurface environment; properties of petroleum; exploration and production methods; use of seismic lines and well logs; types of petroleum basins; reserves and resources. Prerequisite: GEOL 3442 and GEOL 3443.

GEOL 5348. MARINE GEOLOGY AND GEOCHEMISTRY. 3 Hours.

Geologic and geochemical processes of the oceans. Chemistry of seawater; geochemical and biogeochemical cycles; carbonate sediment production.

GEOL 5351. ENERGY RESOURCES FOR GEOSCIENTISTS. 3 Hours.

The course will review critical knowledges of minerals, rocks, stratigraphy, surface processes, geophysics, geochemistry, structures and tectonics, and connect these aspects of Earth system with Earth's six energy components: hydrocarbon, critical minerals, geothermal energy, CO2 sequestration, waste management, and green energies. Prerequisite: GEOL 1301, GEOL 3340, or cons. inst.

GEOL 5365. TOPICS IN GEOLOGY. 3 Hours.

Topics offered depend on student and faculty interest. Such topics might include identification of fossil fragments in thin section; magmatic processes; plate tectonics and sedimentary basin evolution; stratigraphic paleontology; sedimentary or volcanogenic ore deposition; geostatistics; geophysical archeology; and various advanced subjects in sedimentology, stratigraphy, paleontology, geophysics, geochemistry, volcanology and petrology. May be repeated for credit when topic changes.

GEOL 5367. PALEO EARTH SYSTEMS. 3 Hours.

This course discusses the evolution of Earth's complex dynamic system that is controlled by feedback processes that are both non-linear and stochastic in nature. Prerequisite: GEOL 1301.

GEOL 5368. GEOLOGY OF THE PERMIAN BASIN. 3 Hours.

Overview of the geologic evolution of the Permian Basin of W Texas and SE New Mexico and its petroleum resources. Emphasis on student presentations and term paper.

GEOL 5369. SEQUENCE STRATIGRAPHY. 3 Hours.

This course introduces sequence stratigraphy within context of all stratigraphy and history of sequence stratigraphy. Includes overview of sequence stratigraphy principles. Review of basic fundamental concepts of surface- and facies-based physical stratigraphy. Review of architectural element analysis, sequence stratigraphic in seismic, borehole expression of sequences and overview of subsurface stratigraphic techniques. Prerequisite: GEOL 3442.

GEOL 5370. SEDIMENTARY SYSTEMS. 3 Hours.

Carbonate and clastic depositional systems, recognition of facies, systems tracts, diagenetic overprint, shelf to basin profiling, and sequence stratigraphic analysis.

GEOL 5371. BASIN ANALYSIS. 3 Hours.

Topics include: the classification and characteristics of sedimentary basins and the mechanisms forming them; and the tectonic, climatic, and eustatic controls on basin subsidence and the basin fill. Applications include the influence of basin evolution on petroleum generation, migration, and accumulation. Prerequisite GEOL 3442 (Sedimentology and Stratigraphy).

GEOL 5372. STRUCTURAL GEOMETRY AND TECTONICS OF PETROLEUM FIELDS. 3 Hours.

Structural styles of thin-skinned, basement involved and reactivated systems in shortening, extensional and strike-slip deformation. Use of structural modeling and restoration methods to test the reliability of structural interpretations. Prerequisite: GEOL 3443.

GEOL 5373. RESERVOIR CHARACTERIZATION. 3 Hours.

Principles, protocols, analysis and measurement of petrophysical properties (e.g., fluid content, porosity, permeability, pore size distribution, water retention curve, imbibition) of petroleum reservoir rocks.

GEOL 5374. SEISMIC INTERPRETATION. 3 Hours.

Introduction to the methods of acquisition and processing as they relate to the interpretation of seismic records. Structural and stratigraphic interpretation methods and pitfalls using two and three dimensional seismic data. Introduction to Seismic Interpretation Software such as the Kingdom Suite from Seismic Micro Technology, Inc. Prerequisite: GEOL 3442 and GEOL 3443.

GEOL 5375. INTRODUCTION TO WELL LOG INTERPRETATION AND MAPPING. 3 Hours.

Introduction to the various types of well logs used in the petroleum industry and their petrophysical interpretations, including evaluations of porosity, water saturation, shale volume, permeability, and lithology. Introduction to techniques of contouring data and use of mapping software such as PETRA. Prerequisite: GEOL 3442.

GEOL 5381. RESEARCH IN GEOLOGY. 3 Hours.

Independent study in various areas of research including paleontology, stratigraphy, tectonics, structural geology, sedimentology, geochemistry, petrology, geophysics, and volcanology. May be repeated for credit. Graded R.

GEOL 5395. MASTER'S PROJECT. 3 Hours.

May be used as elective for students in non-thesis program. Graded F,P,R,W. Prerequisite: GEOL 1301 or equivalent course.

GEOL 5398. THESIS. 3 Hours.

Graded F, R.

GEOL 5405. METEOROLOGY AND CLIMATOLOGY. 4 Hours.

A quantitative approach to the study of the structure, energy, and motions of the atmosphere.

GEOL 5409. APPLIED GEOPHYSICS. 4 Hours.

Geophysical Techniques used to determine the presence and extent of deposits of minerals and the subsurface structure of selected localities from field methods.

GEOL 5421. GEOCHRONOLOGY. 4 Hours.

Introduction to dating techniques, applied to understand past climate and tectonics. Prerequisite: GEOL 1301 or equivalent.

GEOL 5425. PALEOCLIMATE AND CLIMATE CHANGE. 4 Hours.

Climate change throughout geologic time, especially the last 100 million years: models of the climate system, reconstruction and modeling of past climates, abrupt climate change, warm climates, paleoclimatology, climate change and mass extinctions.

GEOL 5428. HYDROGEOLOGY. 4 Hours.

Hydrologic cycle, Darcy's law, hydraulic properties, aquifer types and materials, groundwater flow to wells, fracture flow, vadose zone flow, groundwater chemistry, and groundwater modeling; a term paper about the relevant topics covered in the class is required. Prerequisite: GEOL 2446, MATH 2425.

GEOL 5450. CONTAMINANT HYDROGEOLOGY. 4 Hours.

Sources and types of organic and inorganic contaminants; the physical, chemical, and biological factors and processes that affect the transport and fate of contaminants in the subsurface; non-aqueous phase liquids and multiphase flow; and various remedial techniques of contaminated sites.

GEOL 5454. STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of statistics and helps students apply statistics to analyze data and interpret results from the perspective of Earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in Earth and environmental sciences. Offered as EVSE 5454 and GEOL 5454. Credit will not be given for both.

GEOL 5455. MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS. 4 Hours.

This course is designed to introduce the process principles that govern contaminant transport and transformations in multimedia environments. This course will cover application of fate and transport models to evaluate pollutant interactions with the biosphere, particularly in the context of human exposure modeling and health risk assessment. Offered as EVSE 5455 and GEOL 5455. Credit will not be given for both.

GEOL 5456. ENVIRONMENTAL RISK ASSESSMENT. 4 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization. Offered as EVSE 5456 and GEOL 5456, credit will not be given for both.

GEOL 5465. PHYSICAL OCEANOGRAPHY AND LIMNOLOGY. 4 Hours.

An introduction to physical processes in lakes and oceans. Changes in lakes and oceans influence heat, and momentum fluxes at the aquatic/oceanic and atmospheric interface. Topics include ocean/lake structure and circulation, and the impact of global climate change on lakes and oceans. Field excursions to nearby lakes combine theoretical knowledge and field measurements. Prerequisite: PHYS 1441 or PHYS 1443; and MATH 2425.

GEOL 5698. THESIS. 6 Hours.

Graded F, P, R.

Earth and Environmental Sciences - Graduate Programs

Program Objectives

The MS in Earth and Environmental Sciences has four options: an Environmental Science Option; a Geoscience Option; a Professional Environmental Science Option; and a Petroleum Geoscience Option.

The Environmental Science Option provides graduate students with an integrated, multidisciplinary education, requiring a breadth of understanding and mastery of a spectrum of scientific and engineering principles. The thesis option, designed for those interested in an in-depth experience in some particular topic, and a non-thesis option are available. All new students are admitted into the non-thesis option. During the first year, students may transfer to the thesis option after obtaining a faculty thesis supervisor. A thesis supervisor is not guaranteed.

The Geoscience Option is a two year program with specializations in stratigraphy, petrology, paleontology, sedimentology, structural geology, Geomechanics, plate tectonics, computer modeling, hydrology, geochemistry and paleoclimatology. Students in this program are prepared for additional graduate work at the PhD level, or for positions in industry and government. Thesis or non thesis options are available. However, all new students are admitted into the non-thesis option. During the first year, students may transfer to the thesis option after obtaining a faculty thesis supervisor. A thesis supervisor is not guaranteed.

The Environmental Science Professional Option is a Professional Master's Degree for those interested in a career in Environmental Science. Instead of a thesis, students participate in a mentoring program, take a course in project economics, work as an intern or in a part time job in the Environmental Science Profession, and course experiences involving business ethics, teamwork, a small research project, and communication. This is a non thesis program.

The Petroleum Geoscience Professional Option is a Professional Masters Degree for those interested in a career in the Petroleum Industry. In addition to core geology courses, students are required to participate in a networking program with industry professionals, work as an intern or in a part time job in petroleum geoscience, take a course in project economics, and participate in course activities that emphasize business ethics, teamwork and communications. A thesis research project is required. All students are initially admitted to the Geoscience non-thesis option. During the first year, students may transfer to the Petroleum Geoscience option after obtaining a faculty thesis supervisor. A thesis supervisor is not guaranteed.

The PhD in Earth and Environmental Sciences. The program leading to the Doctor of Philosophy degree in Earth and Environmental Sciences is designed primarily to prepare doctoral-level students for research careers in industry, government or academic institutions. Students carry out independent research and acquire practical knowledge of the type of research conducted and the constraints (both practical and philosophical) under which such research is conducted. The areas of research are interdisciplinary using the Earth's environment, interpreted broadly, as the theme. Research normally comes from the disciplines of Geoscience, Biology, Chemistry and Engineering, but contributions from other disciplines are welcome. The program is designed to provide graduate students an integrated, multidisciplinary education, requiring a breadth of understanding and mastery of a spectrum of scientific and engineering principles. Among the goals is to provide students who have earned engineering or science undergraduate degrees a common ground for interdisciplinary communication, an understanding of the environment, and competence in a research area that will enable them to evaluate complex environmental problems.

Admission

Students applying for MS or PhD degrees should apply to the Graduate School for regular admission to a particular degree program at <http://www.uta.edu/admissions/graduate/index.php>. (<http://www.uta.edu/admissions/graduate/>)

CATEGORIES OF ADMISSION

Unconditional - all the admission criteria are met and there are no conditions placed on continued enrollment in the program.

Probationary - Applicants who do not meet the standards for unconditional admission may be considered for probationary admission after careful examination of their application materials. Probationary admission normally requires that the applicant receive a B or better in their first 12 hours of graduate coursework at UT Arlington, and/or make up undergraduate deficiencies.

Deferred and Provisional Admission - A deferred admission may be granted when an application is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but whom otherwise appears to meet admission requirements may be granted provisional admission.

INTERNATIONAL STUDENTS

An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies. Applicants must submit a score of at least 550 on the paper-based TOEFL, a score of at least 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section to.

An applicant holding either a bachelor's or a master's degree from a regionally accredited U.S. college or university is not required to submit a TOEFL, TOEFL iBT, TSE or IELTS score for admission purposes. Any other waivers of the score requirements must be recommended by the applicant's Graduate Advisor and approved by the Dean of Graduate Studies.

FINANCIAL AID

Students that are unconditionally admitted into the MS or PhD programs can also apply for available scholarships and/or Graduate Teaching Assistantships. Award of scholarships or Assistantships will be based on consideration of the same criteria utilized in admission decisions. To be eligible, candidates must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 9 hours of coursework in both long semesters to retain their Financial Aid. To be eligible for a Graduate Teaching Assistantship, a non-native English speaker must receive a TOEFL iBT score of at least 23, or an IELTS score of at least 7 on the speaking section of those exams. Applications Scholarships or Teachings Assistantships must be submitted over the internet at <https://uta.academicworks.com/>. (<https://uta.academicworks.com/>) Deadline is March 1st for the following academic year starting in August.

DENIAL OF ADMISSION

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

Earth and Environmental Sciences Master's Program Admissions

For unconditional admission a student must meet the following requirements:

For the Environmental Science Options: A B.S. degree in biology, chemistry, geoscience, mathematics, or engineering with the following courses or their equivalent: 1 semester of introductory physics for science majors; 2 semesters of introductory chemistry for science majors; and Calculus I and II. Students with a Bachelor's Degree in other sciences will also be considered, subject to satisfactory completion of deficiency courses.

For the Geoscience Options: A B.S. degree in an Earth Science discipline with the following courses or their equivalent: Mineralogy, Petrology, Structure, Stratigraphy/sedimentology, Field Geology and Geophysics or Paleontology. In addition, one semester of Biology, Calculus I and II, and a year of Chemistry and Physics is required.

For all Options:

1. A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School.
2. Graduate Record Examination (GRE) scores are used in conjunction with GPA's. For example a person with a GPA below 3.0 will need a GRE score better than average. Masters students who have succeeded in the Earth and Environmental Sciences Program typically score higher than the 60th Percentile on the verbal and quantitative portion of the GRE.
3. An applicant whose native language is not English must submit a score of at least 550 on the paper-based TOEFL, a score of at least 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed 22 for the writing section, 21 for the speaking section, 20 for the reading section, and 16 for the listening section. However, an applicant whose native language is not English with a bachelor's or a master's degree from a regionally accredited U.S. college or university is not required to submit a TOEFL, TOEFL iBT, TSE or IELTS score for admission purposes.
4. Favorable letters of recommendation from people familiar with the applicant's academic work.

Master's Degree Requirements

Earth and Environmental Sciences Master's Degree

THERE ARE ADDITIONAL REQUIREMENTS FOR ALL MASTER'S PROGRAMS LISTED IN THIS CATALOG UNDER UNIVERSITY REQUIREMENTS AND POLICIES.

Environmental Science Thesis Option

Core Courses

General core courses		7
EVSE 5303	SUSTAINABILITY ISSUES SEMINAR III	
EVSE 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	
Select one of the following engineering courses		3
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
CE 5319	PHYSICAL-CHEMICAL PROCESSES II	
or CE 5328	FUNDAMENTALS OF AIR POLLUTION	
Select one of the following science courses		3
EVSE 5309	ENVIRONMENTAL SYSTEMS-BIOLOGICAL ASPECTS ¹	
EVSE 5310	ENVIRONMENTAL SYSTEMS-CHEMICAL ASPECTS ¹	

EVSE 5311	ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS ¹	
Select one of the following in City, or Regional Planning:		3
PLAN 5342	ENVIRONMENTAL POLICY	
PLAN 5343	FOUNDATIONS OF ENVIRONMENTAL POLICY	
PLAN 5351	TECHNIQUES OF ENVIRONMENTAL ASSESSMENT	
Electives within one of the following departments: Biology, Chemistry, Earth and Environmental Sciences, Civil and Environmental Engineering, or Urban and Public Affairs		6
Two semesters of GEOL 5199 or EVSE 5199 - Seminar		2
EVSE 5698	THESIS	6
Total Hours		30

¹ Students with less than 20 undergraduate hours in biology, chemistry, or geology will need to take a third environmental systems course as a deficiency. Students entering with a BS degree in one of these areas must take their two courses in the other areas.

Environmental Science Non-Thesis Option

Core Courses

General core courses		7
EVSE 5303	SUSTAINABILITY ISSUES SEMINAR III	
EVSE 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	
Select one of the following engineering courses		3
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
CE 5319	PHYSICAL-CHEMICAL PROCESSES II	
or CE 5328	FUNDAMENTALS OF AIR POLLUTION	
Select one of the following in science:		3
EVSE 5309	ENVIRONMENTAL SYSTEMS-BIOLOGICAL ASPECTS ¹	
EVSE 5313	ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS ¹	
EVSE 5311	ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS ¹	
Select one of the following in City and Regional Planning		3
PLAN 5305	LAND USE, MANAGEMENT AND DEVELOPMENT	
PLAN 5316	LAND USE PLANNING AND THE LAW	
PLAN 5352	ENVIRONMENT ASSESSMENT POLICY & PRACTICE	
Electives within one of the following departments: Biology, Chemistry, Earth and Environmental Sciences, Civil and Environmental Engineering, or Urban and Public Affairs		9
EVSE Seminar		2
Two semesters of GEOL 5199 or EVSE 5199		
EVSE 5395	MASTER'S PROJECT	3
Successful completion of the Master's Comprehensive Examination in the final semester		
Total Hours		30

¹ Students with less than 20 undergraduate hours in biology, chemistry, or geology will need to take a third environmental systems course as a deficiency. Students entering with a BS degree in one of these areas must take their two courses in the other areas.

² Must include at least 6 hours in department(s) outside that in which the first 9 hours of electives are taken.

The Geoscience Thesis Option

Core Courses

GEOL 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
Select one of the following in engineering (or advisor approved):		3
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
IE 5304	ADVANCED ENGINEERING ECONOMY	
take two hours in the following seminar:		2
GEOL 5199	TECHNICAL SESSIONS	
Advisor Approved Electives		15

GEOL 5698	THESIS	6
Total Hours		30

The Geoscience Non-Thesis Option

Core Courses

GEOL 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
Select one of the following in engineering (or advisor approved):		3
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
IE 5304	ADVANCED ENGINEERING ECONOMY	
take two hours in the following seminar:		2
GEOL 5199	TECHNICAL SESSIONS	
Advisor Approved Electives		18
GEOL 5395	MASTER'S PROJECT	3
Total Hours		30

Environmental Science Professional Option

EVSE 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
Engineering Courses		6
CE 5321	ENGINEERING FOR ENVIRONMENTAL SCIENTISTS	
IE 5304	ADVANCED ENGINEERING ECONOMY	
Select one of the following in science:		3
EVSE 5309	ENVIRONMENTAL SYSTEMS-BIOLOGICAL ASPECTS ¹	
EVSE 5311	ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS ¹	
EVSE 5313	ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS ¹	
Select one of the following in City and Regional Planning:		3
PLAN 5305	LAND USE, MANAGEMENT AND DEVELOPMENT	
PLAN 5316	LAND USE PLANNING AND THE LAW	
PLAN 5352	ENVIRONMENT ASSESSMENT POLICY & PRACTICE	
Professional Courses		
Take each of the following courses:		
EVSE 5120	ENVIRONMENTAL PROFESSIONAL MENTORING & BUSINESS ETHICS	1
EVSE 5199	SEMINAR IN ENVIRONMENTAL & EARTH SCIENCES	1
Select one of the following courses:		3
EVSE 5315	PROFESSIONAL EXPERIENCE	
EVSE 5395	MASTER'S PROJECT	
Other Electives		
Electives within one of the following departments: Biology, Chemistry, Earth and Environmental Sciences, Civil and Environmental Engineering, or Urban and Public Affairs		9
Successful completion of the Master's Comprehensive Examination in final semester.		
Total Hours		30

¹ Students with less than 20 undergraduate hours in biology, chemistry, or geology will need to take a third environmental systems course as a deficiency. Students entering with a BS degree in one of these areas must take their two courses in the other areas.

Energy Geoscience Professional Option

Professional Courses		10
GEOL 5454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	
GEOL 5180	PROFESSIONAL ORIENTATION AND BUSINESS ETHICS	
or GEOL 5199	TECHNICAL SESSIONS	
or GEOL 5190	GEOSCIENCE INTERNSHIP	
GEOL 5151	TOPICS IN ENERGY AND EARTH RESOURCES	
GEOL 5351	ENERGY RESOURCES FOR GEOSCIENTISTS	

Three of the following geoscience courses:		9
GEOL 5342	MICROFOSSILS AND CARBONATE ROCKS	
GEOL 5370	SEDIMENTARY SYSTEMS	
GEOL 5371	BASIN ANALYSIS	
GEOL 5373	RESERVOIR CHARACTERIZATION	
GEOL 5374	SEISMIC INTERPRETATION	
GEOL 5375	INTRODUCTION TO WELL LOG INTERPRETATION AND MAPPING	
Two of the following electives:		8
GEOL 5450	CONTAMINANT HYDROGEOLOGY	
GEOL 5405	METEOROLOGY AND CLIMATOLOGY	
GEOL 5428	HYDROGEOLOGY	
GEOL 5465	PHYSICAL OCEANOGRAPHY AND LIMNOLOGY	
EVSE 5458	MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS	
GEOL 5395	MASTER'S PROJECT	3
Total Hours		30

DUAL DEGREE PROGRAM

Dual master's degrees can be arranged with any suitable program. By participating in a dual degree program, students may apply 6-18 total semester credit hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately. The number of hours which may be jointly applied ranges from six to 18, subject to the approval of Graduate Advisors from both programs. Degree plans, thesis or professional report proposals and programs of work must be approved by Graduate Advisors from both programs. The successful candidate will be awarded both degrees rather than one joint degree.

To participate in the dual degree program, students must make separate application to each program and must submit a separate program of work for each degree. Those interested in the dual degree program should consult the appropriate Graduate Advisors for further information on course requirements. See also the statement on Dual Degree Programs in the general information section of this catalog.

Arrangements to offer a dual degree have already been made between Earth and Environmental Sciences and the Program in City and Regional Planning (M.C.R.P. degree), School of Urban and Public Affairs.

Admission Requirements

For unconditional admission a student must meet the following requirements:

1. A Masters Degree or at least 30 hours of graduate coursework in environmental science, biology, chemistry, geology, mathematics or engineering. Students with a Bachelor's degree in biology, chemistry, geology, mathematics, or engineering will be considered for the B.S. to Ph.D. track if they meet the other requirements for admission to doctoral studies. Students with a Bachelor's Degree in other sciences will also be considered, subject to satisfactory completion of courses to make up deficiencies.
2. A minimum graduate coursework GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School.
3. Graduate Record Examination (GRE) scores are considered in admission decisions. Doctoral students who have succeeded in the Earth and Environmental Sciences Program typically score higher than the 60th percentile the verbal and the quantitative portion of the GRE.
4. For applicants whose native language is not English, a minimum score of 550 on the Test of English as a Foreign Language (or an equivalent score on a computer-based test) or a score of 40 on the Test of Spoken English.
5. Favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.
6. A statement must be submitted to the program detailing the applicant's specific research interests and identifying the faculty member who is requested as supervisor of the dissertation research.
7. Students may be considered for unconditional admission if further review of their transcripts, recommendation letters, correspondence or direct interactions with Earth and Environmental Sciences faculty, and statement of research interests indicates that they are qualified to enter the Doctoral Program.

Doctoral Degree Requirements

EARTH AND ENVIRONMENTAL SCIENCES DOCTORAL DEGREE

The Doctoral Program provides students with the interdisciplinary knowledge and skills to conduct independent research in Earth and Environmental Sciences. Students conduct dissertation research under the supervision of a faculty member in one of the participating departments (Biology, Chemistry, Earth and Environmental Sciences, Civil and Environmental Engineering, or Urban and Public Affairs). The supervising professor and a faculty committee assign courses in this primary area of emphasis to support the student's research and professional goals. To provide interdisciplinary training, additional courses are assigned in a secondary area of emphasis.

If they have not already done so in their previous work, all Doctoral students must take one engineering course; two science courses; and one course in policy or planning.

Students who enter the Doctoral Program with a Master's degree in a science or engineering field, or with 30 semester hours of graduate coursework, take a Diagnostic Examination In the first year of residence to evaluate this previous work. The student's supervising committee must approve all courses taken to meet degree requirements.

Students who enter the Doctoral Program with a Bachelor's degree take 30 semester hours of graduate coursework that includes Engineering, Science and Public Policy courses. These students are encouraged to take the diagnostic exam in their first year of enrollment. The student's supervising committee must approve all courses taken to meet degree requirements.

Students may choose among any of the five participating units for their primary and secondary areas of emphasis. Course selection within these areas of emphasis is guided by the student's supervising committee and must result in a cohesive program that supports the dissertation research.

Other requirements include:

1. Successful completion of the Diagnostic Examination at the end of the first year of residence.
2. Successful completion of the Comprehensive Examination, an oral defense of a research proposal to be pursued for the dissertation, and a specialization examination over areas of the student's proposed research.
3. Demonstration of proficiency in one foreign language or a research tool such as advanced computer skills, statistics, or operations research.
4. Successful defense of the dissertation and acceptance of the dissertation by the supervising committee.

Earth and Environmental Sciences - Undergraduate Programs

Academic Advising: 107 Life Science Building • 817.272.9685

Degree Programs

BACHELOR OF SCIENCE IN GEOLOGY

This degree has three options:

1. The **Professional Option** is for students who plan to enter the profession or go to graduate school but are uncertain where they want to concentrate. The program emphasizes breadth and exposes students to most of the geological disciplines.
2. The **Environmental Science Option** emphasizes the application of earth science to environmental problems associated with the hydrosphere, atmosphere and natural hazards.
3. The **Engineering Geology Option** is for students who are interested in combining Geology with Civil Engineering coursework to work with engineering firms on construction and environmental problems.

BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

This degree emphasizes on interdisciplinary training related to environmental sciences and is designed for students who plan to enter the profession or go to graduate school.

BACHELOR OF ARTS IN GEOLOGY

This degree has three options:

1. The **General Option** is for students who want to combine Geology with other professional interests.
2. The **Geographic Information Systems Option** is for students who want to combine Geology with computer technology to store and analyze spatial data using GIS software.
3. The **Composite Science Teacher Certification Option** is for students who want teacher certification, and it is offered through the UTeach program.

Requirements for a Bachelor of Science in Geology - Professional Option

This degree is for students who plan to enter the profession or go to graduate school. The program emphasizes breadth and exposes students to most of the geological disciplines.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1441 or PHYS 1443	GENERAL COLLEGE PHYSICS I GENERAL TECHNICAL PHYSICS I	4
PHYS 1442 or PHYS 1444	GENERAL COLLEGE PHYSICS II GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - pass oral presentation requirement in GEOL 3441 or GEOL 3443, or complete COMS 1301, COMS 2302, or other equivalent course

Computer Competence - pass Computer Skills Placement test or any computer-related course such as:

GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	
PROFESSIONAL COURSES		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
Select either GEOL 3454 or MATH 3316		3
GEOL 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	
MATH 3316	STATISTICAL INFERENCE	
MINOR: 18 or more hours as required for Biology, Chemistry, Mathematics, or Physics		10
MAJOR		
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
GEOL 2445	MINERALOGY	4
GEOL 3446	PETROLOGY AND GEOCHEMISTRY	4
GEOL 3441	BIOSTRATIGRAPHY AND LIFE THROUGH TIME	4
GEOL 3442	SEDIMENTOLOGY AND STRATIGRAPHY	4
GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 3387	FIELD GEOLOGY I	3
GEOL 3388	FIELD GEOLOGY II	3
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	
GEOL 4000-level elective (4 hours) (can not be GEOL4331, 4333, 4334, and 4354):		8
General Elective(s)		4
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		116

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Earth and Environmental Sciences undergraduate advisor, particularly since many GEOL courses are not offered every semester. Students should also consult with the appropriate department for minor requirements; Biology minors should consult with the Earth and Environmental Sciences undergraduate advisor.

First Year					
	First Semester	Hours	Second Semester	Hours	
	UNIV 1131		1 GEOL 1302	3	
	GEOL 1301	3	MATH 2425	4	
	MATH 1426	4	ENGL 1302	3	
	ENGL 1301	3	CHEM 1442	4	
	CHEM 1441	4			
	15		14		
Second Year					
	First Semester	Hours	Second Semester	Hours	
	BIOL 1441		4 PHYS 1442	4	
	POLS 2311	3	POLS 2312	3	
	PHYS 1441	4	Creative Arts*	3	
	GEOL 2445	4	Minor Course**	4	
	15		14		
Third Year					
Summer Session	Hours	First Semester	Hours	Second Semester	Hours
GEOL 3387	3	GEOL 3441	4	GEOL 3442	4
GEOL 3388	3	GEOL 3443	4	minor course**	3
		GEOL 4330	3	GEOL 3446	4
		HIST 1301	3	HIST 1302	3
	6		14		14
Fourth Year					
	First Semester	Hours	Second Semester	Hours	
	Additional 4000 level Geology elective		4 Foundational Component Area*	3	

minor course **	3 Approved Geol 4000 level courses	8
Language, Philosophy and Culture *	3	
Social/Behavioral Science *	3	
GEOL 3454	4	
17	11	

Total Hours: 120

* See General Core Requirements (p. 50) for approved courses.

** Actual number of courses/hours and course sequence determined by appropriate department.

Requirements for a Bachelor of Science in Geology - Environmental Science Option

This degree emphasizes the application of earth science to environmental problems associated with the hydrosphere, atmosphere and natural hazards.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
or PHYS 1443	GENERAL TECHNICAL PHYSICS I	
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
or PHYS 1444	GENERAL TECHNICAL PHYSICS II	
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - pass oral presentation requirement in GEOL 3443 or complete COMS 1301, COMS 2302, or other equivalent course

Computer Competence - satisfied by GEOL 4330

PROFESSIONAL COURSES

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4

Select either GEOL 3454 or MATH 3316

MINOR: 18 or more hours as required by the department of Biology or Chemistry and Biochemistry		10
GEOL 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
MAJOR		
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
GEOL 2445	MINERALOGY	4
GEOL 3446	PETROLOGY AND GEOCHEMISTRY	4
GEOL 3442	SEDIMENTOLOGY AND STRATIGRAPHY	4
GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 3387	FIELD GEOLOGY I	3
GEOL 3388	FIELD GEOLOGY II	3

ENVR 4313	ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS	3
ENVR 3457	ENVIRONMENTAL ANALYTICAL CHEMISTRY	4
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 4000-level elective (4 hours):		
GEOL 4405	METEOROLOGY AND CLIMATOLOGY	4
or GEOL 4420	HYDROGEOLOGY	
or GEOL 4465	PHYSICAL OCEANOGRAPHY AND LIMNOLOGY	
or ENVR 4455	MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS	
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		6
Total Hours		121

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Earth and Environmental Sciences undergraduate advisor, particularly since many GEOL courses are not offered every semester. Biology minors should consult with the Earth and Environmental Sciences undergraduate advisor for minor requirements, and Chemistry minors should consult with the Chemistry and Biochemistry undergraduate advisor for minor requirements.

First Year					
	First Semester	Hours	Second Semester	Hours	
	UNIV 1131		1 GEOL 1302		3
	GEOL 1301	3	MATH 2425		4
	MATH 1426	4	ENGL 1302		3
	ENGL 1301	3	CHEM 1442		4
	CHEM 1441	4			
	15		14		
Second Year					
	First Semester	Hours	Second Semester	Hours	
	HIST 1301		3 PHYS 1442		4
	BIOL 1441	4	HIST 1302		3
	PHYS 1441	4	Minor Course**		4
	GEOL 2445	4	Creative Arts		3
	15		14		
Third Year					
Summer Session	Hours	First Semester	Hours	Second Semester	Hours
GEOL 3387	3	GEOL 3443	4	GEOL 3442	4
GEOL 3388	3	GEOL 3454	4	GEOL 4330	3
		Minor Course**	3	GEOL 3446	4
		POLS 2311	3	POLS 2312	3
	6		14		14
Fourth Year					
	First Semester	Hours	Second Semester	Hours	
	ENVR 4313		3 ENVR 3457		4
	GEOL 4405, 4420, 4465, or 4455	4	minor course **		4
	minor course **	3	Foundational Component Area *		3
	Social/Behavioral Science *	3	Additional electives (3000/4000-level)		1-2
			Language, Philosophy, and Culture		3
	13		15-16		
Total Hours: 120-121					

* See General Core Requirements (p. 50) for approved courses.

** Actual number of courses/hours and course sequence determined by appropriate department.

Requirements for a Bachelor of Science in Geology - Geology Engineering Option

This degree is for students who are interested in combining Geology with Civil Engineering coursework to work with engineering firms on construction and environmental problems.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - pass oral presentation requirement in GEOL 3443 or complete COMS 1301, COMS 2302, or other equivalent course

Computer Competence - satisfied by GEOL 4330

PROFESSIONAL COURSES

CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CE 2311	STATICS	3
CE 2221	DYNAMICS	2
CE 2313	MECHANICS OF MATERIALS I	3
12 hours of 3000 and 4000 level advisor approved Civil Engineering courses plus prerequisites		12
MAJOR		
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
GEOL 2445	MINERALOGY	4
GEOL 3442	SEDIMENTOLOGY AND STRATIGRAPHY	4
GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 3387	FIELD GEOLOGY I	3
GEOL 3388	FIELD GEOLOGY II	3
GEOL 4420	HYDROGEOLOGY	4
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 4352	ANALYTICAL METHODS IN GEOCHEMISTRY	3
GEOL, ENVR, DATA, CE, ENGR Elective(s) as needed to total 120 hours for degree		11

36 hours of coursework must be advanced (3000/4000-level) to earn degree.

Total Hours 120

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Earth and Environmental Sciences undergraduate advisor, particularly since many GEOL courses are not offered every semester.

First Year

	First Semester	Hours	Second Semester	Hours
	UNIV 1131		1 PHYS 1443	4
	GEOL 1301	3	GEOL 1302	3
	MATH 1426	4	MATH 2425	4
	CHEM 1441	4	ENGL 1302	3
	ENGL 1301	3		
	15		14	

Second Year

	First Semester	Hours	Second Semester	Hours
	MATH 2326		3 CHEM 1442	4
	PHYS 1444	4	CE 2313	3
	CE 2311	3	CE 2221	2
	HIST 1301	3	HIST 1302	3
			Social/Behavior Science	3
	13		15	

Third Year

Summer Session	Hours	First Semester	Hours	Second Semester	Hours
GEOL 3387	3	GEOL 3443	4	GEOL 3442	4
GEOL 3388	3	Advisor Approved CE, DATA, or MATH Electives	3	Advisor Approved CE, DATA, or MATH elective	6
		POLS 2311	3	POLS 2312	3
		GEOL 2445	4		
	6		14		13

Fourth Year

	First Semester	Hours	Second Semester	Hours
	GEOL 4420		4 GEOL 4330	3
	GEOL 4352		3 Foundational Component Area *	3
	Advisor Approved GEOL, ENVR, DATA, CE electives	10	General Elective	1
			Advisor Approved CE or MATH Electives	6
	17		13	

Total Hours: 120

* See General Core Requirements (p. 50) for approved courses.

Requirements for a Bachelor of Science in Environmental Science

This degree is designed for students who plan to work in the environmental and sustainability sectors.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES**RECOMMENDED CORE REQUIREMENTS**

UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443 or PHYS 1441	GENERAL TECHNICAL PHYSICS I GENERAL COLLEGE PHYSICS I	4
PHYS 1444 or PHYS 1442	GENERAL TECHNICAL PHYSICS II GENERAL COLLEGE PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundation Component Area		3

Computer Competence - pass Computer Skills Placement test or any computer-related course:		3
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	
PROFESSIONAL COURSES		
ENVR 3454	STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS	4
MAJOR		
ENVR 1301	INTRODUCTION TO ENVIRONMENTAL SCIENCE	3
ENVR 1330	GLOBAL WARMING	3
or GEOL 1340	WEATHER AND CLIMATE	
ENVR 2414	THE GLOBAL ENVIRONMENT AND HUMAN HEALTH	4
ENVR 3387	ENVIRONMENTAL SCIENCE FIELD METHODS	3
ENVR 4303	TOPICS IN SUSTAINABILITY	3
ENVR 4313	ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS	3
ENVR 4455	MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS (MODELING OF ENVR SYSTEMS)	4
ENVR 3457	ENVIRONMENTAL ANALYTICAL CHEMISTRY	4
GEOL 4323	ISSUES IN ENVIRONMENTAL HEALTH	3
GEOL 4331	ANALYSIS OF SPATIAL DATA	3
or GEOL 4332	GLOBAL POSITIONING SYSTEM	
or GEOL 4333	REMOTE SENSING FUNDAMENTALS	
or GEOL 4334	GEOGRAPHIC DATA ANALYSIS	
GEOL 4405	METEOROLOGY AND CLIMATOLOGY	4
or GEOL 4465	PHYSICAL OCEANOGRAPHY AND LIMNOLOGY	
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 3356	ENVIRONMENTAL SYSTEMS, BIOLOGICAL ASPECTS	3
or BIOL 3355	TOXICOLOGY	
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
ENVR/GEOL/DATA/CHEM/BIO ELECTIVES (10 CREDIT HOURS)		10
36 hours of coursework must be upperdivision (3000/4000 - level) to earn the degree		
Total Hours		120

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Earth and Environmental Sciences undergraduate advisor, particularly since many GEOL courses are not offered every semester.

First Year

	First Semester	Hours	Second Semester	Hours
	MATH 1426	4	BIOL 1442	4
	BIOL 1441	4	MATH 2425	4
	ENGL 1301	3	ENGL 1302	3
	ENVR 1301	3	ENVR 1330	3
	UNIV 1131	1		
	15		14	

Second Year

	First Semester	Hours	Second Semester	Hours
	HIST 1301	3	CHEM 1442	4
	CHEM 1441	4	PHYS 1442 or 1444	4
	PHYS 1441 or 1443	4	HIST 1302	3
	Social and Behavioral Sciences	3	ENVR 2414	4
	14		15	

Third Year

Summer Session	Hours	First Semester	Hours	Second Semester	Hours
ENVR 3387	3	ENVR 4313	3	POLS 2312	3

	GEOL 3454	4	GEOL 4331, 4332, 4333, or 4334	3
	GEOL 4330	3	BIOL 3356 or 3355	3
	POLS 2311	3	GEOL 4323	3
			Creative Arts*	3
	3	13		15
Fourth Year				
	First Semester	Hours	Second Semester	Hours
	GEOL 4405 or 4465		4 ENVR 4303	3
	ENVR/GEOL/DATA/BIOL/CHEM Electives (10 Credits)	10	ENVR 4455	4
	Language, Philosophy, and Culture	3	ENVR 3457	4
			Foundational Component Area	3
	17	14		

Total Hours: 120

* See General Core Requirements (p. 50) for approved courses.

Requirements for a Bachelor of Arts in Geology - General Option

This degree is for students who want to combine Geology with other professional interests.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
MATH 1421	PREPARATION FOR CALCULUS	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - pass oral presentation requirement in GEOL 3441 or GEOL 3443, or complete COMS 1301, COMS 2302, or other equivalent course

Computer Competence - pass Computer Skills Placement test or any computer-related course such as:

GEOL 4330 UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS

PROFESSIONAL COURSES

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
MINOR:	18 or more hours as required by the appropriate department	18
MAJOR		
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
GEOL 2445	MINERALOGY	4
GEOL 3441	BIOSTRATIGRAPHY AND LIFE THROUGH TIME	4
GEOL 3442	SEDIMENTOLOGY AND STRATIGRAPHY	4

GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 3446	PETROLOGY AND GEOCHEMISTRY	4
GEOL, ENVR, or DATA advanced (3000/4000-level) electives approved by the Earth and Environmental Sciences undergraduate advisor		11
General Electives		3
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		120

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Earth and Environmental Sciences undergraduate advisor, particularly since many GEOL courses are not offered every semester. Students should also consult with the appropriate department for minor requirements.

First Year

First Semester	Hours	Second Semester	Hours
GEOL 1301		3 GEOL 1302	3
MATH 1421		4 MATH 1308	3
ENGL 1301		3 ENGL 1302	3
CHEM 1441		4 CHEM 1442	4
UNIV 1131		1 Creative Arts	3
		15	16

Second Year

First Semester	Hours	Second Semester	Hours
minor course**		3 minor course**	3
PHYS 1441		4 POLS 2311	3
BIOL 1441		4 PHYS 1442	4
GEOL 2445		4 BIOL 1442	4
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
GEOL 3443		4 GEOL 3442	4
POLS 2312		3 approved GEOL, ENVR, or DATA advanced (3000/4000-level) elective	4
HIST 1301		3 GEOL 3446	4
HIST 1302		3 HIST 1302	3
General Elective		3	
		16	15

Fourth Year

First Semester	Hours	Second Semester	Hours
GEOL 3441		4 approved GEOL 4000-level elective	1
approved GEOL, ENVR, or DATA advanced (3000/4000-level) elective		3 minor course**	6
minor course**		6 Language, Philosophy and Culture	3
Social/Behavioral Science*		3 Foundational Component Area*	3
		16	13

Total Hours: 120

* See General Core Requirements (p. 50) for approved courses.

** Actual number of courses/hours and course sequence determined by appropriate department.

Requirements for a Bachelor of Arts in Geology - Geographic Information Systems Option

This degree is for students who want to combine Geology with computer technology to store and analyze spatial data using GIS software.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES**RECOMMENDED CORE REQUIREMENTS**

UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
MATH 1421	PREPARATION FOR CALCULUS	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - pass oral presentation requirement in GEOL 3441 or GEOL 3443, or complete COMS 1301, COMS 2302, or other equivalent course

Computer Competence - satisfied by GEOL 4330

PROFESSIONAL COURSES

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
MINOR: 18 hours as required by appropriate department		18
MAJOR		
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
GEOL 2445	MINERALOGY	4
GEOL 3446	PETROLOGY AND GEOCHEMISTRY	4
GEOL 3441	BIOSTRATIGRAPHY AND LIFE THROUGH TIME	4
GEOL 3442	SEDIMENTOLOGY AND STRATIGRAPHY	4
GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 4331	ANALYSIS OF SPATIAL DATA	3
GEOL 4333	REMOTE SENSING FUNDAMENTALS	3
GEOL 4334	GEOGRAPHIC DATA ANALYSIS	3

General Elective(s) **2**

36 hours of coursework must be advanced (3000/4000-level) to earn degree.

Total Hours 120

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Earth and Environmental Sciences undergraduate advisor, particularly since many GEOL courses are not offered every semester. Students should also consult with the appropriate department for minor requirements.

First Year			
First Semester	Hours	Second Semester	Hours
GEOL 1301		3 GEOL 1302	3
MATH 1324		3 MATH 1308	3
ENGL 1301		3 ENGL 1302	3

Creative Arts *		3 Language, Philosophy and Culture	3
CHEM 1441		4 CHEM 1442	4
		16	16
Second Year			
First Semester	Hours	Second Semester	Hours
GEOL 2445		4 minor course **	3
HIST 1301		3 PHYS 1442	4
PHYS 1441		4 POLS 2311	3
BIOL 1441		4 Social/Behavioral Science *	3
		HIST 1302	3
		BIOL 1442	4
		15	20
Third Year			
First Semester	Hours	Second Semester	Hours
GEOL 3443		4 GEOL 3442	4
GEOL 4330		3 GEOL 4331	3
minor course **		6 minor course **	3
		GEOL 3446	4
		13	14
Fourth Year			
First Semester	Hours	Second Semester	Hours
GEOL 3441		4 GEOL 4334	3
GEOL 4333		3 minor course **	3
minor course **		3 POLS 2312	3
undefined		General Elective(s)	7
		10	16

Total Hours: 120

* See General Core Requirements (p. 50) for approved courses.

** Actual number of courses/hours and course sequence determined by appropriate department.

Requirements for a Bachelor of Arts in Geology - Composite Science Teacher Certification Option (UTeach)

This degree is for students who want teacher certification, and it is offered through the UTeach program.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

UNIV 1131	STUDENT SUCCESS	1
ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
MATH 1421	PREPARATION FOR CALCULUS	4
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - pass oral presentation requirement in GEOL 3441 or GEOL 3443, or complete COMS 1301, COMS 2302, or other equivalent course

Computer Competence - satisfied by EDUC 4331

PROFESSIONAL COURSES

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL 3315	GENETICS	3
BIOL 3454	GENERAL ZOOLOGY	4
ENVR 4303	TOPICS IN SUSTAINABILITY	3
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
TEACHER CERTIFICATION (UTEACH)		
SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
SCIE 4107	CLINICAL TEACHING SEMINAR	1
SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
MAJOR		
GEOL 1301	EARTH SYSTEMS	3
GEOL 1302	EARTH HISTORY	3
GEOL 2445	MINERALOGY	4
GEOL 3446	PETROLOGY AND GEOCHEMISTRY	4
or GEOL 3441	BIOSTRATIGRAPHY AND LIFE THROUGH TIME	
GEOL 3442	SEDIMENTOLOGY AND STRATIGRAPHY	4
GEOL 3443	STRUCTURAL GEOLOGY	4
GEOL 4343	RESEARCH METHODS - UTEACH	3
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		120

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the UTeach advisor, particularly since many GEOL courses are not offered every semester.

First Year

First Semester	Hours	Second Semester	Hours
UNIV 1131		1 GEOL 1302	3
GEOL 1301		3 MATH 1308	3
MATH 1421		4 ENGL 1302	3
SCIE 1201		2 SCIE 1202	2
CHEM 1441		4 CHEM 1442	4
		14	15

Second Year

First Semester	Hours	Second Semester	Hours
EDUC 4331		3 Creative Arts*	3
PHYS 1441		4 EDUC 4332	3
BIOL 1441		4 PHYS 1442	4
GEOL 2445		4 BIOL 1442	4
		15	14

Third Year

First Semester	Hours	Second Semester	Hours
GEOL 3443		4 GEOL 3442	4
BIOL 3315		3 BIOL 3454	4
PHIL 2314		3 GEOL 4343	3

HIST 1301		3 ENVR 4303	3
ENGL 1301		3 HIST 1302	3
		16	17
Fourth Year			
First Semester	Hours	Second Semester	Hours
GEOL 3441 or 3446		4 POLS 2312	3
POLS 2311		3 Language, Philosophy and Culture	3
Social/Behavioral Science *		3 Foundational Component Area *	3
EDUC 4333		3 SCIE 4107	1
		SCIE 4607	6
		13	16
Total Hours: 120			

* See General Core Requirements (p. 50) for approved courses.

Requirements for a Minor in Geology

A minimum total of 18 credit hours (including a minimum of 6 hours at the 3000-4000 level) are required. Transfer students must complete a minimum of 9 hours at UTA, 6 of which must be 3000-4000 level. A 2.0 GPA is required for coursework in the minor.

The following courses cannot be used for the minor: GEOL 3100, GEOL 3340, GEOL 4189, GEOL 4190, GEOL 4289, GEOL 4393.

Requirements for a Minor in Data Science (for Majors in Earth and Environmental Sciences)

Students who are pursuing a major in the Department of Earth and Environmental Sciences and a minor in Data Science must meet with a Earth and Environmental Science Advisor who approves the minor courses. The following courses normally satisfy the requirements and are recommended by the Earth and Environmental Science Department.

REQUIRED COURSES

DATA 1301	INTRODUCTION TO DATA SCIENCE	3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3461	MACHINE LEARNING	4
or ENVR 4458	MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS	
ADVANCED ELECTIVES - choose from the following:		9
DATA 3402	PYTHON FOR DATA SCIENCE 2	
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	
DATA 4380	DATA PROBLEMS	
DATA 4381	DATA CAPSTONE PROJECT 1	
other DATA advanced elective(s) approved by the Earth and Environmental Science undergraduate advisor		
Total Hours		20

Requirements for a Minor in Biology (for Majors in Earth and Environmental Sciences)

Students who are pursuing a major in the Department of Earth and Environmental Sciences and a minor in Biology must meet with a Biology Advisor who approves the minor courses. The following courses normally satisfy the requirements of the Biology Department and are recommended by the EES Department.

A minimum total of 18 credit hours (including a minimum of 6 hours at the 3000-4000 level) are required. Transfer students must complete a minimum of 9 hours at UTA, 6 of which must be 3000-4000 level. A 2.0 GPA is required for coursework in the minor.

REQUIRED COURSES

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
ADVANCED ELECTIVES - choose from the following:		10
BIOL 2300	BIOSTATISTICS	

BIOL 3301	CELL PHYSIOLOGY	
BIOL 3315	GENETICS	
BIOL 3318	LIMNOLOGY	
BIOL 3339	INTRODUCTION TO EVOLUTION	
BIOL 3355	TOXICOLOGY	
BIOL 3457	GENERAL ECOLOGY	
other BIOL advanced elective(s) approved by the Biology undergraduate advisor		
Total Hours		18

Requirements for Certification in Geographic Information Systems

Certification in Geographic Information Systems is designed for students in non-Earth and Environmental Sciences majors who want to become proficient in spatial data analysis, which is used in business, liberal arts, engineering and architecture disciplines.

This is a certification program and it does not lead to a second major or minor. However, students may use these courses to count towards a Geology minor. Students who are in the Geology B.A. Geographic Information Systems Option or Geoinformatics B.S. degree plans may not also earn this certificate, as the certificate courses are required for those degrees.

Students must obtain a 3.0 cumulative GPA in the required courses in order to earn the certificate.

REQUIRED COURSES

GEOL 4330	UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS	3
GEOL 4331	ANALYSIS OF SPATIAL DATA	3
GEOL 4333	REMOTE SENSING FUNDAMENTALS	3
GEOL 4334	GEOGRAPHIC DATA ANALYSIS	3
Total Hours		12

Mathematics

Undergraduate Degrees

- Bachelor of Science in Mathematics (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bsmath>)
- Bachelor of Science in Mathematics (Actuarial Science Option) (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bsactuarial>)
- Bachelor of Science in Mathematics (Statistics Option) (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bsstatistics>)
- Bachelor of Science in Mathematics (Applied Mathematics Option) (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bsindustrial>)
- Bachelor of Science in Mathematics (Pure Mathematics Option) (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bspuremathematics>)
- Bachelor of Science in Mathematics with Secondary Teaching Certification (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bateaching>)
- Bachelor of Science in Mathematics (Data Science Option) (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bsdatascience>)
- Bachelor of Arts in Mathematics (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#bamath>)
- Minor in Mathematics (p. 1254)

Fast-Track Degrees

- Accelerated BS/MS: Bachelor of Science in Mathematics and Master of Science in Mathematics (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#fasttrackBSmathMSmath>)
- Accelerated BS/MS: Bachelor of Science in Mathematics and Master of Science in Biomedical Engineering (<http://catalog.uta.edu/science/math/undergraduate/#bachelorstext/#fasttrackBSmathMSBioEng>)

Graduate Degrees

- Mathematics (General Mathematics), M.S. (<http://catalog.uta.edu/science/math/graduate/#masterstext/#msgeneralmath>)
- Mathematics (General Statistics), M.S. (<http://catalog.uta.edu/science/math/graduate/#masterstext/#msgeneralstatistics>)
- Mathematics, M.A. (<http://catalog.uta.edu/science/math/graduate/#masterstext/#mamath>)
- Mathematics (General Mathematics), B.S. to Ph.D. (<http://catalog.uta.edu/science/math/graduate/#doctoraltext/#bsphdgeneralmath>)
- Mathematics (General Mathematics), Ph.D. (<http://catalog.uta.edu/science/math/graduate/#doctoraltext/#phdgeneralmath>)
- Mathematics (General Statistics), B.S. to Ph.D. (<http://catalog.uta.edu/science/math/graduate/#doctoraltext/#bsphdgeneralstatistics>)
- Mathematics (General Statistics), Ph.D. (<http://catalog.uta.edu/science/math/graduate/#doctoraltext/#phdgeneralstatistics>)
- Mathematics (Data Science), B.S. to Ph.D. (<http://catalog.uta.edu/science/math/graduate/#doctoraltext/#bsphdgeneraldatascience>)
- Mathematics (Data Science), Ph.D. (<http://catalog.uta.edu/science/math/graduate/#doctoraltext/#phdgeneraldatascience>)

Certificate

- Applied Statistics Certificate (p. 1235)

COURSES

MATH 0302. FUNDAMENTALS OF ALGEBRA. 3 Hours.

This course is designed for students whose placement scores or life experience indicate that they may need additional preparation in order to take a college credit bearing mathematics course. Topics may include basic algebraic operations and expressions, linear equations and inequalities, polynomials, rational expressions, factoring, exponents and radicals, graphing, quadratic equations, and mathematical reasoning. Students will use mathematical software to master targeted areas and progress through a self-paced environment in order to achieve college readiness. Immediately following the successful completion of this foundational course, students should register for a credit bearing mathematics course accordingly to their degree plan. Credit in this course does not fulfill any degree requirement.

MATH 0311. FOUNDATIONS FOR CONTEMPORARY MATHEMATICS. 3 Hours.

This course is designed for students whose placement scores or life experience indicate that they may need additional preparation in order to take a college credit-bearing mathematics course. This course provides foundational preparation for MATH 1301. Topics include basic numeric and algebraic operations, expressions, linear and quadratic equations, solving techniques, graphing, mathematical logic and reasoning, as well as a brief introduction to probability and statistics. Students will use mathematical software to master targeted areas and progress through a modified self-paced environment in order to achieve college readiness. Immediately following the successful completion of this foundational course, students should register for a credit-bearing mathematics course according to their degree plan, specifically MATH 1301. Credit in this course does not fulfill any degree requirements.

MATH 0312. FOUNDATIONS FOR ALGEBRA. 3 Hours.

This course is designed for students whose placement scores or life experience indicate that they may need additional preparation in order to take a college credit-bearing mathematics course. This course provides foundational preparation for MATH 1302 or MATH 1315. Topics include basic numeric and algebraic operations and expressions, linear equations and inequalities, polynomials, rational expressions, factoring, exponents and radicals, graphing, and quadratic equations. Students will use mathematical software to master targeted areas and progress through a modified self-paced environment in order to achieve college readiness. Immediately following the successful completion of this foundational course, students should register for a credit bearing mathematics course according to their degree plan, specifically MATH 1302 or MATH 1315. Credit in this course does not fulfill any degree requirements.

MATH 1301. CONTEMPORARY MATHEMATICS. 3 Hours. (TCCN = MATH 1332)

This course covers material in a traditional algebra course together with real-world applications of mathematics. It develops problem-solving and critical thinking skills. Topics include the mathematics of dimensional analysis, mathematical logic, population growth, optimization, voting theory, number theory, graph theory, relations, functions, probability, statistics, and finance. The use of mathematical software and calculators is required. See course syllabus for details. Credit may be received for only one of MATH 1301, MATH 1302, or MATH 1315.

MATH 1302. COLLEGE ALGEBRA. 3 Hours. (TCCN = MATH 1314)

This course is designed as preparation for higher level mathematics courses. Topics include the study of linear, quadratic, polynomial, rational, radical absolute value, logarithmic, and exponential functions, relations and inequalities; graphs, basic characteristics, and operations on functions; real and complex zeros of functions; graphing techniques; systems of equations and matrices. The use of mathematical software and calculators is required. See course syllabus for more details. Non-STEM (Science-Technology-Engineering-Mathematics) majors should enroll in MATH 1301, and Business majors should enroll in MATH 1315. Credit may be received for only one of MATH 1301, MATH 1302, or MATH 1315.

MATH 1303. TRIGONOMETRY. 3 Hours. (TCCN = MATH 1316)

Trigonometric functions, radian measure, solution of triangles, graphs of trigonometric functions, trigonometric identities and equations, and complex numbers. This course is not intended for Science majors. The Math Placement Test (MPT) is required to register for this course. See <http://www.uta.edu/math/pages/main/mpt.htm> for test details. Prerequisite: C or better in MATH 1301, MATH 1302, MATH 1308, MATH 1315, or a qualifying score on Math Placement Test.

MATH 1308. ELEMENTARY STATISTICAL ANALYSIS. 3 Hours. (TCCN = MATH 1342)

Topics may include collection, analysis, presentation, and interpretation of data. Analysis includes descriptive statistics, probability, relationships between variables and graphs, elementary statistical models, hypothesis testing, inference, estimation, correlation, regression and confidence intervals. The use of mathematical software and calculators is required. See course syllabus for details.

MATH 1313. LIBERAL ARTS HONORS MATHEMATICS. 3 Hours.

Topics include the development of the real number system, different orders of infinity, the idea of convergence and how this led to the development of calculus, the concept of a mathematical proof, the conceptual foundations of topology, networks, and knot theory, and modern applications of mathematics to the sciences.

MATH 1315. COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS. 3 Hours. (TCCN = MATH 1324)

This course covers material in a traditional algebra course with emphasis on business and financial application. The application of common algebraic functions including polynomial, exponential, logarithmic, and rational, to problems in business, economics, and the social sciences are addressed. Additional topics include systems of linear equations and inequalities, linear programming, mathematics of finance, elements of matrix algebra, logic and probability including expected value. Credit may be received for only one of MATH 1301, MATH 1302, or MATH 1315.

MATH 1316. MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS. 3 Hours. (TCCN = MATH 1325)

This course is the basic study of limits and continuity, differentiation, optimization and graphing, and integration of elementary functions, with emphasis on mathematical tools and applications in business, economics, and social sciences. This course is not a substitute for MATH 1426 Calculus I. Prerequisite: C or better in MATH 1315 or MATH 1302, or a qualifying score on Math Placement Test, or student group.

MATH 1324. ALGEBRA AND TRIGONOMETRY. 3 Hours. (TCCN = MATH 2412)

A fast-paced summary study of the topics of MATH 1302 and MATH 1303. This course is not intended for calculus track students; those students should take MATH 1421. Credit cannot be received for MATH 1324 and MATH 1302 or MATH 1303.

MATH 1325. ANALYTIC GEOMETRY. 3 Hours. (TCCN = MATH 1348)

Vectors, lines in two dimensions, circles, conics, transformation of coordinates, polar coordinates, parametric equations, and the solid analytic geometry of vectors, lines, planes, cylinders, spherical and cylindrical coordinates. Prerequisite: C or better in MATH 1301 or MATH 1302 or MATH 1315 or MATH 1324, or a qualifying score on Math Placement Test.

MATH 1327. ARCHITECTURAL CALCULUS WITH ANALYTIC GEOMETRY. 3 Hours.

Topics from Analytic Geometry and Calculus including conics, polar coordinates, parametric equations; concepts of limit, continuity, differentiation and integration; applications of these concepts. This course will not substitute for MATH 1426. Prerequisite: Major or intended major in Architecture or Interior Design and C or better in MATH 1303 or MATH 1421, or a qualifying score on Math Placement Test, or student group.

MATH 1330. ARITHMETICAL PROBLEM SOLVING. 3 Hours.

This is a course in small and large group problem solving, with emphasis on reasoning and writing. Topics include problem solving, sets, operations and relations, arithmetic, place value and bases, propositional logic, fractions, number theory, number systems and estimation. Prerequisite: C or better in MATH 1302 or a qualifying score on the Math Placement Test, and enrollment as an education major.

MATH 1331. GEOMETRICAL INFERENCE AND REASONING. 3 Hours.

A discovery-oriented exploration of two-and three-dimensional geometry, with emphasis on reasoning and writing. Topics include constructions, polygons, tessellations, polyhedra, symmetry, rigid motions in the plane, measurement, and discovering theorems. Prerequisite: C or better in MATH 1330 and enrollment as an education major.

MATH 1332. FUNCTIONS, DATA, AND APPLICATIONS. 3 Hours.

An exploration of interpreting data, using cooperative groups, spreadsheets and mathematical models. Topics include graphs, applications to economics and natural sciences, function concepts, counting principles, and basic probability and statistics. Prerequisite: C or better in MATH 1330 and enrollment as an education major.

MATH 1402. COLLEGE ALGEBRA. 4 Hours.

This course is designed as preparation for higher level mathematics courses. Integrated review materials will be used to master targeted areas as students proceed through the course. Topics include foundational numeric and algebraic operations in addition to the study of linear, quadratic, polynomial, rational, radical absolute value, logarithmic, and exponential functions, relations and inequalities; graphs, basic characteristics, and operations on functions; real and complex zeros of functions; graphing techniques; systems of equations and matrices. The use of mathematical software and calculators is required. See course syllabus for more details. Non-STEM (Science-Technology-Engineering-Mathematics) majors should enroll in MATH 1301, and Business majors should enroll in MATH 1315. Credit may be received for only one of MATH 1301, MATH 1302, MATH 1402, or MATH 1315. Students may not co-enroll in MATH 1302 and MATH 1402.

MATH 1421. PREPARATION FOR CALCULUS. 4 Hours.

This course integrates and builds upon concepts and skills from college algebra and trigonometry that are essential to success in calculus. Problem solving activities form the basis for the establishment of these mathematical connections. Prerequisite: C or better in MATH 1301 or MATH 1302 or MATH 1315, or a qualifying score on Math Placement Test, or student group.

MATH 1426. CALCULUS I. 4 Hours. (TCCN = MATH 2413)

Concepts of limit, continuity, differentiation and integration; applications of these concepts. Prerequisite: A qualifying score on the Math Placement Test (MPT) is required to register for this course, or student group.

MATH 2326. CALCULUS III. 3 Hours. (TCCN = MATH 2315)

Vectors, dot product, cross product, planes, quadric surfaces, partial differentiation, multiple integrals (with applications), line integrals, Green's Theorem, surface integrals, Stokes' Theorem, divergence theorem. Prerequisite: C or better in MATH 2425 or HONR-SC 2425, or student group.

MATH 2330. FUNCTIONS AND MODELING. 3 Hours.

Students engage in explorations and lab activities designed to strengthen and expand their knowledge of the topics found in secondary mathematics. Students collect data and explore a variety of situations that can be modeled using linear, exponential, polynomial, and trigonometric functions. Activities are designed to have them take a second, deeper look at topics they should have been exposed to previously; illuminate the connections between secondary and college mathematics; illustrate good, as opposed to typically poor, sometimes counterproductive, uses of technology in teaching; illuminate the connections between various areas of mathematics; and engage them in serious (i.e., non-routine) problem solving, problem-based learning, and applications of mathematics. While there is some discussion of how the content relates to secondary mathematics instruction, the course primarily emphasizes mathematics content knowledge and content connections, as well as applications of the mathematics topics covered. This course is part of the UTeach program. Prerequisite: C or better in MATH 2425; C or better in SCIE 1201 or SCIE 1334 or concurrent enrollment.

MATH 2425. CALCULUS II. 4 Hours. (TCCN = MATH 2414)

Applications of integration, techniques of integration, parametric equations, polar coordinates, sequences, and series. Prerequisite: C or better in MATH 1426 or HONR-SC 1426, or student group.

MATH 3300. INTRODUCTION TO PROOFS. 3 Hours.

Techniques for constructing proofs for various propositions. The propositions chosen exhibit properties of functions, relations, sets, cardinality, and other ideas in mathematics. An axiomatic approach to some areas in mathematics. Oral presentations of proofs are required. Prerequisite: Math major or math intended major. C or better in MATH 2425 or HONR-SC 2425, or student group.

MATH 3301. FOUNDATIONS OF GEOMETRY. 3 Hours.

A development of the foundations of geometry. Prerequisite: C or better in MATH 2425 or HONR-SC 2425, or student group.

MATH 3302. MULTIVARIATE STATISTICAL METHODS. 3 Hours.

Topics in multivariate data analysis with applications in various areas of interest, including multiple regression, analysis of experimental designs, covariate adjustment, non-linear regression and the use of standard multivariate statistical packages. Offered as MATH 3302 and STATS 3302; credit will be granted in only one department. Prerequisite: C or better in MATH 3313 or STATS 3313 or MATH 3316 or STATS 3316 or MATH 3351 or BIOL 3351 or consent of the instructor.

MATH 3303. MATHEMATICAL GAME THEORY. 3 Hours.

Two-person zero-sum games, solving matrix games by linear programming, two-person non-zero sum games, noncooperative n-person games, Nash equilibrium points and refinements, cooperative n-person games, core, Shapley value, and other concepts of solution. Applications to cost allocation, fair division, and voting power. Prerequisite: C or better in MATH 3330 or MATH 3319, or consent of the instructor.

MATH 3304. LINEAR OPTIMIZATION APPLICATIONS. 3 Hours.

An introduction to basic methods of optimization with applications to optimal resource application, minimal cost allocation and interpersonal decision making in noncooperative and cooperative environments. Includes simplex method, duality, zero sum games, transportation and assignment. Prerequisite: C or better in MATH 3330 or MATH 3319.

MATH 3307. ELEMENTARY NUMBER THEORY. 3 Hours.

Various topics in elementary number theory. Divisibility, congruences, quadratic reciprocity, and multiplicative functions. Prerequisite: 2.0 or better in nine hours of college mathematics, or student group.

MATH 3313. INTRODUCTION TO PROBABILITY. 3 Hours.

Basic concepts in probability, random variables, probability distributions, functions of random variables, moment generating functions, central limit theorem and its role in statistics, joint probability functions and joint probability density functions, joint cumulative distribution functions, conditional and marginal probability distributions, covariance and correlation coefficients, transformation and order statistics. Offered as MATH 3313 and STATS 3313; credit will be granted in only one department. Prerequisite: C or better in MATH 2326, or student group.

MATH 3314. DISCRETE MATHEMATICS. 3 Hours.

An introduction into discrete structures. Propositional calculus, sets and operations, functions, induction, counting, relations and matrices, equivalences and partial orders, graphs and shortest path algorithms, trees and minimal spanning trees, tree traversal, elements of boolean algebra. Prerequisite: C or better in MATH 1426 or HONR-SC 1426, or student group.

MATH 3315. MATHEMATICAL MODELS. 3 Hours.

Methods for solving, by means of mathematics, problems which occur in other disciplines such as physics, engineering, biology, and economics. Basic mathematical tools are chosen from areas such as optimization, probability, differential equations, and computer-oriented mathematics. Problems arising in other disciplines or industrial applications are emphasized. Subject matter will depend on the instructor. Prerequisite: C or better in MATH 2326, or permission of instructor, or student group.

MATH 3316. STATISTICAL INFERENCE. 3 Hours.

A comprehensive study of basic data analysis, focused on reasoning process of statistical investigations from asking question and collecting data to analyzing data and drawing inferences. Topics include exploratory data analysis, sampling, sampling distribution, estimation, hypothesis tests, regression, and ANOVA, with an emphasis on applications of these techniques using statistical software. Offered as MATH 3316 and STATS 3316; credit will be granted in only one department. Prerequisite: C or better in 6 hours from the following: MATH 1302, MATH 1308, MATH 1322, MATH 1323, MATH 1330, MATH 1331, MATH 1332, MATH 1421, MATH 1426, MATH 2425, MATH 2326, MATH 3300, MATH 3307, MATH 3314, MATH 3319, or MATH 3330; HONR-SC 1426, HONR-SC 2425, or student group.

MATH 3318. DIFFERENTIAL EQUATIONS. 3 Hours.

Ordinary differential equations with emphasis on the solutions and analysis of first and higher order differential equations drawn from fields of physics, chemistry, geometry, and engineering. Prerequisite: C or better in MATH 2326 or concurrent registration, or student group.

MATH 3319. DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA. 3 Hours.

Introductory course with emphasis on solution techniques. Ordinary differential equations, vector spaces, linear transformations, matrix/vector algebra, eigenvectors, Laplace Transform, and systems of equations. Math majors will not receive credit for this course. Prerequisite: C or better in MATH 2326 or concurrent enrollment, or student group.

MATH 3321. ABSTRACT ALGEBRA I. 3 Hours.

Groups including Lagrange's Theorem, Cauchy's Theorem, the homomorphism theorems, and symmetric groups. Prerequisite: C or better in MATH 3300 and MATH 3330, or student group.

MATH 3330. INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES. 3 Hours.

Solving systems of linear equations by (reduced) row-echelon form and matrix inversion, matrix operations, linear transformations, projections, characterizing invertibility, determinants, bases, change of basis, real n -dimensional space and its geometric structure, subspaces, kernel and image of a linear transformation, application to abstract vector spaces of arbitrary dimension, dot product, orthogonality, Gram-Schmidt process, eigenvalues and eigenvectors, characteristic polynomial, diagonalization, symmetric matrices, and principal-axis theorem. Prerequisite: C or better in MATH 2425, or student group.

MATH 3335. ANALYSIS I. 3 Hours.

Real numbers, sequences, series, limits of functions, continuity. Prerequisite: Grade of C or better in both MATH 2326 and MATH 3300, or student group.

MATH 3345. NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS. 3 Hours.

Numerical solutions of nonlinear equations, numerical integration and differentiation, polynomial interpolation, solutions of linear systems, and an introduction to spline functions. Prerequisite: C or better in MATH 2326, and C or better in one of MATH 3330 or MATH 3319, or student group.

MATH 3351. PROBABILITY AND RANDOM PROCESSES IN BIOLOGY. 3 Hours.

Introduction to random processes arising in biological modeling. Topics include introduction to probability, Poisson processes, birth-death processes, Markov chains, and Markov processes. Course taught as BIOL 3351 and MATH 3351; credit will be granted only once. Prerequisite: C or better in BIOL 3350 or MATH 3350 or consent of the instructor.

MATH 4093. Undergraduate Research. 0 Hours.

Undergraduate research experiences under supervision of faculty. Students are expected to disseminate research findings by poster or oral presentations in meetings or conferences. Students are also expected to participate in other activities as directed by the grant-funded Research Program Director.

MATH 4150. SEMINAR IN MATHEMATICAL BIOLOGY. 1 Hour.

Formulation and definition of interdisciplinary research problems in Mathematical Biology, the formulation and execution of strategies of solution, and the presentation of results. Research under faculty supervision and mentorship involving collaboration within a small group. Prerequisite: Consent of the instructor.

MATH 4180. ORAL COMMUNICATION OF MATHEMATICS. 1 Hour.

This course trains students in giving effective oral presentations of mathematics and topics involving mathematics. Students will give presentations to the class and evaluate the presentations of their classmates. Topics may be chosen from mathematics and science journals at a level suitable for undergraduates, from books and articles on the history and development of mathematics, or from previous course material.

MATH 4191. SPECIAL TOPICS IN MATHEMATICS. 1 Hour.

Special topics in mathematics are assigned to individuals or small groups. Faculty members closely supervise the projects and assign library reference material. Small groups will hold seminars at suitable intervals. May be repeated for credit. Prerequisite: senior standing and written permission of the instructor and department chair.

MATH 4291. SPECIAL TOPICS IN MATHEMATICS. 2 Hours.

Special topics in mathematics are assigned to individuals or small groups. Faculty members closely supervise the projects and assign library reference material. Small groups will hold seminars at suitable intervals. May be repeated for credit. Prerequisite: senior standing and written permission of the instructor & department chair.

MATH 4303. INTRODUCTION TO TOPOLOGY. 3 Hours.

A first course in topology from the axiomatic point of view. Prerequisite: C or better in MATH 3335.

MATH 4311. STOCHASTIC MODELS AND SIMULATION. 3 Hours.

A study of processes, whose outcomes are governed by chance, through a combination of lectures and computer lab sessions. Experiments include random number generation, coin tossing and other games of chance, random walks, Markov Chains, Poisson processes, birth-death processes, branching processes, and Brownian Motion. A foundation for modeling random phenomena in sciences, engineering and business. Prerequisite: C or better in MATH 2326 and knowledge of basic probability (MATH 3313/STATS 3313 or MATH 3351/BIOL 3351 or equivalent), or consent of instructor, or student group.

MATH 4312. ACTUARIAL RISK ANALYSIS. 3 Hours.

Fundamentals of actuarial science concerning risk theory based on probability. Topics include: utility theory, principles of premium calculations, collective and individual risk models, ruin theory, classical Lundberg's Model. Prerequisite: C or better in MATH 3313/STATS 3313.

MATH 4313. MATHEMATICAL STATISTICS. 3 Hours.

A continuation of MATH 3313. Random sampling and sampling distributions, estimation of unknown parameters and main properties of estimators, confidence intervals for unknown parameters, testing of hypotheses. Prerequisite: C or better in MATH 3313 or STATS 3313.

MATH 4314. ADVANCED DISCRETE MATHEMATICS. 3 Hours.

Finite automata, Turing machines, formal languages, graph theory, combinatorial optimization, complexity of algorithms, P versus NP, and decidable versus undecidable problems. Prerequisite: C or better in MATH 3314.

MATH 4320. ADVANCED DIFFERENTIAL EQUATIONS. 3 Hours.

The existence and properties of solution of differential equations. Prerequisite: C or better in MATH 3318 or MATH 3319.

MATH 4321. ABSTRACT ALGEBRA II. 3 Hours.

Rings and field theory, including polynomial rings and field extensions. Prerequisite: C or better in MATH 3321.

MATH 4322. INTRODUCTION TO COMPLEX VARIABLES. 3 Hours.

An introduction to the theory of functions of a complex variable and also an introduction to applications including uses of the residue theory, contour integration and conformal mapping. Prerequisite: C or better in MATH 2326, or student group.

MATH 4324. INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS. 3 Hours.

Methods of solutions of selected elliptic, parabolic, and hyperbolic partial differential equations with reference to physical applications. Prerequisite: C or better in MATH 3318 or MATH 3319.

MATH 4330. ADVANCED LINEAR ALGEBRA. 3 Hours.

Eigenvalues, eigenvectors, generalized eigenvectors, minimal/characteristic polynomial, Jordan normal/canonical form, companion matrix and rational canonical form, inner products, adjoint of a linear map, positive-definite operators and isometries, polar decomposition and singular-value decomposition, exponential of a matrix and applications to differential equations, least squares and curve fitting, bilinear and quadratic forms, dual spaces and transpose of a matrix, quotient spaces, multilinear maps, tensor products. Prerequisite: Math 3330 or consent of instructor.

MATH 4334. ADVANCED MULTIVARIABLE CALCULUS. 3 Hours.

Topics include properties of limits of mappings, continuity of mappings, derivatives of mappings, and integrals of mappings from n-dimensional Euclidean space to m-dimensional Euclidean space. Prerequisite: C or better in MATH 3335, and MATH 3330.

MATH 4335. ANALYSIS II. 3 Hours.

Differentiation, integration, and selected topics in sequences and series of functions and metric spaces. Prerequisite: C or better in MATH 3335.

MATH 4345. NUMERICAL ANALYSIS & COMPUTER APPLICATIONS II. 3 Hours.

Numerical solutions for ordinary differential equations, boundary value problems, minimizations of multivariate functions, and methods of least squares. Prerequisite: C or better in MATH 3345.

MATH 4350. PRECALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS. 3 Hours.

This course serves to bridge the gap between algebra and calculus for middle level teachers. It will develop a firm understanding of the concept of function, how to graphically represent various functions, analyze their behavior and create new functions from old. Functions will be used to model real-life situations. The course will focus on the essential elements of precalculus, as given by the TEKS. It will develop the foundations for functions and explore functions as a unifying theme. This includes transformations, inverses, and solving equations. These foundational ideas will be explored and applied to specific functions, including exponential, logarithmic, power, polynomial, rational, and trigonometric functions. There will be an emphasis on multiple representations of mathematical ideas: verbal, concrete, pictorial, tabular, symbolic and graphical. Throughout, the mathematical connections between precalculus and school mathematics will be highlighted. Prerequisite: C or better in MATH 1302, MATH 1308, MATH 1330, MATH 1331 and MATH 1332. This course does not count toward a degree in mathematics.

MATH 4351. CALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS. 3 Hours.

This course serves to introduce the basic concepts of calculus to middle level teachers. The primary goal is to help teachers develop a fundamental understanding of the key mathematical ideas in calculus in order to broaden their mathematical perspective and gain insight into the topics in the middle level curriculum which are related and foundational to its development. Participants will develop conceptual knowledge of the processes of differentiation and integration, and understanding of their applications and an understanding of the relationship between the two processes. Prerequisite: C or better in MATH 4350. This course does not count toward a degree in mathematics.

MATH 4381. MATHEMATICS RESEARCH. 3 Hours.

Formulation and definition of research problems, the formulation and execution of strategies of solution, and the presentation of results. Prerequisite: consent of instructor. Recommendation by other faculty encouraged.

MATH 4391. SPECIAL TOPICS IN MATHEMATICS. 3 Hours.

Special topics in mathematics are assigned to individuals or small groups. Faculty members closely supervise the projects and assign library reference material. Small groups will hold seminars at suitable intervals. May be repeated for credit. Prerequisite: senior standing and written permission of the instructor & department chair.

MATH 4392. ADVANCED TOPICS IN MATHEMATICS. 3 Hours.

Varies from semester to semester. New developments in mathematics, in-depth study of a topic not covered in other courses, or a special faculty expertise made available to undergraduates. May be repeated for credit as topic varies. Prerequisite: permission of instructor.

MATH 4393. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year the student must complete a thesis or a project under the direction of a faculty member in the math department. Prerequisite: enrollment in the University Honors College and written permission of the instructor and chair.

MATH 4394. UNDERGRADUATE RESEARCH EXPERIENCES. 3 Hours.

Research under faculty supervision and mentorship involving collaboration within a small group. The topic varies from semester to semester, is determined by the faculty teaching the course, and is announced in advance. The course promotes active learning based on inquiry, development of higher-order thinking skills, and meaningful scientific research. Prerequisite: consent of instructor.

MATH 5190. INTERNSHIP FOR MATHEMATICAL SCIENCES. 1 Hour.

Practical experiences in the mathematical sciences. May be repeated for credit when the content changes. Prerequisite: Successful completion of 18 graduate credit hours in the program of study and in good academic standing (i.e. graduate GPA 3.0/4.0 or higher).

MATH 5191. SEMINAR FOR TEACHING ASSISTANTS. 1 Hour.

This course is mandatory for all mathematics graduate teaching assistants. Students will be instructed on classroom procedures and effective teaching strategies and will be required to deliver teaching demonstrations under the supervision of mathematics faculty. The purpose is to enhance students' capacity to facilitate mathematics learning in a variety of settings. Admittance to this course is restricted to Math TAs.

MATH 5300. INTRODUCTION TO SCIENTIFIC COMPUTING. 3 Hours.

Introduction to scientific computing utilizing algorithmic languages and operating environment such as Fortran, MATLAB, C, and C++ and UNIX (LINUX) operating system. Prerequisite: consent of the instructor.

MATH 5302. FUNDAMENTALS OF MATHEMATICAL SCIENCES I. 3 Hours.

Matrices and operators, linear spaces, multivariable calculus, dynamical systems, applications. Prerequisites: MATH 3318 and MATH 3330 or consent of the instructor.

MATH 5303. FUNDAMENTALS OF MATHEMATICAL SCIENCES II. 3 Hours.

Wave propagation, potential theory, complex variables, transform techniques, perturbation techniques, diffusion, applications. Prerequisite: MATH 5302 or consent of the instructor.

MATH 5304. GENERAL TOPOLOGY. 3 Hours.

Introduction to fundamentals of general topology. Topics include product spaces, the Tychonoff theorem, Tietzes Extension theorem, and metrization theorems. Prerequisite: MATH 4304 or MATH 4335.

MATH 5305. STATISTICAL METHODS. 3 Hours.

Topics include descriptive statistics, numeracy, and report writing; basic principles of experimental design and analysis; regression analysis; data analysis using the SAS package. Prerequisite: consent of the instructor.

MATH 5307. MATHEMATICAL ANALYSIS I. 3 Hours.

Elements of topology and the real number system, sequences in metric spaces, limits and continuity of functions, differentiation, the Riemann integral, infinite series, and sequences and series of functions. Prerequisite: MATH 4335 or consent of Graduate Advisor.

MATH 5308. MATHEMATICAL ANALYSIS II. 3 Hours.

Analysis in \mathbb{R}^n , limits, continuity, Jacobian, extremum problems, multiple integrals, sequences and series of functions, Lebesgue integral. Prerequisite: MATH 5307 or consent of Graduate Advisor.

MATH 5310. MATHEMATICAL GAME THEORY. 3 Hours.

Two person null sum games. Bimatrix games and Nash equilibrium points. Noncooperative games, existence theorem. Cooperative games, core, Shapley value, the nucleolus. Cost allocation. Market games. Simple games and voting. Prerequisite: MATH 3330.

MATH 5311. APPLIED PROBABILITY AND STOCHASTIC PROCESSES. 3 Hours.

Topics include conditional expectations, law of large numbers and central limit theorem, stochastic processes, including Poisson, renewal, birth-death, and Brownian motion. Prerequisite: MATH 3313 or equivalent.

MATH 5312. MATHEMATICAL STATISTICS I. 3 Hours.

Random variables and their expectations, some special distributions, moment generating functions, transformations of bivariate random variables, sampling distribution of statistics, Central Limit Theorem, confidence intervals, maximum likelihood estimation, introduction to hypothesis testing, maximum likelihood tests. Prerequisite: MATH 3335 or consent of instructor.

MATH 5313. MATHEMATICAL STATISTICS II. 3 Hours.

Multivariate distributions, consistency and limiting distributions, Rao-Cramer lower bound and efficiency, sufficiency and completeness, most powerful tests, uniformly most powerful tests, likelihood ratio test, the sequential probability ratio test, minimax and classification procedures. Prerequisite: MATH 5312/STATS 5312.

MATH 5314. EXPERIMENTAL DESIGN. 3 Hours.

This course covers the classical theory and methods of experimental design, including randomization, blocking, one-way and factorial treatment structures, confounding, statistical models, analysis of variance tables and multiple comparisons procedures. Prerequisite: MATH 5305/STATS 5305 or MATH 5355/STATS 5355 or permission of instructor.

MATH 5315. GRAPH THEORY. 3 Hours.

Algorithms for problems on graphs. Trees, spanning trees, connectedness, fundamental circuits. Eulerian graphs and Hamiltonian graphs. Graphs and vector spaces, matrices of a graph. Covering and coloring. Flows. Prerequisite: MATH 3314.

MATH 5316. COMBINATORIAL OPTIMIZATION. 3 Hours.

Shortest paths. Minimum weight spanning trees and matroids. Matchings and optimal assignment. Connectivity. Flows in networks, applications. Prerequisite: MATH 3314.

MATH 5317. REAL ANALYSIS. 3 Hours.

Sigma-fields, measures, measurable functions, convergence in measure and almost everywhere, integration, Fatou's Lemma, Lebesgue-dominated convergence, signed measures, Radon-Nikodym Theorem, product measures, Fubini's Theorem. Prerequisite: Math 5307 or consent of the Graduate Advisor.

MATH 5318. FUNDAMENTALS OF STOCHASTIC ANALYSIS. 3 Hours.

General properties of stochastic processes, processes with independent increments, martingales, limit theorems including invariance principle, Markov processes, stochastic integral, stochastic differential. Prerequisite: Math 5317 or consent of the instructor.

MATH 5319. PROBABILITY THEORY. 3 Hours.

Probability spaces, random variables, filtrations, conditional expectations, martingales, strong law of large numbers, ergodic theorem, central limit theorem, Brownian motion and its properties. Prerequisite: Math 5317.

MATH 5320. ORDINARY DIFFERENTIAL EQUATIONS. 3 Hours.

Fundamentals of the theory of systems of ordinary differential equations: existence, uniqueness, and continuous dependence of solutions on data; linear equations, stability theory and its applications, periodic and oscillatory solutions. Prerequisite: MATH 5307 and MATH 5333.

MATH 5321. APPLIED PARTIAL DIFFERENTIAL EQUATIONS. 3 Hours.

General first order equations. Basic linear theory for elliptic, hyperbolic, and parabolic second order equations, including existence and uniqueness for initial and boundary value problems. Prerequisites: MATH 5307 and MATH 5333.

MATH 5322. COMPLEX VARIABLES I. 3 Hours.

Fundamental theory of analytic functions, residues, conformal mapping and applications. Prerequisite: MATH 5307.

MATH 5325. ALGEBRAIC NUMBER THEORY. 3 Hours.

Field extensions, number fields and number rings, ramification theory, class groups, elliptic curves and their group structure, applications to Fermat's last theorem. Prerequisite: MATH 3321.

MATH 5326. ALGEBRAIC TOPOLOGY. 3 Hours.

Basics of topology, Fundamental groups, covering spaces, VanKampen's Theorem, categories and functors, singular homology, relative homology, Mayer-Vietoris sequence, cohomology, cup products, the cohomology ring of a space, CW complexes. Prerequisites: MATH 3321, MATH 3335.

MATH 5327. FUNCTIONAL ANALYSIS I. 3 Hours.

Introduction to Hilbert and Banach spaces: Hahn-Banach, Banach-Steinhaus, and closed graph theorems. Riesz representation theorem and bounded linear operators in Hilbert space. Prerequisite: MATH 5317 or consent of the instructor.

MATH 5328. FUNCTIONAL ANALYSIS II. 3 Hours.

The theory of distributions and Sobolev spaces, with applications to differential equations. Compact operators and Fredholm theory. Spectral theory for unbounded operators. Prerequisite: MATH 5327.

MATH 5329. HOMOLOGICAL ALGEBRA. 3 Hours.

Projective and injective modules, projective and injective resolutions, Hom and tensor, the language of category theory, derived functors, Ext and Tor, complexes.

MATH 5330. ALGEBRAIC GEOMETRY. 3 Hours.

Theory of ideals in polynomial rings, Nullstellensatz, Hilbert's basis theorem, computation in polynomial rings, affine and projective varieties, singular and smooth points on varieties. Prerequisite: MATH 4321.

MATH 5331. ABSTRACT ALGEBRA I. 3 Hours.

Fundamental topics on groups, rings and modules that may include: abelian groups; dihedral groups; groups of permutations; normal subgroups; quotient groups; group actions; Lagrange's Theorem; Cayley's Theorem; Sylow's Theorems; factorization in commutative rings; localization in commutative rings; quotient rings; quotient modules; isomorphism theorems. Prerequisite: permission from instructor.

MATH 5332. ABSTRACT ALGEBRA II. 3 Hours.

Fundamental topics that may include: modules; chain conditions, noetherian rings and modules, artinian rings; Wedderburn's Theorem; localization with Ore conditions; Maschke's Theorem; special classes of rings such as regular algebras, Cohen-Macaulay rings, Gorenstein rings, universal enveloping algebras. Prerequisite: MATH 5331 or permission from instructor.

MATH 5333. LINEAR ALGEBRA AND MATRICES. 3 Hours.

Vector spaces, their sums, linear (in)dependence, bases, linear maps and their matrices, change of basis, inner-products, adjoints, diagonalization, eigenvectors and generalized eigenvectors, eigenvalues, Jordan form, characteristic and minimal polynomials, dual vector spaces, bilinear and quadratic forms. Prerequisite: MATH 3330 or consent of instructor.

MATH 5334. DIFFERENTIAL GEOMETRY. 3 Hours.

Introduction to the theory of curves and surfaces in three dimensional Euclidean space. Prerequisite: MATH 4334 or MATH 4335.

MATH 5336. CONCEPTS AND TECHNIQUES IN NUMBER THEORY. 3 Hours.

Topics include mathematical induction, fundamental theorem of arithmetic, inequalities, special sequences and sums, divisibility properties, greatest common divisor, division and Euclidean algorithm, properties of congruence and Diophantine equations.

MATH 5337. CONCEPTS AND TECHNIQUES IN CALCULUS. 3 Hours.

Topics studied include limits, continuity, differentiation, integration, numerical approximations, applications and Taylor series.

MATH 5338. NUMERICAL ANALYSIS I. 3 Hours.

Solution of equations including linear and nonlinear systems, interpolation and approximation, spline, numerical differentiation and quadrature. Prerequisite: MATH 2425 or consent of the instructor.

MATH 5339. NUMERICAL ANALYSIS II. 3 Hours.

Rigorous treatment of numerical aspects of linear algebra and numerical solution of ordinary differential equations, boundary value problems, introduction to numerical solution of partial differential equations. Prerequisite: MATH 5338 or consent of the instructor.

MATH 5340. DISCRETE MATHEMATICS FOR PROBLEM SOLVING. 3 Hours.

Topics may include functions, mathematical induction, principles of counting, combinatorics, sequences and recurrence relations, finite graph theory, and elementary game theory.

MATH 5341. MODERN GEOMETRY. 3 Hours.

Topics include Euclidean and non-Euclidean geometries with an emphasis on comparing intrinsic and extrinsic characteristics of geodesics and the resulting geometrical implications.

MATH 5342. CONCEPTS AND TECHNIQUES IN ALGEBRA. 3 Hours.

A study of algebra as described in the K-12 research literature and connections to algebraic structures. Topics include algebra as the study of functions and function relationships, algebra as the study of multiple representations with an emphasis on graphs, tables, and formulae, algebra as generalized arithmetic and quantitative reasoning, and algebra as a language.

MATH 5343. CONCEPTS AND TECHNIQUES IN PROBABILITY AND STATISTICS. 3 Hours.

Consideration of (1) exploring data: descriptive statistics of situations involving one and two variables; (2) anticipating patterns: probability and simulation; (3) design of experiments and planning a study; (4) statistical inference: confirming models. Use of a graphing calculator and other appropriate technology.

MATH 5344. MATHEMATICS-SPECIFIC TECHNOLOGIES. 3 Hours.

Focus on use of current mathematics-specific technologies for enhancing mathematical understanding and mathematics teaching. May include use of Geometer's Sketchpad, Fathom, graphing calculators and computer algebra systems.

MATH 5345. HISTORICAL APPROACH TO REAL ANALYSIS. 3 Hours.

A historical treatment of real analysis that explores motivations for the early definitions and theorems in analysis. Topics may include Fourier's introduction of trigonometric series and the issues it created for mathematicians of the early 19th century, Cauchy's efforts toward establishing a firm foundation for calculus, and Dirichlet's proof of the validity of the Fourier series expansion. Prerequisite: MATH 5337 or consent of the instructor.

MATH 5346. CONCEPTS AND TECHNIQUES IN PROBLEM SOLVING. 3 Hours.

A study of the application of various heuristics and general problem strategies in mathematics, with application to the teaching and learning of secondary school and college-level mathematics. Topics include analyzing, classifying, and modifying tasks, assessment of problem solving, and implementing problem solving in the classroom. Assignments require interaction in secondary school or college field settings.

MATH 5347. CONCEPTS AND TECHNIQUES IN MATHEMATICAL MODELING WITH APPLICATIONS. 3 Hours.

Topics studied include algebraic, graphical, geometrical and numerical techniques to model and solve applied problems.

MATH 5348. ADVANCED ALGEBRA IN SECONDARY SCHOOL MATHEMATICS. 3 Hours.

Major concepts of second-year algebra applied to the teaching and learning of secondary school mathematics. Topics include relations, algebraic, tabular, verbal and geometric representations of functions, transformations, including applications involving systems of equations and inequalities.

MATH 5350. APPLIED MATHEMATICS I. 3 Hours.

Development of models arising in the natural sciences and in engineering. Emphasis will be on the mathematical techniques and theory needed to analyze such models; these include aspects of the theory of differential and integral equations, boundary value problems, theory of distributions and transforms. Prerequisites: MATH 5307 and MATH 5333.

MATH 5351. APPLIED MATHEMATICS II. 3 Hours.

Continuation of MATH 5350; models arising in the physical sciences whose analysis includes such topics as the theory of operators in a Hilbert space, variational principles, branching theory, perturbation and stability analysis. Prerequisite: MATH 5350.

MATH 5352. CONCEPTS AND TECHNIQUES IN PRECALCULUS. 3 Hours.

Topics include functions (transcendental, inverse, parametric, polar, transformations), asymptotic behavior, conics, sequences, complex numbers.

MATH 5353. APPLIED LINEAR MODELS. 3 Hours.

The course covers, at an operational level, three topics: 1) the univariate linear model, including a self-contained review of the relevant distribution theory, basic inference methods, several parameterizations for experimental design and covariate-adjustment models and applications, and power calculation; 2) the multivariate linear model, including basic inference (e.g. the four forms of test criteria and simultaneous methods), applications to repeated measures experiments and power calculation; and 3) the univariate mixed model, including a discussion of the likelihood function and its maximization, approximate likelihood inference, and applications to complex experimental designs, missing data, unbalanced data, time series observations, variance component estimation, random effects estimation, power calculation and a comparison of the mixed model's capabilities relative to those of the classical multivariate model. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis) or equivalent.

MATH 5354. CATEGORICAL DATA ANALYSIS. 3 Hours.

This course covers classical methods for analyzing categorical data from a variety of response/factor structures (univariate or multivariate responses, with or without multivariate factors), based on several different statistical rationales (weighted least squares, maximum likelihood and randomization-based). Included are logistic regression, multiple logit analysis, mean scores analysis, observer agreement analysis, association measures, methods for complex experimental designs with categorical responses and Poisson regression. The classical log-linear model for the association structure of multivariate responses is briefly reviewed. Randomization-based inference (e.g. Mantel-Haenszel) is discussed as well. The necessary distribution theory (multinomial, asymptotics of weighted least squares and maximum likelihood) are discussed at an operational level. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis).

MATH 5355. STATISTICAL THEORY FOR RESEARCH WORKERS. 3 Hours.

Designed for graduate students not majoring in mathematics. Topics include basic probability theory, distributions of random variables, point estimation, interval estimation, testing hypotheses, regression, and an introduction to analysis of variance. Graduate credit not given to math majors. Prerequisite: calculus MATH 1426/MATH 2425/MATH 2326 or permission of instructor.

MATH 5356. APPLIED MULTIVARIATE STATISTICAL ANALYSIS. 3 Hours.

Statistical analysis for data collected in several variables, topics including sampling from multivariate normal distribution, Hotelling's T^2 , multivariate analysis of variance, discriminant analysis, principal components, and factor analysis. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

MATH 5357. SAMPLE SURVEYS. 3 Hours.

A comprehensive account of sampling theory and methods, illustrations to show methodology and practice, simple random sampling, stratified random sample, ratio estimates, regression estimates, systematic sampling, cluster sampling, and nonsampling errors. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

MATH 5358. REGRESSION ANALYSIS. 3 Hours.

A comprehensive course including multiple linear regression, non-linear regression and logistic regression. Emphasis is on modeling, inference, diagnostics and application to real data sets. The course begins by developing a toolbox of methods via a sequence of guided homework assignments. It culminates with projects based on consulting-level data analysis problems involving stratification, covariate adjustment and messy data sets. Some knowledge of the SAS package is required. Prerequisites: Math 5312/STATS 5312 or Math 5305/STATS 5305 with a B or better or permission of the instructor.

MATH 5359. SURVIVAL ANALYSIS. 3 Hours.

This course covers analysis of lifetime data with applications in engineering and biomedical research. Topics may include survival function, hazard function, cumulative hazard function, parametric distributions to model lifetime data, censoring, Kaplan-Meier estimator, testing for survival times for two or more groups, Cox proportional hazards model (both fixed and time dependent covariate), parametric regression models, regression diagnostics, accelerated failure time models, sample size determination, extensive use of R statistical software. Prerequisites: MATH 5305/STATS 5305 or MATH 5312/STATS 5312 or permission of instructor.

MATH 5361. APPLIED CALCULUS OF VARIATION. 3 Hours.

Functionals, variation, extremization, Euler's equation, direct and indirect approximation methods; applications to mechanics and control theory. Prerequisite: MATH 5302.

MATH 5362. MATHEMATICS OF LINEAR PROGRAMMING. 3 Hours.

The simplex method and the revised simplex method. Linear algebra for polyhedra and polytopes. Duality theory. Sensitivity analysis. Applications to transportation problems, network flow problems, matrix-games and scheduling problems. Integer programming. Quadratic programming. Prerequisite: MATH 3330.

MATH 5363. OSCILLATIONS AND WAVES. 3 Hours.

Development of methods and results related to phenomena in nature that exhibit oscillatory motion; mathematical techniques include Fourier series, ordinary and partial differential equations, and the theory of almost periodic functions. Prerequisite: MATH 3318.

MATH 5364. INTRODUCTION TO MATHEMATICAL CONTROL THEORY. 3 Hours.

Systems in science, engineering, and economics and their mathematical description by means of functional equations (ordinary, partial, integral, delay-type). Basic properties of various classes of systems: observability, controllability, stability, and oscillating systems; optimal control problems and applications. Prerequisite: MATH 3318 or MATH 4320.

MATH 5365. BIOMATHEMATICS. 3 Hours.

Mathematical techniques used in modeling such as perturbation theory, dimensional analysis, Fourier analysis, and differential equations. Applications to morphogenetics, population dynamics, compartmental systems, and chemical kinetics.

MATH 5366. INTRODUCTION TO NEURAL AND COGNITIVE MODELING. 3 Hours.

Principles of neural network modeling; application of these principles to the simulation of cognitive processes in both brains and machines; models of associative learning, pattern recognition, and classification. Prerequisite: consent of instructor.

MATH 5370. PROBLEM SOLVING IN K-8 MATHEMATICS. 3 Hours.

A study of the nature and aspects of problem solving in mathematics, with application to the teaching and learning of K-8 mathematics. Topics include deconstructing and modifying tasks, assessment of problem solving, and the roles of representation, conjecture & proof, and technology in problem solving. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5371. APPLIED NUMERICAL LINEAR ALGEBRA. 3 Hours.

Numerical solutions of linear algebraic systems, least squares problems, and eigenvalue problems; LU and QR decompositions, Schur and Singular Value decompositions, Gaussian elimination, QR algorithm, and Krylov subspace iterations for large and sparse linear algebra problems. Prerequisites: MATH 3330 or consent of the instructor.

MATH 5372. OPTIMIZATION METHODS & NUMERICAL SOLUTIONS OF NONLINEAR EQUATIONS. 3 Hours.

Unconstrained and constrained optimization, solutions of nonlinear system of equations; Newton and quasi-Newton methods, secant methods and variations, nonlinear least squares problems. Prerequisite: consent of the instructor.

MATH 5373. NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS. 3 Hours.

Numerical methods for approximating solutions of initial value problems, boundary value problems, including linear multistep methods, Runge-Kutta methods, shooting methods. Prerequisite: MATH 5300, MATH 3319 or consent of instructor.

MATH 5374. NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS. 3 Hours.

Numerical methods for elliptic, parabolic, hyperbolic, mixed, and systems of partial differential equations; finite difference methods, finite element methods, spectral methods. Prerequisite: MATH 5373 or consent of instructor.

MATH 5375. CONSTRUCTING WHOLE NUMBER AND OPERATIONS IN K-8 MATHEMATICS. 3 Hours.

A study of the interaction between the structure of place-value numeration systems and the nature of the four arithmetic operations. The development of traditional and alternative computational arithmetic algorithms from conceptual and concrete models for operations, viewed through the lens of alternative numeration systems and research on children's mathematical thinking. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5376. CONSTRUCTING RATIONAL NUMBER AND OPERATIONS IN K-8 MATH. 3 Hours.

The meanings and representations of rational numbers, and the development of computations on rational numbers from algorithms for whole numbers, including concrete models for operations on fractions and decimals. Discussion of research on the learning and teaching of operations on rational numbers. Also, divisibility tests and factoring. Assignments require interaction in K-8 field settings. Prerequisite: MATH 5375.

MATH 5377. ALGEBRAIC THINKING IN K-8 MATHEMATICS. 3 Hours.

A study of the practice of making and justifying generalizations in K-8 mathematics, including field properties of operations, modular arithmetic (with applications to odd/even), relations and equivalence relations, the introduction and use of variables and unknowns, and the influence of representations on the form of mathematical arguments. Assignments require interaction in K-8 field settings. Prerequisite: MATH 5375.

MATH 5378. GEOMETRY CONCEPTS IN K-8 MATHEMATICS. 3 Hours.

Major concepts of geometry applied to the teaching and learning of K-8 mathematics. Topics include dimension, development of definitions, meanings of angle, geometric comparison relations, notions of center, and non-Euclidean geometries. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5379. MEASUREMENT CONCEPTS IN K-8 MATHEMATICS. 3 Hours.

The development of measurement concepts as applied to the teaching and learning of K-8 mathematics. Topics include the development and properties of standard and nonstandard units, notions of size, decomposing space, relationships between boundaries and interiors, the algebra of units, measuring time, and notions of heaviness. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5380. SEMINAR. 3 Hours.

Current topics in mathematics, may be repeated for credit twice. Prerequisite: consent of instructor.

MATH 5391. SPECIAL TOPICS IN MATHEMATICS. 3 Hours.

Topics in mathematics assigned individual students or small groups. Faculty members closely supervise the students in their research and study. In areas where there are only three hours offered, the special topics may be used by students to continue their study in the same area. Graded P/F/R. Prerequisite: permission of instructor.

MATH 5392. SELECTED TOPICS IN MATHEMATICS. 3 Hours.

May vary from semester to semester depending upon need and interest of the students. May be repeated for credit. Prerequisite: permission of Graduate Advisor.

MATH 5395. SPECIAL PROJECT. 3 Hours.

Graded P/F/R. Prerequisite: permission of Graduate Advisor.

MATH 5398. THESIS. 3 Hours.

MATH 5398 Graded R/F only; MATH 5698 graded P/F/R. Prerequisite: permission of Graduate Advisor.

MATH 5399. RESEARCH IN MATHEMATICS. 3 Hours.

Faculty directed individual study and research. May be repeated for credit. Graded P/F/R/W only. Prerequisite: permission of instructor.

MATH 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: permission of Graduate Advisor.

MATH 5699. RESEARCH IN MATHEMATICS. 6 Hours.

Faculty directed individual study and research. May be repeated for credit. Graded P/F/R/W only. Prerequisite: permission of instructor.

MATH 5999. RESEARCH IN MATHEMATICS. 9 Hours.

Faculty directed individual study and research. May be repeated for credit. Graded P/F/R/W only. Prerequisite: permission of instructor.

MATH 6180. SEMINAR FOR PROFESSIONAL DEVELOPMENT OF PhD STUDENTS IN SPECIAL PROJECTS. 1 Hour.

This seminar class is for Ph.D. students enrolled in special University projects. Topics include a survey of new Math, Science, Technology and Engineering advancements, Ph.D. students professional development and mentoring. Prerequisite: Prior approval of Project Director.

MATH 6310. FOUNDATION OF DATA SCIENCES. 3 Hours.

Basic knowledge and computational methods in data sciences, select topics in norms, semidefinite matrix, nonnegative matrix, Cholesky decomposition, QR decompositions, linear system, least squares problem, eigenvalue and singular value decompositions, low rank approximation, nonnegative matrix factorization, introduction to simplex method, KKT conditions for optimizations, Krylov subspace methods, and applications. Prerequisite: MATH 3330 or consent of the instructor.

MATH 6311. OPTIMIZATION ON BIG DATA. 3 Hours.

Introduction to big data analysis; real world applications of data science; linear system solutions; linear programming; duality theory; convex sets; convex functions; optimality conditions; unconstrained optimization; constraint optimization; conjugate direction methods; alternating direction method of multipliers; classification/regression models and algorithms; dimensionality reduction for visualization; projects on real data. Prerequisite: MATH 3330 or consent of the instructor.

MATH 6312. DATA MINING. 3 Hours.

The course focuses on topics including but not limited to: linear methods in regression, linear methods in classification, model assessment and selection, regularized models, splines, generalized additive models, model averaging, ensemble learning, support vector machines, neural networks, probabilistic graphical models, cluster analysis, dimension reduction techniques, and multidimensional scaling. Prerequisite: MATH 5305/STATS 5305 or MATH 5312/STATS 5312 or permission of instructor. Basic programming skills are preferred.

MATH 6313. TOPICS IN PROBABILITY AND STATISTICS. 3 Hours.

May be repeated for credit when the content changes.

MATH 6353. GENERALIZED LINEAR MODELS. 3 Hours.

This course covers modern methods for analyzing Bernoulli, multinomial and count data. It begins with a development of generalized linear model theory, including the exponential family, link function and maximum likelihood. Second is a discussion of the case of models for independent observations. Next is a discussion of models for repeated measures, based on quasi-likelihood methods. These include models (such as Markov chains) for categorical time series. Next is a treatment of models with random effects. Finally is a discussion of methods for handling missing data. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and preferably MATH 5313/STATS 5313. (Students without 5313 can still succeed but must deal with the slightly higher mathematical level of this course.).

MATH 6356. TIME SERIES ANALYSIS. 3 Hours.

This course covers classical methods of time series analysis, for both the time and frequency domains. For covariance stationary series, these include ARIMA modeling and spectral analysis. For nonstationary series, they include methods for detrending and filtering. Also included is a treatment of multivariate series, as well as a discussion of the Kalman filter state-space model. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and MATH 5313/STATS 5313.

MATH 6357. NONPARAMETRIC STATISTICS. 3 Hours.

This is a survey of classical nonparametric methods for inference in standard observational settings (one-sample, two-sample, k-samples and the univariate linear model), and includes a development of U-statistics, rank statistics and their asymptotic distribution theory. The mathematical level is fairly high. Prerequisite: MATH 5313/STATS 5313.

MATH 6391. SPECIAL TOPICS IN MATHEMATICS. 3 Hours.

Faculty directed individual study and research. May be repeated for credit when the content changes.

MATH 6399. DISSERTATION. 3 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree in mathematics.

MATH 6699. DISSERTATION. 6 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree in mathematics.

MATH 6999. DISSERTATION. 9 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree in mathematics.

MATH 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

COURSES

MSCI 6399. DISSERTATION. 3 Hours.**MSCI 6699. DISSERTATION. 6 Hours.****MSCI 6999. DISSERTATION. 9 Hours.****MSCI 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

COURSES

STATS 1308. ELEMENTARY STATISTICAL ANALYSIS. 3 Hours.

Topics may include collection, analysis, presentation, and interpretation of data. Analysis includes descriptive statistics, probability, relationships between variables and graphs, elementary statistical models, hypothesis testing, inference, estimation, correlation, regression and confidence intervals. The use of mathematical software and calculators is required. See course syllabus for details.

STATS 3302. MULTIVARIATE STATISTICAL METHODS. 3 Hours.

Topics in multivariate data analysis with applications in various areas of interest, including multiple regression, analysis of experimental designs, covariate adjustment, non-linear regression and the use of standard multivariate statistical packages. Offered as MATH 3302 and STATS 3302; credit will be granted in only one department. Prerequisite: C or better in MATH 3313 or STATS 3313 or MATH 3316 or STATS 3316 or MATH 3351 or BIOL 3351 or consent of the instructor.

STATS 3313. INTRODUCTION TO PROBABILITY. 3 Hours.

Basic concepts in probability, random variables, probability distributions, functions of random variables, moment generating functions, central limit theorem and its role in statistics, joint probability functions and joint probability density functions, joint cumulative distribution functions, conditional and marginal probability distributions, covariance and correlation coefficients, transformation and order statistics. Offered as MATH 3313 and STATS 3313; credit will be granted in only one department. Prerequisite: C or better in MATH 2326, or student group.

STATS 3316. STATISTICAL INFERENCE. 3 Hours.

A comprehensive study of basic data analysis, focused on reasoning process of statistical investigations from asking question and collecting data to analyzing data and drawing inferences. Topics include exploratory data analysis, sampling, sampling distribution, estimation, hypothesis tests, regression, and ANOVA, with an emphasis on applications of these techniques using statistical software. Offered as MATH 3316 and STATS 3316; credit will be granted in only one department. Prerequisite: C or better in 6 hours from the following: MATH 1302, MATH 1308, MATH 1322, MATH 1323, MATH 1330, MATH 1331, MATH 1332, MATH 1421, MATH 1426, MATH 2425, MATH 2326, MATH 3300, MATH 3307, MATH 3314, MATH 3319, or MATH 3330; HONR-SC 1426, HONR-SC 2425, or student group.

STATS 4311. STOCHASTIC MODELS AND SIMULATION. 3 Hours.

A study of processes, whose outcomes are governed by chance, through a combination of lectures and computer lab sessions. Experiments include random number generation, coin tossing and other games of chance, random walks, Markov Chains, Poisson processes, birth-death processes, branching processes, and Brownian Motion. A foundation for modeling random phenomena in sciences, engineering and business. Prerequisite: C or better in MATH 2326 and knowledge of basic probability (MATH 3313/STATS 3313 or MATH 3351/BIOL 3351 or equivalent), or consent of instructor, or student group.

STATS 4313. MATHEMATICAL STATISTICS. 3 Hours.

A continuation of MATH 3313. Random sampling and sampling distributions, estimation of unknown parameters and main properties of estimators, confidence intervals for unknown parameters, testing of hypotheses. Prerequisite: C or better in MATH 3313 or STATS 3313.

STATS 5305. STATISTICAL METHODS. 3 Hours.

Topics include descriptive statistics, numeracy, and report writing; basic principles of experimental design and analysis; regression analysis; data analysis using the SAS package. Prerequisite: consent of the instructor.

STATS 5312. MATHEMATICAL STATISTICS I. 3 Hours.

Random variables and their expectations, some special distributions, moment generating functions, transformations of bivariate random variables, sampling distribution of statistics, Central Limit Theorem, confidence intervals, maximum likelihood estimation, introduction to hypothesis testing, maximum likelihood tests. Prerequisite: MATH 3335 or consent of instructor.

STATS 5313. MATHEMATICAL STATISTICS II. 3 Hours.

Multivariate distributions, consistency and limiting distributions, Rao-Cramer lower bound and efficiency, sufficiency and completeness, most powerful tests, uniformly most powerful tests, likelihood ratio test, the sequential probability ratio test, minimax and classification procedures. Prerequisite: MATH 5312/STATS 5312.

STATS 5314. EXPERIMENTAL DESIGN. 3 Hours.

This course covers the classical theory and methods of experimental design, including randomization, blocking, one-way and factorial treatment structures, confounding, statistical models, analysis of variance tables and multiple comparisons procedures. Prerequisite: MATH 5305/STATS 5305 or MATH 5355/STATS 5355 or permission of instructor.

STATS 5353. APPLIED LINEAR MODELS. 3 Hours.

The course covers, at an operational level, three topics: 1) the univariate linear model, including a self-contained review of the relevant distribution theory, basic inference methods, several parameterizations for experimental design and covariate-adjustment models and applications, and power calculation; 2) the multivariate linear model, including basic inference (e.g. the four forms of test criteria and simultaneous methods), applications to repeated measures experiments and power calculation; and 3) the univariate mixed model, including a discussion of the likelihood function and its maximization, approximate likelihood inference, and applications to complex experimental designs, missing data, unbalanced data, time series observations, variance component estimation, random effects estimation, power calculation and a comparison of the mixed model's capabilities relative to those of the classical multivariate model. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis) or equivalent.

STATS 5354. CATEGORICAL DATA ANALYSIS. 3 Hours.

This course covers classical methods for analyzing categorical data from a variety of response/factor structures (univariate or multivariate responses, with or without multivariate factors), based on several different statistical rationales (weighted least squares, maximum likelihood and randomization-based). Included are logistic regression, multiple logit analysis, mean scores analysis, observer agreement analysis, association measures, methods for complex experimental designs with categorical responses and Poisson regression. The classical log-linear model for the association structure of multivariate responses is briefly reviewed. Randomization-based inference (e.g. Mantel-Haenzel) is discussed as well. The necessary distribution theory (multinomial, asymptotics of weighted least squares and maximum likelihood) are discussed at an operational level. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis).

STATS 5355. STATISTICAL THEORY FOR RESEARCH WORKERS. 3 Hours.

Designed for graduate students not majoring in mathematics. Topics include basic probability theory, distributions of random variables, point estimation, interval estimation, testing hypotheses, regression, and an introduction to analysis of variance. Graduate credit not given to math majors. Prerequisite: calculus MATH 1426/MATH 2425/MATH 2326 or permission of instructor.

STATS 5356. APPLIED MULTIVARIATE STATISTICAL ANALYSIS. 3 Hours.

Statistical analysis for data collected in several variables, topics including sampling from multivariate normal distribution, Hotelling's T^2 , multivariate analysis of variance, discriminant analysis, principal components, and factor analysis. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

STATS 5357. SAMPLE SURVEYS. 3 Hours.

A comprehensive account of sampling theory and methods, illustrations to show methodology and practice, simple random sampling, stratified random sample, ratio estimates, regression estimates, systematic sampling, cluster sampling, and nonsampling errors. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

STATS 5358. REGRESSION ANALYSIS. 3 Hours.

A comprehensive course including multiple linear regression, non-linear regression and logistic regression. Emphasis is on modeling, inference, diagnostics and application to real data sets. The course begins by developing a toolbox of methods via a sequence of guided homework assignments. It culminates with projects based on consulting-level data analysis problems involving stratification, covariate adjustment and messy data sets. Some knowledge of the SAS package is required. Prerequisites: Math 5312/STATS 5312 or Math 5305/STATS 5305 with a B or better or permission of the instructor.

STATS 5359. SURVIVAL ANALYSIS. 3 Hours.

This course covers analysis of lifetime data with applications in engineering and biomedical research. Topics may include survival function, hazard function, cumulative hazard function, parametric distributions to model lifetime data, censoring, Kaplan-Meier estimator, testing for survival times for two or more groups, Cox proportional hazards model (both fixed and time dependent covariate), parametric regression models, regression diagnostics, accelerated failure time models, sample size determination, extensive use of R statistical software. Prerequisites: MATH 5305/STATS 5305 or MATH 5312/STATS 5312 or permission of instructor.

STATS 6353. GENERALIZED LINEAR MODELS. 3 Hours.

This course covers modern methods for analyzing Bernoulli, multinomial and count data. It begins with a development of generalized linear model theory, including the exponential family, link function and maximum likelihood. Second is a discussion of the case of models for independent observations. Next is a discussion of models for repeated measures, based on quasi-likelihood methods. These include models (such as Markov chains) for categorical time series. Next is a treatment of models with random effects. Finally is a discussion of methods for handling missing data. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and preferably MATH 5313/STATS 5313. (Students without 5313 can still succeed but must deal with the slightly higher mathematical level of this course.).

STATS 6356. TIME SERIES ANALYSIS. 3 Hours.

This course covers classical methods of time series analysis, for both the time and frequency domains. For covariance stationary series, these include ARIMA modeling and spectral analysis. For nonstationary series, they include methods for detrending and filtering. Also included is a treatment of multivariate series, as well as a discussion of the Kalman filter state-space model. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and MATH 5313/STATS 5313.

STATS 6357. NONPARAMETRIC STATISTICS. 3 Hours.

This is a survey of classical nonparametric methods for inference in standard observational settings (one-sample, two-sample, k-samples and the univariate linear model), and includes a development of U-statistics, rank statistics and their asymptotic distribution theory. The mathematical level is fairly high. Prerequisite: MATH 5313/STATS 5313.

Mathematics - Graduate Programs

Objective

The objectives of the UT Arlington Mathematics Department's graduate program are:

- Develop the students' ability to do independent research and prepare them for more advanced studies in mathematics.
- Provide advanced training and preparation for professional careers as mathematicians, mathematics teachers, and those employed in engineering, scientific and business fields.

Graduate work will be offered in algebra, complex and real variables, differential equations, functional analysis, geometry, mathematics education, numerical analysis, probability, statistics and topology.

Admissions Requirements

MASTER OF SCIENCE PROGRAM

For unconditional admission, a student must meet the following requirements:

1. A B.A. or B.S. degree in mathematics or closely related field.
2. An overall GPA in the final 60 hours of coursework of a 3.0 or better, as calculated by the Graduate School, on a 4.0 scale.
3. Minimum of 350 on the verbal and 650 on the quantitative portions of the Graduate Record Examination (GRE) if taken prior to August 2011. Minimum of 143 on the verbal and 151 on the quantitative portions of the GRE if taken after August 2011.
4. For applicants whose native language is not English, a minimum score of 550 on the Test of English as a Foreign Language (or a minimum score of 213 on a computer-based test, or a minimum score of 79 on an internet-based test) or a minimum score of 40 on the Test of Spoken English.
5. Three favorable letters of recommendation from people familiar with the applicant's academic work.

Applicants who do not satisfy requirements 2 or 3 above may be considered for unconditional admission if further review of their undergraduate transcript, recommendation letters, correspondence or direct interactions with mathematics faculty, and statement of professional or research interests indicates that they are qualified to enter the Master's Program without deficiency.

If an applicant does not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in the first 12 hours of graduate coursework at UT Arlington.

Students who are unconditionally admitted or admitted on probation will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on consideration of the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the fall semester, must have a GPA of 3.0 in the last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain the fellowship.

Applicants may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

MASTER OF ARTS PROGRAM

For unconditional admission a student must meet items 1-3 or 3-5.

1. A B.S. or B.A. degree with at least 24 hours of mathematics coursework with a GPA of at least 3.0, as calculated by the Graduate School on a 4.0 scale.
2. Minimum of 400 on the verbal and 600 on the quantitative portions of the Graduate Record Examination (GRE) if taken prior to August 2011. Minimum of 146 on the verbal and 148 on the quantitative portions of the GRE if taken after August 2011.
3. Three favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.
4. A B.S. or B.A. degree with a GPA of at least 3.0, as calculated by the Graduate School on a 4.0 scale.
5. Certified to teach mathematics at the Secondary Level (Secondary Mathematics Certification).

Applicants who do not satisfy requirements 1 or 2 above may be considered for unconditional admission if further review of their undergraduate transcript, recommendation letters, correspondence or direct interactions with mathematics faculty, and statement of professional or research interests indicates that they are qualified to enter the Master's Program without deficiency.

If an applicant does not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in the first 12 hours of graduate coursework at UT Arlington.

Applicants may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

Master of Science Degree Requirements

The Department of Mathematics offers master's degree programs in mathematics with additional emphasis in applied mathematics, computational mathematics, mathematics education, pure mathematics, and statistics. All students are to use the thesis plan, thesis-substitute plan, or non-thesis plan.

All students in Master of Science program must complete one of the following:

1. General Mathematics core requirements¹:

MATH 5307	MATHEMATICAL ANALYSIS I	3
MATH 5333	LINEAR ALGEBRA AND MATRICES	3
Select one of the following tracks:		
Applied Mathematics:		15
MATH 5300	INTRODUCTION TO SCIENTIFIC COMPUTING	3
Select four of the following:		12
MATH 5350	APPLIED MATHEMATICS I	
MATH 5351	APPLIED MATHEMATICS II	
MATH 5320	ORDINARY DIFFERENTIAL EQUATIONS	
MATH 5321	APPLIED PARTIAL DIFFERENTIAL EQUATIONS	
An area-related graduate course chosen in consultation with the student's advisor.		
Computational Mathematics:		15
MATH 5300	INTRODUCTION TO SCIENTIFIC COMPUTING	3
MATH 5338	NUMERICAL ANALYSIS I	3
MATH 5339	NUMERICAL ANALYSIS II	3
MATH 5371	APPLIED NUMERICAL LINEAR ALGEBRA	3
or MATH 5373	NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS	
An area-related graduate course chosen in consultation with the student's advisor.		3
Data Science:		15
MATH 5300	INTRODUCTION TO SCIENTIFIC COMPUTING	3
MATH 5305	STATISTICAL METHODS	3
MATH 5371	APPLIED NUMERICAL LINEAR ALGEBRA	3
or MATH 6310	FOUNDATION OF DATA SCIENCES	
Select 2 of the following		6
MATH 5312	MATHEMATICAL STATISTICS I	3
MATH 5338	NUMERICAL ANALYSIS I (OR AN AREA-RELATED COURSE CHOSEN IN CONSULTATION WITH THE STUDENT'S ADVISOR)	3
MATH 6311	OPTIMIZATION ON BIG DATA	3
MATH 6312	DATA MINING	3
Mathematics Education:		15
MATH 5300	INTRODUCTION TO SCIENTIFIC COMPUTING	3
MATH 5305	STATISTICAL METHODS	3
Select three of the following:		9
MATH 5341	MODERN GEOMETRY	
MATH 5342	CONCEPTS AND TECHNIQUES IN ALGEBRA	
MATH 5344	MATHEMATICS-SPECIFIC TECHNOLOGIES	
MATH 5345	HISTORICAL APPROACH TO REAL ANALYSIS	
MATH 5346	CONCEPTS AND TECHNIQUES IN PROBLEM SOLVING	
Pure Mathematics:		15
MATH 5322	COMPLEX VARIABLES I	3
MATH 5331	ABSTRACT ALGEBRA I	3
Select 3 from the following:		9

MATH 5304	GENERAL TOPOLOGY	
MATH 5326	ALGEBRAIC TOPOLOGY	
MATH 5329	HOMOLOGICAL ALGEBRA	
MATH 5330	ALGEBRAIC GEOMETRY	
MATH 5332	ABSTRACT ALGEBRA II	
MATH 5334	DIFFERENTIAL GEOMETRY	
Or select 3 from the following:		9
MATH 5300	INTRODUCTION TO SCIENTIFIC COMPUTING	
MATH 5304	GENERAL TOPOLOGY	
MATH 5317	REAL ANALYSIS	
MATH 5321	APPLIED PARTIAL DIFFERENTIAL EQUATIONS	
MATH 5327	FUNCTIONAL ANALYSIS I	
MATH 5334	DIFFERENTIAL GEOMETRY	

2. General Statistics core requirements¹:

MATH 5300	INTRODUCTION TO SCIENTIFIC COMPUTING	3
MATH 5307	MATHEMATICAL ANALYSIS I	3
MATH 5333	LINEAR ALGEBRA AND MATRICES	3
MATH 5305	STATISTICAL METHODS	3
MATH 5312	MATHEMATICAL STATISTICS I	3
MATH 5313	MATHEMATICAL STATISTICS II	3
Select one of the following:		3
MATH 5356	APPLIED MULTIVARIATE STATISTICAL ANALYSIS	
MATH 5357	SAMPLE SURVEYS	
MATH 5358	REGRESSION ANALYSIS	
Total Hours		21

• In addition:

- i. Those students enrolled in the non-thesis plan must take at least 15 other hours of electives approved by the graduate advisor².
- ii. Those students enrolled in the thesis substitute plan must take MATH 5395 SPECIAL PROJECT, and must take at least nine other hours of electives².
- iii. Those students enrolled in the thesis plan must take at least six hours of MATH 5398 / MATH 5698, and must take at least three other hours of electives².

¹ Core requirements can also be fulfilled by completing core requirements in the BS-Ph.D. track in the Doctoral program.

² Electives may not be chosen from MATH 5336, MATH 5337, MATH 5340, MATH 5341, MATH 5342, MATH 5343, MATH 5344, MATH 5345, MATH 5346, MATH 5347, MATH 5348, MATH 5352, MATH 5370, MATH 5375, MATH 5376, MATH 5377, MATH 5378, MATH 5379. However, students in the Mathematics Education thesis or thesis-substitute track may choose three hours from Math 5336, 5337, 5340-5348, 5352, 5370, 5375-5379. Students in the Mathematics Education non-thesis track may choose six hours from Math 5336, 5337, 5340-5348, 5352, 5370, 5375-5379. Students in the Computational Mathematics track may choose three approved hours of electives in science and/or engineering. Elective courses for pure-mathematics track must be chosen from MATH 5300, MATH 5304, MATH 5317, MATH 5321, MATH 5326, MATH 5327, MATH 5329, MATH 5330, MATH 5332, MATH 5334, MATH 5380, or MATH 5392 courses offered in the pure-mathematics track.

Students in thesis degree plan or thesis-substitute plan must pass a final Master's exam.

Master of Arts Degree Requirements

The Master of Arts in Mathematics program in the Department of Mathematics is designed to extend undergraduate mathematics experiences in the area of specialized mathematics content for secondary school and early college mathematics teaching. The program focuses on enhancing mathematics teaching through innovative preparation in topics grounded in secondary school and early college mathematics from an advanced standpoint. The program embraces a philosophy of teaching and learning mathematics that is consistent with the landmark *Standards* documents produced by the National Council of Teachers of Mathematics.

The requirements for the Master of Arts degree thesis-substitute option are 30 hours of graduate courses from the Department of Mathematics and a 3-hour project. Students in the thesis-substitute plan must pass a final Master's exam. The requirements for a Master of Arts degree non-thesis option are 36 hours of graduate courses from the Department of Mathematics.

All students in the Master of Arts program must complete one of the following:

Required Courses		18
MATH 5341	MODERN GEOMETRY	3
MATH 5342	CONCEPTS AND TECHNIQUES IN ALGEBRA	3
MATH 5343	CONCEPTS AND TECHNIQUES IN PROBABILITY AND STATISTICS	3
MATH 5344	MATHEMATICS-SPECIFIC TECHNOLOGIES	3
MATH 5345	HISTORICAL APPROACH TO REAL ANALYSIS	3
MATH 5346	CONCEPTS AND TECHNIQUES IN PROBLEM SOLVING	3
Thesis-Substitute Option:		15
MATH 5395	SPECIAL PROJECT (Individual, Director-Approved Research)	
Students must successfully complete 12 additional hours of electives. Electives may not be chosen from MATH 5375-MATH 5379.		
Non-Thesis Option:		18
Students must successfully complete 18 additional hours of electives. Electives may not be chosen from MATH 5375-MATH 5379.		

Admission Requirements

For unconditional admission a student must meet the following requirements:

1. A master's degree or at least 30 hours of graduate coursework in mathematics or closely related fields.
2. A minimum GPA of 3.0, as calculated by the Graduate School, on a 4.0 scale in graduate coursework.
3. Minimum of 350 on the verbal and 700 on the quantitative portions of the Graduate Record Examination (GRE) if taken prior to August 2011. Minimum of 143 on the verbal and 155 on the quantitative portions of the GRE if taken after August 2011.
4. For applicants whose native language is not English, a minimum score of 550 on the Test of English as a Foreign Language (or a minimum score of 213 on a computer-based test, or a minimum score of 79 on an internet-based test) or a minimum score of 40 on the Test of Spoken English.
5. Three favorable letters of recommendation from people familiar with the applicant's academic work and/or professional work.

Applicants who do not satisfy requirements 2 or 3 above may be considered for unconditional admission if further review of their undergraduate transcript, recommendation letters, correspondence or direct interactions with mathematics faculty, and statement of professional or research interests indicates that they are qualified to enter the Doctoral Program without deficiency.

If an applicant does not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in the first 12 hours of graduate coursework at UT Arlington.

Applicants may be denied admission if they have less than satisfactory performance on a majority of the admission criteria described above.

A deferred decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

DOCTORAL PROGRAM (B.S.-PH.D. TRACK)

For unconditional admission a student must meet the following requirements:

1. A bachelor's degree in mathematics or in a closely related field.
2. A minimum GPA of 3.00 on the 4.00 scale in undergraduate course work, as calculated by the UT Arlington Graduate School.
3. A minimum of 350 on the verbal part and 700 on the quantitative part of the Graduate Record Examination (GRE) if taken prior to August 2011. Minimum of 143 on the verbal and 155 on the quantitative portions of the GRE if taken after August 2011.
4. For an applicant whose native language is not English, a minimum score of 550 on the Test of English as a Foreign Language (or a minimum score of 213 on a computer-based test, or a minimum score of 79 on an internet-based test) or a minimum score of 40 on the Test of Spoken English.
5. At least three letters of recommendation from people familiar with the applicant's academic work and/or professional work.

Applicants who do not satisfy requirement 2 or/and 3 above may be considered for an unconditional admission if a further review of their undergraduate transcript(s), recommendation letters, correspondence or direct interactions with mathematics faculty, and statement of professional or research interests indicates that they are qualified to enter the B.S.-Ph.D. track program without deficiency.

If an applicant does not meet a majority of standards for an unconditional admission outlined above, he/she may be considered for a probationary admission after a careful examination of his/her application materials. A probationary admission requires that the applicant receive grades of B or better in the first 12 hours of graduate course work at UT Arlington.

An applicant may be denied admission if he/she has less than satisfactory performance on a majority of the admission criteria described above.

A deferred decision may be granted when the applicant's file is incomplete or when a denial on his/her admission is not appropriate. An applicant who is unable to supply all required documentation prior to the admission deadline but who otherwise appears to have met admission requirements may be granted provisional admission.

Students who are unconditionally admitted or admitted on probation will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on consideration of the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the fall semester, must have a GPA of 3.0 in the last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain the fellowship.

Ph.D. Degree Requirements

A dynamic program leading to the Doctor of Philosophy degree in the mathematics will aim at both real and demonstrated competency on the part of the student over material from various branches of mathematics. The Doctor of Philosophy degree in Mathematics provides a program of study that may be tailored to meet the needs of those interested in applied or academic careers. This program allows students to pursue topics ranging from traditional mathematics studies to applied mathematical problems in engineering and sciences. The nature of the dissertation will range from research in mathematics to the discovery and testing of mathematical models for analyzing given problems in engineering and sciences and in locating and developing mathematical and computational techniques for deducing the properties of these models as to solve these problems effectively and efficiently. Such dissertations will be concerned with research problems from pure mathematics, applied mathematics, mathematics education and statistics.

The Department of Mathematics offers doctoral degree programs in Mathematics (algebra, applied mathematics, data science, geometry, mathematics education, numerical analysis and statistics).

All doctoral students must complete one of the following:

1. General MATHEMATICS core requirements:

MATH 5317	REAL ANALYSIS	3
MATH 5322	COMPLEX VARIABLES I	3
MATH 5327	FUNCTIONAL ANALYSIS I	3
MATH 5331	ABSTRACT ALGEBRA I	3
MATH 5338	NUMERICAL ANALYSIS I	3
In addition to the mathematics core requirements, the student is required to take four area-related courses, in consultation with their advisor		12
Total Hours		27

2. General STATISTICS core requirements:

MATH 5312	MATHEMATICAL STATISTICS I	3
MATH 5313	MATHEMATICAL STATISTICS II	3
MATH 5317	REAL ANALYSIS	3
MATH 5319	PROBABILITY THEORY	3
MATH 5358	REGRESSION ANALYSIS	3
or MATH 5359	SURVIVAL ANALYSIS	
In addition to the statistics core requirements, students are also required to take four area-related courses, chosen in consultation with their advisor.		12
Total Hours		27

3. General MATHEMATICS-DATA SCIENCE (jointly with Computer Science and Engineering department) core requirements:

MATH 5317	REAL ANALYSIS	3
MATH 5322	COMPLEX VARIABLES I	3
MATH 5327	FUNCTIONAL ANALYSIS I	3
MATH 5338	NUMERICAL ANALYSIS I	3
CSE 5301	DATA ANALYSIS & MODELING TECHNIQUES	3

CSE 5311	DESIGN AND ANALYSIS OF ALGORITHMS	3
CSE 5334	DATA MINING	3
In addition to the MATH/CSE core requirements, the student is required to take two area-related courses in MATH or CSE, chosen in consultation with their advisor.		6
Total Hours		27

Students in every degree plan must pass the preliminary examinations, a diagnostic evaluation, and a comprehensive examination. A minimum of 9 dissertation hours must be taken to satisfy the graduation requirement for doctoral degree in the Mathematics Department. Doctoral students must enroll in the appropriate 6699, 6999 or 7399 Dissertation Completion course the semester in which the dissertation is defended. Students typically enroll in these courses defend and apply for graduation in the same term. The Dissertation Completion course (7399) may only be taken once and cannot be repeated.

Ph.D. Degree Requirements for the B.S.-Ph.D. track

The student must complete either the mathematics or statistics core requirements.

1. General MATHEMATICS core requirements:

MATH 5307	MATHEMATICAL ANALYSIS I	3
MATH 5317	REAL ANALYSIS	3
MATH 5322	COMPLEX VARIABLES I	3
MATH 5327	FUNCTIONAL ANALYSIS I	3
MATH 5331	ABSTRACT ALGEBRA I	3
MATH 5333	LINEAR ALGEBRA AND MATRICES	3
MATH 5338	NUMERICAL ANALYSIS I	3
In addition to the mathematics core requirements, the student is required to take four area-related courses, chosen in consultation with their advisor.		12
Total Hours		33

2. General STATISTICS core requirements:

MATH 5307	MATHEMATICAL ANALYSIS I	3
MATH 5312	MATHEMATICAL STATISTICS I	3
MATH 5313	MATHEMATICAL STATISTICS II	3
MATH 5317	REAL ANALYSIS	3
MATH 5319	PROBABILITY THEORY	3
MATH 5333	LINEAR ALGEBRA AND MATRICES	3
MATH 5358	REGRESSION ANALYSIS	3
or MATH 5359	SURVIVAL ANALYSIS	
In addition to the statistics core requirements, students are also required to take four area-related courses, chosen in consultation with their advisor.		12
Total Hours		33

3. General MATHEMATICS-DATA SCIENCE (jointly with Computer Science and Engineering department) core requirements:

MATH 5307	MATHEMATICAL ANALYSIS I	3
MATH 5317	REAL ANALYSIS	3
MATH 5322	COMPLEX VARIABLES I	3
MATH 5327	FUNCTIONAL ANALYSIS I	3
MATH 5333	LINEAR ALGEBRA AND MATRICES	3
MATH 5338	NUMERICAL ANALYSIS I	3
CSE 5301	DATA ANALYSIS & MODELING TECHNIQUES	3
CSE 5311	DESIGN AND ANALYSIS OF ALGORITHMS	3
CSE 5334	DATA MINING	3

In addition to the MATH/CSE core requirements, the student is required to take two area-related courses in MATH or CSE, chosen in consultation with their advisor.	6
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Total Hours	33
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The requirements for the preliminary examinations, diagnostic evaluation, and comprehensive examination are the same as the other tracks in the Ph.D. program. A minimum of 9 dissertation hours must be taken to satisfy the graduation requirement for doctoral degree in the Mathematics Department. Doctoral students must enroll in the appropriate 6699, 6999 or 7399 Dissertation Completion course the semester in which the dissertation is defended. Students typically enroll in these courses defend and apply for graduation in the same term. The Dissertation Completion course (7399) may only be taken once and cannot be repeated.

For additional information on the mathematics program, see the program entry in the Interdepartmental and Intercampus Programs section of this catalog.

Certificate of Applied Statistics Program

The admission standard is the same as that of Master of Science Program (<http://catalog.uta.edu/science/math/graduate/#masterstext>).

Certificate of Applied Statistics Requirements

The Certificate in Applied Statistics offers individuals with an undergraduate degree an opportunity to receive graduate instruction in applied statistics as a means of maintaining and enhancing their professional development. The certificate program will provide coursework in statistics to an individual whose undergraduate major was outside the area of statistics. Since the requirements for the certificate are substantially less than those for the Master's Degree in Mathematics with a concentration in Statistics, the certificate can be earned in a much shorter time span. When applicable, the courses taken in the certificate program can also be used to satisfy a Master of Science in Mathematics degree requirement at UTA and other institutions. Consult with the graduate advisor for advice on graduate course transfer.

The Certificate in Applied Statistics requires that the students take and successfully complete the following courses.

Required Courses

STATS 5312	MATHEMATICAL STATISTICS I	3
STATS 5313	MATHEMATICAL STATISTICS II	3

Electives

Select three of the following:	9
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STATS 5305	STATISTICAL METHODS
STATS 5314	EXPERIMENTAL DESIGN
STATS 5353	APPLIED LINEAR MODELS
STATS 5356	APPLIED MULTIVARIATE STATISTICAL ANALYSIS
STATS 5357	SAMPLE SURVEYS
STATS 5358	REGRESSION ANALYSIS
MATH 5392	SELECTED TOPICS IN MATHEMATICS (Statistical Quality Control)
MATH 5392	SELECTED TOPICS IN MATHEMATICS (Statistical Methods in Clinical Research)

Total Hours	15
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Upon completion of the 15 hours of graduate courses from lists 1 and 2 with a minimum GPA of 3.0, the student is awarded the Certificate in Applied Statistics. The expected time to completion is 1 to 2 years. The time limit for completion of the certificate program is 6 years.

Mathematics - Undergraduate Programs

Academic Advising: 406 Pickard Hall • 817-272-0939

Bachelor's Degrees in Mathematics

The Department of Mathematics offers programs leading to the Bachelor of Science Degree in Mathematics and the Bachelor of Arts Degree in Mathematics. The Bachelor of Science degree may also be acquired with the explicit addition of one of these options: actuarial science, applied mathematics, pure mathematics, statistics, data science, or secondary teaching certification.

The Bachelor of Science pure math option is primarily intended for students wishing to pursue graduate work in mathematics. The applied mathematics option is aimed at students seeking careers as mathematicians in the emerging high-tech industries. The actuarial science option is intended for students with an interest in a career involving various applications of mathematics to the world of business. The data science option provides a mathematics major with the interdisciplinary skills to derive science and business insights from big data. The option with secondary teaching certification is intended for students desiring to teach mathematics at the secondary school level, and is offered in coordination with UT Arlington's UTeach program. The Bachelor of Arts degree is intended for those students seeking a traditional liberal arts education with an emphasis on mathematics.

All students seeking a bachelor's degree in mathematics must take at least two mathematics sequences. A sequence is defined as a 3300-level course followed by a 4300-level course in the same general area of mathematics. Each of the two sequences must build from distinct 3300-level courses. The approved sequences are as follows:

MATH 3313 & MATH 4311 or STATS 3313 & STATS 4311	INTRODUCTION TO PROBABILITY and STOCHASTIC MODELS AND SIMULATION INTRODUCTION TO PROBABILITY and STOCHASTIC MODELS AND SIMULATION	6
MATH 3313 & MATH 4312 or STATS 3313 & MATH 4312	INTRODUCTION TO PROBABILITY and ACTUARIAL RISK ANALYSIS INTRODUCTION TO PROBABILITY and ACTUARIAL RISK ANALYSIS	6
MATH 3313 & MATH 4313 or STATS 3313 & STATS 4313	INTRODUCTION TO PROBABILITY and MATHEMATICAL STATISTICS INTRODUCTION TO PROBABILITY and MATHEMATICAL STATISTICS	6
MATH 3321 & MATH 4321	ABSTRACT ALGEBRA I and ABSTRACT ALGEBRA II	6
MATH 3335 & MATH 4303	ANALYSIS I and INTRODUCTION TO TOPOLOGY	6
MATH 3335 & MATH 4334	ANALYSIS I and ADVANCED MULTIVARIABLE CALCULUS	6
MATH 3335 & MATH 4335	ANALYSIS I and ANALYSIS II	6
MATH 3345 & MATH 4345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS and NUMERICAL ANALYSIS & COMPUTER APPLICATIONS II	6
MATH 3314 & MATH 4314	DISCRETE MATHEMATICS and ADVANCED DISCRETE MATHEMATICS	6
MATH 3318 & MATH 4324	DIFFERENTIAL EQUATIONS and INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS	6
MATH 3330 & MATH 4330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES and ADVANCED LINEAR ALGEBRA	6

It is strongly recommended that mathematics majors take MATH 3330 and MATH 3300 as early as possible, since these courses are prerequisites for many other 3000/4000-level courses. It is suggested to take MATH 3330 simultaneously with Calculus III. Mathematics majors must pass MATH 3300 before attempting the required courses MATH 3321 and MATH 3335. It is strongly recommended that mathematics majors with little or no computer programming experience satisfy the computer programming requirement as early as possible with CSE 1310 INTRODUCTION TO COMPUTERS & PROGRAMMING, CSE 1311, CSE 1320, CSE 1325 OBJECT-ORIENTED PROGRAMMING, or MAE 2360 NUMERICAL ANALYSIS & PROGRAMMING.

Teacher Certification

Students interested in earning a Bachelor of Science degree with a major in mathematics with secondary teacher certification should refer to the "Bachelor of Science in Mathematics with Secondary Teaching Certification" degree plan for teacher certification requirements. Students should also see an advisor in the UTeach Arlington department.

Second Major

A student who satisfies the requirements for any other baccalaureate degree qualifies for having mathematics named as a second major upon completion of **nine** mathematics courses at 3000/4000 level (except for capstone mathematics courses specifically for prospective middle or secondary grades mathematics teachers). The following courses are required:

MATH 3300	INTRODUCTION TO PROOFS	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3335	ANALYSIS I	3
Select one of the following:		3
MATH 4321	ABSTRACT ALGEBRA II	
MATH 4335	ANALYSIS II	
MATH 4334	ADVANCED MULTIVARIABLE CALCULUS	

Besides the sequence MATH 3321-MATH 4321 or the sequence MATH 3335 and (MATH 4335 or MATH 4334), a second sequence must be part of the second major. The GPA requirements on the mathematics courses for a second major are identical to those listed below under the heading Graduation Requirements.

First-time Admission Requirements

Students who wish to apply for major status in mathematics must first complete the University and College of Science requirements and the specific requirements of the Department of Mathematics listed below.

- Overall GPA of 2.25;
- Minimum GPA of 2.25 in at least nine hours of mathematics courses in residence at the level of MATH 1426 or above, excluding capstone mathematics courses specifically for prospective middle or secondary grades mathematics teachers;
- At least six hours from the science or computer science courses listed in the mathematics degree plans; and
- Twelve hours of courses of the University core curriculum in disciplines other than science and mathematics.

Students currently enrolled at the University may qualify to change their major to mathematics by meeting the requirements listed above.

Satisfactory Academic Standard Requirement

Majors whose overall GPA or GPA in major courses falls below 2.25 will be required to change their major.

To re-enter as a mathematics major, the student must meet the requirements listed in the First-time Admissions Requirements section.

Non-Credit Courses

The following courses will not be counted for credit (as mathematics or electives) toward a bachelor's degree in mathematics:

MATH 1301	CONTEMPORARY MATHEMATICS	3
MATH 1302	COLLEGE ALGEBRA	3
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	3
MATH 1316	MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS	3
MATH 1330	ARITHMETICAL PROBLEM SOLVING	3
MATH 1331	GEOMETRICAL INFERENCE AND REASONING	3
MATH 1332	FUNCTIONS, DATA, AND APPLICATIONS	3
MATH 1402	COLLEGE ALGEBRA	4
MATH 4350	PRECALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS	3
MATH 4351	CALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS	3

Capstone mathematics courses specifically for prospective secondary grades mathematics teachers can be counted for credit only by those pursuing a B.S. with Secondary Teaching Certification.

Math Course Registration and Requirements

Students may not be "pre-enrolled" in mathematics courses while prerequisite courses at another institution are pending grades. Only UT Arlington credits may be used for pre-enrollment purposes.

Canvas grades (or other learning-management system grades) may not be used as proof of completion for a prerequisite course. Students must submit either an official transcript to the registrar's office, or submit a transcript with a letter grade for the prerequisite course to the undergraduate mathematics advisor in order to be enrolled in a mathematics course. If a student is submitting the transcript via email, the email must be sent from their UTA email address.

Requirements for a Bachelor of Science Degree in Mathematics

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
Communication ¹		6
Language, Philosophy, and Culture ¹		3
Social and Behavioral Sciences ¹		3
Creative Arts ¹		3
Foundational Component Area ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages (Levels I and II or higher) in one language		8
Select one of the following sequences in life and physical science:		6-8
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY	
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
Life and Physical Science: select 6 additional hours from required or that use required as prerequisite		6
Select one of the following in computer programming:		3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS	
CSE 1320	INTERMEDIATE PROGRAMMING	
CSE 1325	OBJECT-ORIENTED PROGRAMMING	
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING	
Professional Courses		
Major		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3

Select one of the following to complete one sequence: 3

MATH 4321 ABSTRACT ALGEBRA II

MATH 4334 ADVANCED MULTIVARIABLE CALCULUS

MATH 4335 ANALYSIS II

Additional advanced hours in mathematics ² 15

Minor 18

The minor may be from any college ³

Sufficient number of hours to complete the total hours required for a degree

¹ See general core requirements (p. 50).

² Fifteen additional advanced hours (MATH 3301 or above, except for capstone mathematics courses specifically for prospective middle grades or secondary grades mathematics teachers), including a second sequence (see paragraph three in the opening section).

³ The student should consult the appropriate section in this catalog for the exact requirements for a minor in a given department or contact that department's undergraduate advisor.

Capstone mathematics courses specifically for prospective middle grade mathematics teachers do not count toward a degree in mathematics. Capstone mathematics courses for secondary mathematics teachers will count only for those working on the BS in Mathematics with Teaching Certification.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
MATH 1426		4 MATH 2425	4
ENGL 1301		3 PHYS 1443	4
HIST 1301		3 ENGL 1302	3
Language, Philosophy, and Culture Elective		3 HIST 1302	3
CSE 1311		3	
UNIV 1131		1	
		17	14

Second Year

First Semester	Hours	Second Semester	Hours
MATH 2326		3 MATH 3318	3
MATH 3330		3 MATH 3300	3
PHYS 1444		4 Life and Physical Science	3
Social and Behavioral Sciences		3 Creative Arts	3
		MATH 3316	3
		13	15

Third Year

First Semester	Hours	Second Semester	Hours
MATH 3321 or 3335		3 MATH 4321 or 4335	3
Minor		3 Mathematics	6
Life and Physical Science		3 Minor	3
POLS 2311		3 POLS 2312	3
MATH 3345		3	
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
MATH 3335 or 3321		3 Mathematics	6
Mathematics		3 Minor	6
Minor		6 Modern Language II	4
Modern Language I		4	
		16	16

Total Hours: 121

Requirements for a Bachelor of Arts Degree in Mathematics

UNIV 1131 STUDENT SUCCESS 1

General Core Requirements (p. 50) 42

Pre-Professional Courses

Communication ¹ 6

Language, Philosophy, and Culture ¹	3
Social and Behavioral Sciences ¹	3
Creative Arts ¹	3
Foundational Component Area ¹	3
POLS 2311 GOVERNMENT OF THE UNITED STATES	3
POLS 2312 STATE AND LOCAL GOVERNMENT	3
HIST 1301 HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302 HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages: 14 hours (Level I, II, III, and IV) in one language, or 8 hours (Level I and II) in one language plus 6 hours in single area cluster from list of approved cultural studies courses (see information in College of Science section)	14
Select one of the following sequences in life and physical science:	6-8
BIOL 1441 CELL AND MOLECULAR BIOLOGY & BIOL 1442 and EVOLUTION AND ECOLOGY	
CHEM 1441 GENERAL CHEMISTRY I & CHEM 1442 and GENERAL CHEMISTRY II	
GEOL 1301 EARTH SYSTEMS & GEOL 1302 and EARTH HISTORY	
PHYS 1443 GENERAL TECHNICAL PHYSICS I & PHYS 1444 and GENERAL TECHNICAL PHYSICS II	
Additional hours of natural science	6
Select one of the following in computer literacy	0-3
CSE 1301 COMPUTER LITERACY	
INSY 2303 INTRODUCTION TO M.I.S. AND DATA PROCESSING	
Or equivalent course approved by undergraduate advisor	
Or competency test	
Select one of the following in computer programming:	3
CSE 1310 INTRODUCTION TO COMPUTERS & PROGRAMMING	
CSE 1311 INTRODUCTION TO PROGRAMMING FOR ENGINEERS	
CSE 1320 INTERMEDIATE PROGRAMMING	
CSE 1325 OBJECT-ORIENTED PROGRAMMING	
MAE 2360 NUMERICAL ANALYSIS & PROGRAMMING	
Professional Courses	
MATH 1426 CALCULUS I	4
MATH 2425 CALCULUS II	4
MATH 2326 CALCULUS III	3
MATH 3300 INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3316 STATISTICAL INFERENCE	3
MATH 3318 DIFFERENTIAL EQUATIONS	3
MATH 3321 ABSTRACT ALGEBRA I	3
MATH 3330 INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335 ANALYSIS I	3
MATH 3345 NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
Select one of the following:	3
MATH 4321 ABSTRACT ALGEBRA II	
MATH 4335 ANALYSIS II	
MATH 4334 ADVANCED MULTIVARIABLE CALCULUS	
Additional advanced hours ²	9
Minor ³	18
Sufficient number of hours to complete the total hours required for a degree	

¹ See general core requirements (p. 50).

² Nine additional advanced hours (MATH 3301 or above, except for capstone mathematics courses specifically for prospective middle or secondary grades mathematics teachers), including a second sequence (see paragraph three in the opening section).

- ³ The student should consult the appropriate section in this catalog for the exact requirements for a minor in a given department or contact that department's undergraduate advisor.

Capstone mathematics courses specifically for prospective middle grade mathematics teachers do not count toward a degree in mathematics. Capstone mathematics courses for secondary mathematics teachers will count only for those working on the BS in Mathematics with Teaching Certification.

SUGGESTED COURSE SEQUENCE

First Year			
First Semester	Hours	Second Semester	Hours
MATH 1426		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
Modern Language I		4 Modern Language II	4
UNIV 1131		1 GEOL 1301	3
HIST 1301		3	
		15	14
Second Year			
First Semester	Hours	Second Semester	Hours
MATH 2326		3 MATH 3300	3
Language, Philosophy, and Culture		3 MATH 3330	3
Modern Language III		3 Life and Physical Science	3
GEOL 1302		3 Modern Language IV	3
MATH 3316		3 INSY 2303	3
		15	15
Third Year			
First Semester	Hours	Second Semester	Hours
MATH 3321		3 MATH 4321	3
Minor		3 Mathematics	3
Life and Physical Science		3 Minor	3
Social and Behavioral Studies		3 Creative Arts	3
MATH 3318		3 CSE 1310	3
		15	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
MATH 3335		3 Mathematics	3
Minor		6 Minor	6
POLS 2311		3 HIST 1302	3
Mathematics		3 POLS 2312	3
		15	15

Total Hours: 119

Requirements for a Bachelor of Science Degree in Mathematics (Actuarial Science Option)

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
Communication ¹		6
Language, Philosophy, and Culture ¹		3
Creative Arts ¹		3
Foundational Component Area ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
ECON 2305	PRINCIPLES OF MACROECONOMICS ²	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages (Levels I and II or higher) in one language		8
Select one of the following sequences in life and physical science:		6-8
BIOL 1441 & BIOL 1442		CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY

CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
Life and Physical Science: select 6 additional hours from required or that use required as prerequisite		6
Select one of the following in computer programming:		3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS	
CSE 1320	INTERMEDIATE PROGRAMMING	
CSE 1325	OBJECT-ORIENTED PROGRAMMING	
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING	
Professional Courses		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3302	MULTIVARIATE STATISTICAL METHODS ⁴	3
MATH 3313	INTRODUCTION TO PROBABILITY ⁵	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
Select one of:		3
MATH 4311	STOCHASTIC MODELS AND SIMULATION	
MATH 4312	ACTUARIAL RISK ANALYSIS	
MATH 4313	MATHEMATICAL STATISTICS ⁴	3
Select one of the following:		3
MATH 4321	ABSTRACT ALGEBRA II	
MATH 4334	ADVANCED MULTIVARIABLE CALCULUS	
MATH 4335	ANALYSIS II	
ECON 2305	PRINCIPLES OF MACROECONOMICS	3
ECON 2306	PRINCIPLES OF MICROECONOMICS ^{2,6}	3
ACCT 2301	PRINCIPLES OF ACCOUNTING I	3
ACCT 2302	PRINCIPLES OF ACCOUNTING II ⁶	3
FINA 3313	BUSINESS FINANCE ^{6,7}	3
FINA 3315	INVESTMENTS ⁷	3
FINA 3317	FINANCIAL INSTITUTIONS AND MARKETS	3
And other 3000+ level courses in MATH, STATS, or Business to complete 120 hours		

¹ See general core requirements (p. 50).

² ECON 2305 and ECON 2306, passed with a B or better, together satisfy the Society of Actuaries requirement for VEE certification in Economics.

⁴ MATH 3302 and MATH 4313, passed with a B or better, together satisfy the Society of Actuaries requirement for VEE certification in Applied Statistical Methods. (Pending approval from the Society of Actuaries.)

⁵ MATH 3313 and MATH 4312 should prepare a student to pass Exam P of the Society of Actuaries Associateship Course Catalog.

⁶ FINA 3313, passed with a B or better, satisfies the Society of Actuaries requirement for VEE certification in Corporate Finance. This course has prerequisites: ACCT 2302 PRINCIPLES OF ACCOUNTING II and ECON 2306.

⁷ FINA 3313, FINA 3315, and FINA 3317 should prepare a student to pass Exam FM of the Society of Actuaries Associateship Course Catalog.

Capstone mathematics courses specifically for prospective middle grade mathematics teachers do not count toward a degree in mathematics. Capstone mathematics courses for secondary mathematics teachers will count only for those working on the BS in Mathematics with Teaching Certification.

See www.soa.org (<http://www.soa.org>) for more details about VEE Certification and the Associateship Course Catalog.

Requirements for a Bachelor of Science Degree in Mathematics (Statistics Option)

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
Communication ¹		6
Language, Philosophy, and Culture ¹		3
Social and Behavioral Sciences ¹		3
Creative Arts ¹		3
Foundational Component Area ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	
POLS 2312	STATE AND LOCAL GOVERNMENT	
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages (Levels I and II or higher) in one language		8
Select one of the following sequences in life and physical science:		6-8
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY	
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
Life and Physical Science: select 6 additional hours from required or that use required as prerequisite		6
Select one of the following in computer literacy:		0-3
CSE 1301	COMPUTER LITERACY	
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	
Or equivalent course approved by Undergraduate Advisor		
Or competency test		
Select one of the following in computer programming:		3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS	
CSE 1320	INTERMEDIATE PROGRAMMING	
CSE 1325	OBJECT-ORIENTED PROGRAMMING	
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING	
Professional Courses		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3302	MULTIVARIATE STATISTICAL METHODS	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3

MATH 4311	STOCHASTIC MODELS AND SIMULATION	3
MATH 4313	MATHEMATICAL STATISTICS	3
Select one of the following:		3
MATH 4321	ABSTRACT ALGEBRA II	
MATH 4335	ANALYSIS II	
MATH 4334	ADVANCED MULTIVARIABLE CALCULUS	
Additional advanced hours ²		15
BSTAT 3321	INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS	3
BSTAT 3322	ADVANCED STATISTICS FOR BUSINESS ANALYTICS	3

¹ See general core requirements (p. 50).

² Fifteen additional advanced hours (3301 or above, except for capstone mathematics courses specifically for prospective middle or secondary grades mathematics teachers) in mathematics.

Capstone mathematics courses specifically for prospective middle grade mathematics teachers do not count toward a degree in mathematics. Capstone mathematics courses for secondary mathematics teachers will count only for those working on the BS in Mathematics with Teaching Certification.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
MATH 1426		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
HIST 1301		3 BIOL 1441	4
UNIV 1131		1 HIST 1302	3
CSE 1311		3	
		14	14

Second Year

First Semester	Hours	Second Semester	Hours
MATH 2326		3 MATH 3313	3
MATH 3330		3 MATH 3316	3
Social & Behavioral Science		3 MATH 3300	3
BIOL 1442		4 Creative Arts	3
Language & Philosophy		3 Life & Physical Science	3
		16	15

Third Year

First Semester	Hours	Second Semester	Hours
MATH 3335		3 MATH 4335	3
MATH 3302		3 MATH 4313	3
Life & Physical Science		3 Advanced math elective	3
POLS 2311		3 POLS 2312	3
MATH 3318		3 BSTAT 3321	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
MATH 3345		3 MATH 3321	3
Advanced math elective		6 Modern Language II	4
BSTAT 3322		3 MATH 4311	3
Modern Language I		4 Advanced math elective	6
		16	16

Total Hours: 121

Requirements for a Bachelor of Science Degree in Mathematics (Applied Mathematics Option)

This degree option is for students seeking immediate employment after graduation. Additional course work may be required for admission to graduate school.

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42

Pre-Professional Courses

General Core Requirements			
Communication ¹			6
Language, Philosophy, and Culture ¹			3
Social and Behavioral Sciences ¹			3
Creative Arts ¹			3
Foundational Component Area ¹			3
POLS 2311	GOVERNMENT OF THE UNITED STATES		3
POLS 2312	STATE AND LOCAL GOVERNMENT		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865		3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT		3
Modern and Classical Languages (Levels I and II or higher) in one language			8
Select one of the following sequences in life and physical science:			6-8
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY		
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II		
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY		
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II		
Life and Physical Science: select 6 additional hours from required or that use required as prerequisite			6
Select one of the following in computer literacy:			0-3
CSE 1301	COMPUTER LITERACY		
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING		
Or equivalent course approved by Undergraduate Advisor			
Or competency test			
Select one of the following in computer programming:			3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING		
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS		
CSE 1320	INTERMEDIATE PROGRAMMING		
CSE 1325	OBJECT-ORIENTED PROGRAMMING		
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING		
Professional Courses			
MATH 1426	CALCULUS I		4
MATH 2425	CALCULUS II		4
MATH 2326	CALCULUS III		3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)		3
MATH 3313	INTRODUCTION TO PROBABILITY		3
MATH 3316	STATISTICAL INFERENCE		3
MATH 3318	DIFFERENTIAL EQUATIONS		3
MATH 3321	ABSTRACT ALGEBRA I		3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES		3
MATH 3335	ANALYSIS I		3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS		3
MATH 4311	STOCHASTIC MODELS AND SIMULATION		3
MATH 4322	INTRODUCTION TO COMPLEX VARIABLES		3
MATH 4324	INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS		3
Select one of the following:			3
MATH 4321	ABSTRACT ALGEBRA II		
MATH 4335	ANALYSIS II		
MATH 4334	ADVANCED MULTIVARIABLE CALCULUS		
Additional advanced hours ²			15

IE 3315 & IE 4315	OPERATIONS RESEARCH I and OPERATIONS RESEARCH II	6
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¹ See general core requirements (p. 50).

² Fifteen additional advanced mathematics hours (MATH 3301 or above, except for capstone mathematics courses specifically for prospective middle grades or secondary grades mathematics teachers).

Capstone mathematics courses specifically for prospective middle grade mathematics teachers do not count toward a degree in mathematics. Capstone mathematics courses for secondary mathematics teachers will count only for those working on the BS in Mathematics with Teaching Certification.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
MATH 1426		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
HIST 1301		3 BIOL 1441	4
UNIV 1131		1 HIST 1302	3
CSE 1311		3	
		14	14

Second Year

First Semester	Hours	Second Semester	Hours
MATH 2326		3 MATH 3313	3
MATH 3330		3 MATH 3316	3
Social & Behavioral Science		3 MATH 3300	3
BIOL 1442		4 Creative Arts	3
Language & Philosophy		3 Life & Physical Science	3
		16	15

Third Year

First Semester	Hours	Second Semester	Hours
MATH 3335		3 MATH 4335	3
Life & Physical Science		3 Advanced math elective	3
POLS 2311		3 POLS 2312	3
MATH 3318		3 IE 4315	3
IE 3315		3 MATH 4324	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
MATH 3345		3 MATH 3321	3
Advanced math elective		6 Modern Language II	4
Modern Language I		4 MATH 4311	3
MATH 4322		3 Advanced math elective	6
		16	16

Total Hours: 121

Requirements for a Bachelor of Science Degree in Mathematics (Pure Mathematics Option)

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
Communication ¹		6
Language, Philosophy, and Culture ¹		3
Social and Behavioral Sciences ¹		3
Creative Arts ¹		3
Foundational Component Area ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3

Modern and Classical Languages (Levels I and II or higher) in one language		8
Select one of the following sequences in life and physical science:		6-8
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY	
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
Life and Physical Science: select 6 additional hours from required or that use required as prerequisite		6
Select one of the following in computer programming:		3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS	
CSE 1320	INTERMEDIATE PROGRAMMING	
CSE 1325	OBJECT-ORIENTED PROGRAMMING	
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING	
Select one of the following in computer literacy:		0-3
CSE 1301	COMPUTER LITERACY	
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	
Or equivalent course approved by Undergraduate Advisor		
Or competency test		
Professional Courses		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
MATH 4321	ABSTRACT ALGEBRA II	3
MATH 4322	INTRODUCTION TO COMPLEX VARIABLES	3
MATH 4335	ANALYSIS II	3
Additional advanced hours ²		27

¹ See general core requirements (p. 50).

² 27 additional advanced mathematics hours (MATH 3301 or above, except for capstone mathematics courses specifically for prospective middle grades or secondary grades mathematics teachers).

Capstone mathematics courses specifically for prospective middle grade mathematics teachers do not count toward a degree in mathematics. Capstone mathematics courses for secondary mathematics teachers will count only for those working on the BS in Mathematics with Teaching Certification.

Bachelor of Science in Mathematics with Secondary Teaching Certification

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
Social and Behavioral Sciences ¹		3
Creative Arts ¹		3
Foundational Component Area ¹		3
Program Requirements		
ENGL 1301	RHETORIC AND COMPOSITION I	3

ENGL 1302	RHETORIC AND COMPOSITION II	3
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages (Levels I and II or higher) in one language		8
Select one of the following sequences in life and physical science: ³		6-8
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
Additional science hours taken from the above science courses or that use required as prerequisite		3
Select one of the following in computer programming:		3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS	
CSE 1320	INTERMEDIATE PROGRAMMING	
CSE 1325	OBJECT-ORIENTED PROGRAMMING	
MAE 2360	NUMERICAL ANALYSIS & PROGRAMMING	
Professional Courses		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 2330	FUNCTIONS AND MODELING	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3301	FOUNDATIONS OF GEOMETRY	3
MATH 3307	ELEMENTARY NUMBER THEORY	3
MATH 3314	DISCRETE MATHEMATICS	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
Select one of the following:		3
MATH 4321	ABSTRACT ALGEBRA II	
MATH 4335	ANALYSIS II	
MATH 4334	ADVANCED MULTIVARIABLE CALCULUS	
Additional advanced hours ²		3
Education Requirements ³		
SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3
Choose one of:		3
BIOL 4343	RESEARCH METHODS - UTEACH	
CHEM 4343	RESEARCH METHODS - UTEACH	
GEOL 4343	RESEARCH METHODS - UTEACH	
PHYS 4343	RESEARCH METHODS - UTEACH	

SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
SCIE 4107	CLINICAL TEACHING SEMINAR	1

¹ See general core requirements (p. 50).

² Three additional advanced hours (MATH 3302 or above, except MATH 4350 and MATH 4351 CALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS), including either a second sequence or a capstone course specifically for prospective secondary mathematics teachers.

³ Certification requirements are subject to change; consult with an advisor in UTeach Arlington to verify current requirements.

Requirements for a Bachelor of Science Degree in Mathematics (Data Science Option)

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
General Core Requirements		
Communication ¹		6
Language, Philosophy, and Culture ¹		3
Social and Behavioral Sciences ¹		3
Creative Arts ¹		3
Foundational Component Area ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages (Levels I and II or higher) in one language		8
Select one of the following sequences in life and physical science:		6-8
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY	
CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	
Life and Physical Science: select 3 additional hours from required or that use required as prerequisite		3
Professional Courses		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3302	MULTIVARIATE STATISTICAL METHODS	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3314	DISCRETE MATHEMATICS	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
MATH 4311	STOCHASTIC MODELS AND SIMULATION	3
Select one of the following:		3
MATH 4313	MATHEMATICAL STATISTICS	
MATH 4314	ADVANCED DISCRETE MATHEMATICS	
MATH 4330	ADVANCED LINEAR ALGEBRA	
MATH 4381	MATHEMATICS RESEARCH	

Select one of the following:

3

MATH 4321	ABSTRACT ALGEBRA II	
MATH 4335	ANALYSIS II	
MATH 4334	ADVANCED MULTIVARIABLE CALCULUS	

Data science requirements

DATA 3401	PYTHON FOR DATA SCIENCE 1	4
DATA 3402	PYTHON FOR DATA SCIENCE 2	4
DATA 3421	DATA MINING, MANAGEMENT, AND CURATION	4
DATA 3441	STATISTICAL METHODS FOR DATA SCIENCE 1	4
DATA 3442	STATISTICAL METHODS FOR DATA SCIENCE 2	4
DATA 3461	MACHINE LEARNING	4

¹ See general core requirements (p. 50).

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
MATH 1426		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
HIST 1301		3 HIST 1302	3
UNIV 1131		1 CHEM 1442	4
CHEM 1441		4	
		15	14

Second Year

First Semester	Hours	Second Semester	Hours
MATH 2326		3 MATH 3313	3
MATH 3330		3 MATH 3316	3
Social & Behavioral Science		3 MATH 3300	3
Language & Philosophy		3 Creative Arts	3
MATH 3314		3 Life & Physical Science	3
		15	15

Third Year

First Semester	Hours	Second Semester	Hours
MATH 3335		3 MATH 4335	3
POLS 2311		3 POLS 2312	3
MATH 3318		3 MATH 3302	3
DATA 3401		4 DATA 3402	4
DATA 3441		4 DATA 3442	4
		17	17

Fourth Year

First Semester	Hours	Second Semester	Hours
MATH 3345		3 MATH 3321	3
Modern Language I		4 Modern Language II	4
DATA 3421		4 MATH 4311	3
DATA 3461		4 MATH 4313	3
		15	13

Total Hours: 121

Requirements for Accelerated BS/MS Degrees: Bachelor of Science in Mathematics and Master of Science in Mathematics

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
Communication ¹		6
Language, Philosophy, and Culture ¹		3
Social and Behavioral Sciences ¹		3
Creative Arts ¹		3

Foundational Component Area ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages (Levels I and II or higher) in one language		8
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
CHEM 1441	GENERAL CHEMISTRY I	4
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	8
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	3
Professional Courses		
Major		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3313	INTRODUCTION TO PROBABILITY	3
MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
MATH 4313	MATHEMATICAL STATISTICS	3
MATH 4335	ANALYSIS II	3
Additional advanced hours in mathematics ²		6
Graduate course work		
MATH 5305	STATISTICAL METHODS	3
MATH 5307	MATHEMATICAL ANALYSIS I	3
MATH 5317	REAL ANALYSIS	3
MATH 5333	LINEAR ALGEBRA AND MATRICES	3
MATH 5338	NUMERICAL ANALYSIS I	3
MATH 5339	NUMERICAL ANALYSIS II	3
MATH 5391	SPECIAL TOPICS IN MATHEMATICS	3
MATH 5395	SPECIAL PROJECT	3
MATH 6310	FOUNDATION OF DATA SCIENCES	3
MATH 6311	OPTIMIZATION ON BIG DATA	3
Additional graduate hours in mathematics		3

SUGGESTED COURSE SEQUENCE

First Year			
First Semester	Hours	Second Semester	Hours
MATH 1426		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
HIST 1301		3 CSE 1310	3
UNIV 1131		1 Creative Arts Elective	3
CHEM 1441		4 BIOL 1441	4
		15	17
Second Year			
First Semester	Hours	Second Semester	Hours
MATH 2326		3 PHYS 1444	4
PHYS 1443		4 MATH 3318	3
MATH 3330		3 MATH 3300	3

Social & Behavioral Science	3 MATH 3316	3
Language & Philosophy	3 Modern Language	4
	16	17
Third Year		
First Semester	Hours	Second Semester
MATH 3313		3 HIST 1302
MATH 3345		3 MATH 4335
MATH 3335		3 MATH 3321
MATH 3316		3 MATH 4313
Modern Language		4
	16	12
Fourth Year		
First Semester	Hours	Second Semester
MATH 5333		3 MATH 5300
MATH 5307		3 POLS 2312
POLS 2311		3 MATH 5317
MATH 3345		3 Undergraduate upper division hours in mathematics
Elective undergrad course		3
	15	15
Fifth Year		
First Semester	Hours	Second Semester
MATH 5305		3 MATH 5395
MATH 5338		3 MATH 6311
MATH 6310		3 MATH 5339
MATH 5391		3 Graduate mathematics hours
	12	12

Total Hours: 147

Requirements for Accelerated BS/MS Degrees: Bachelor of Science in Mathematics and Master of Science in Biomedical Engineering

UNIV 1131	STUDENT SUCCESS	1
General Core Requirements (p. 50)		42
Pre-Professional Courses		
Communication ¹		6
Language, Philosophy, and Culture ¹		3
Social and Behavioral Sciences ¹		3
Creative Arts ¹		3
Foundational Component Area ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Modern and Classical Languages (Levels I and II or higher) in one language		8
BIOL 1441 & BIOL 1442	CELL AND MOLECULAR BIOLOGY and EVOLUTION AND ECOLOGY	8
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	8
CSE 1311	INTRODUCTION TO PROGRAMMING FOR ENGINEERS	3
Professional Courses		
Major		
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
MATH 2326	CALCULUS III	3
MATH 3300	INTRODUCTION TO PROOFS (satisfies Oral Communication Competency)	3
MATH 3313	INTRODUCTION TO PROBABILITY	3

MATH 3316	STATISTICAL INFERENCE	3
MATH 3318	DIFFERENTIAL EQUATIONS	3
MATH 3321	ABSTRACT ALGEBRA I	3
MATH 3330	INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES	3
MATH 3335	ANALYSIS I	3
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	3
MATH 4313	MATHEMATICAL STATISTICS	3

Select one of the following to complete one sequence: 3

MATH 4321	ABSTRACT ALGEBRA II	
MATH 4334	ADVANCED MULTIVARIABLE CALCULUS	
MATH 4335	ANALYSIS II	

Additional advanced hours in mathematics ² 6

BE 3317	LINEAR SYSTEMS IN BIOENGINEERING	3
BE 3320	MEASUREMENT LABORATORY	3

Complete requirement for Master of Science in Biomedical Engineering (please see Biomedical Engineering in the Engineering section of graduate catalog)

Up to three graduate courses in Biomedical Engineering chosen from the following list will be allowed for undergraduate credit in Fast Track Program:

BE 5309	HUMAN PHYSIOLOGY IN BIOENGINEERING	
BE 5325	FLUORESCENCE MICROSCOPY	
BE 5326	TISSUE ULTRASOUND OPTICAL IMAGING	
BE 5337	TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING	
BE 5343	IMAGE PROCESSING WITH MATLAB: APPLICATIONS IN MEDICINE AND BIOLOGY	
BE 5344	BIOINSTRUMENTATION I	
BE 5346	MEDICAL IMAGING	
BE 5352	DIGITAL PROCESSING OF BIOLOGICAL SIGNALS	
BE 5364	TISSUE ENGINEERING LECTURE	
BE 5365	TISSUE ENGINEERING LAB	
BE 5366	PROCESS CONTROL IN BIOTECHNOLOGY	
BE 5372	DRUG DELIVERY	
BE 5373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	
BE 5382	LABORATORY PRINCIPLES	
BE 5388	BIOMEDICAL PRODUCT DESIGN AND DEVELOPMENT	

¹ See general core requirements (p. 50).

² Six additional advanced hours (MATH 3301 or above, except for capstone mathematics courses specifically for prospective middle grades or secondary grades mathematics teachers). The need for a second sequence is fulfilled by Math 3313/4313.

Capstone mathematics courses specifically for prospective middle grade mathematics teachers do not count toward a degree in mathematics. Capstone mathematics courses for secondary mathematics teachers will count only for those working on the BS in Mathematics with Teaching Certification.

SUGGESTED COURSE SEQUENCE

First Year

First Semester	Hours	Second Semester	Hours
ENGL 1301		3 MATH 1426	4
HIST 1301		3 Modern Language Level 1	3
CSE 1311		3 CHEM 1441	4
UNIV 1131		1 ENGL 1302	3
BIOL 1441		4 Social & Behavioral	3
		14	17

Second Year

First Semester	Hours	Second Semester	Hours
MATH 2425		4 MATH 2326	3
PHYS 1443		4 MATH 3300	3
MATH 3330		3 MATH 3318	3
Modern Language Level II		3 PHYS 1444	4

Creative Arts		3 BE 3380	3
		17	16
Third Year			
First Semester	Hours	Second Semester	Hours
MATH 3313		3 HIST 1302	3
MATH 3316		3 MATH 3321	3
MATH 3335		3 MATH 4313	3
MATH 3345		3 MATH 4335	3
BE 3317		3 BE 3320	3
		15	15
Fourth Year			
First Semester	Hours	Second Semester	Hours
BE 4337		3 Choose one BE graduate course	3
POLS 2311		3 POLS 2312	3
Choose 2 BE graduate courses		6 Two statistics undergraduate courses	6
Language, Philosophy, & Culture		3 BE 4382	3
		15	15
Fifth Year			
First Semester	Hours	Second Semester	Hours
Choose 2 Statistics graduate level courses		6 Choose 4 BE graduate level courses	12
Choose 1 BE graduate level course		3	
		9	12
Total Hours: 145			

Minor

Students in non-engineering majors may minor in mathematics by taking 18 hours of mathematics courses with an average GPA in mathematics courses of 2.0, and with at least nine hours of 3000/4000 level courses. The courses that may be counted toward a math minor are MATH 1426 and above, except for capstone mathematics courses specifically for prospective middle or secondary grades mathematics teachers. Nine hours of the minor must be taken in residence. Engineering majors seeking a math minor should refer to the College of Engineering section of this catalog for the requirements for the engineering math minor.

College of Engineering students may minor in mathematics by taking 18 hours of mathematics courses with an average GPA in mathematics courses of 2.0, and with at least nine hours of 3000/4000 level courses. Nine hours of the minor must be taken in residence. The courses that may be counted toward a math minor are MATH 1426 and above, with exceptions listed below for certain majors:

- MATH 3313 is prohibited for BSCPE and BSIE majors
- MATH 3318 and MATH 3319 is prohibited for BSME and BSAE majors
- Only one of MATH 3319 or 3330 may be counted toward the minor
- Only one of MATH 3318 or 3319 may be counted toward the minor

Physics

Undergraduate Degrees

- Bachelor of Science in Physics (p. 1263)
- Bachelor of Science in Physics with Engineering Emphasis (p. 1263)
- Bachelor of Science in Physics with Medical School Preparation (p. 1263)
- Bachelor of Arts in Physics (p. 1263)
- Bachelor of Science in Physics with Physical Science Teacher Certification (UTeach) (p. 1263)
- Bachelor of Science in Physics with Physics/Mathematics Teacher Certification (UTeach) (p. 1263)
- Bachelor of Science in Physics with Master's in Materials Science and Engineering (Fast Track Program) (p. 1263)

Minors

- Minor in Physics (p. 1277)
- Minor in Astronomy for Non-Physics Majors (p. 1277)
- Minor in Astrophysics for Non-Physics Majors (p. 1277)

Graduate Degrees

- Physics, M.S. (p. 1261)
- Physics and Applied Physics, Ph.D. (p. 1261)

COURSES

PHYS 1181. PROBLEMS IN MECHANICS. 1 Hour.

Primarily an independent study course involving problem-solving in general technical mechanics. The objective is to prepare the student whose background in physics is of a non-technical nature to do advanced study in curricula requiring technical physics. This course in combination with PHYS 1441 shall serve as an equivalent to PHYS 1443. Prerequisite: MATH 1426 and a grade of B or better in PHYS 1441. Department consent may be granted to take this course with Physics B AP score of 4 or 5.

PHYS 1182. PROBLEMS IN ELECTRICITY AND MAGNETISM. 1 Hour.

Primarily an independent study course involving problem-solving in general technical electricity and magnetism. The objective is to prepare the student whose background in physics is of a non-technical nature to do advanced study in curricula requiring technical physics. This course in combination with PHYS 1442 shall serve as an equivalent to PHYS 1444. Prerequisite: MATH 2425 and a grade of B or better in PHYS 1442. Department consent may be granted to take this course with Physics B AP score of 4 or 5.

PHYS 1188. SPECIAL PROBLEMS IN GENERAL PHYSICS. 1 Hour.

Primarily laboratory work and/or problem-solving in general technical physics. Prerequisite: PHYS 1441 or PHYS 1443 lecture credit equivalent or PHYS 1442 or PHYS 1444 lecture credit equivalent.

PHYS 1288. SPECIAL PROBLEMS IN GENERAL PHYSICS. 2 Hours.

Primarily laboratory work and/or problem-solving in general technical physics. Prerequisite: PHYS 1441 and PHYS 1442 lecture credit equivalent or PHYS 1443 and PHYS 1444 lecture credit equivalent.

PHYS 1300. INTRODUCTION TO MUSICAL ACOUSTICS. 3 Hours.

An introduction, for the music major, to the nature of periodic motion and its relation to music, characteristics of sound waves, sources of sound used in music, musical scales and temperament, mechanics of hearing, recording and reproduction of sound. May not be used to satisfy any of the requirements for a degree in physics.

PHYS 1301. PHYSICS FOR NON SPECIALISTS I. 3 Hours.

PHYS 1301 and 1302 constitute a one-year introductory course for liberal arts and business majors. How physics plays a role in everyday life; explanations of how things work. Helps develop analytical thinking. The first semester explains motion and forces and heat.

PHYS 1302. PHYSICS FOR NON SPECIALISTS II. 3 Hours.

Follows PHYS 1301 and explains sound, light, electricity and magnetism. Prerequisite: PHYS 1301 or permission from instructor.

PHYS 1351. ENERGY AND ENVIRONMENT. 3 Hours.

This course explores the fundamental laws of nature and natural processes related to energy production, transport, storage, and uses. The objective of this course is to provide students with an in-depth understanding of the Physics of Energy and its relation to the Earth Environment. The course is designed for non-science major students with two one-hour lectures (or one two-hour lecture) and one 2-hour laboratory per week.

PHYS 1441. GENERAL COLLEGE PHYSICS I. 4 Hours. (TCCN = PHYS 1401)

The first half of a one-year, non-calculus introductory physics course taken by pre-medical, pre-dental, biology and architectural majors and others. The study of mechanics, elasticity, fluids, heat and waves is supplemented by laboratory experiments. Familiarity with high school algebra and trigonometry is required.

PHYS 1442. GENERAL COLLEGE PHYSICS II. 4 Hours. (TCCN = PHYS 1402)

The second half of a one-year, non-calculus introductory physics course. Subject matter includes electricity and magnetism, light and optics, and modern physics. Prerequisite: PHYS 1441 or equivalent, or permission of instructor.

PHYS 1443. GENERAL TECHNICAL PHYSICS I. 4 Hours. (TCCN = PHYS 2425)

The first half of a one-year technical course. Required for many science and engineering majors, exceeds premedical requirement. The study of physical phenomena in the fields of mechanics, heat, and waves. Concurrent enrollment in MATH 1426 (per prerequisite) is not recommended if no prior background in calculus. Prerequisite: MATH 1426 or consent of instructor.

PHYS 1444. GENERAL TECHNICAL PHYSICS II. 4 Hours. (TCCN = PHYS 2426)

The second half of a one-year technical course. The study of physical phenomena including electricity, magnetism, circuit theory, light, and optics. Prerequisites: PHYS 1443 or equivalent and MATH 2425 or concurrent enrollment.

PHYS 2311. MATHEMATICAL METHODS OF PHYSICS. 3 Hours.

Harmonic oscillators, waves, vector description of particles and fields, coordinate transformations, eigenvalue problems, and systems of linear equations. Prerequisites: PHYS 1444 or equivalent and MATH 2425.

PHYS 2315. INTRODUCTORY ASTROPHYSICS. 3 Hours.

This course introduces Science and Engineering majors to astrophysics. Subject matter includes the solar system, stellar properties and evolution, the Milky Way galaxy, normal and active galaxies, and cosmology. Prerequisite: PHYS 1444 or permission of the instructor.

PHYS 2321. COMPUTATIONAL PHYSICS. 3 Hours.

Development of computational techniques, including simulation, through applications to physical problems. A survey of topics including the multi-body problem, celestial mechanics, scattering, chaos, percolation, fractals, random processes, Fourier techniques in wave phenomena, Monte Carlo methods, and image reconstruction techniques. Prerequisite: PHYS 1444 or equivalent.

PHYS 3183. MODERN PHYSICS LABORATORY. 1 Hour.

Supplements the topics covered in PHYS 3313. Prerequisite: PHYS 3313 or concurrent enrollment.

PHYS 3313. INTRODUCTION TO MODERN PHYSICS. 3 Hours.

A brief introduction to the theories of quantum mechanics and statistical mechanics followed by a survey of atomic physics, conductors, semiconductors and modern electronic devices, nuclear and sub-nuclear physics. Prerequisites: PHYS 1444 or equivalent and MATH 2425.

PHYS 3315. ASTROPHYSICS AND COSMOLOGY. 3 Hours.

Diverse concepts in theoretical physics are applied to a wide range of astrophysical problems. Topics include stellar properties, spectra, evolution, radiation transport, nuclear reactions, degenerate matter, orbital mechanics, galactic dynamics, introductory general relativity and cosmology. Prerequisite: PHYS 3313 and MATH 3318 or MATH 3319.

PHYS 3316. ASTROBIOLOGY I. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include properties of life, origin and evolution of life on Earth, terrestrial geology and habitability, environmental forcings, extremophiles, mass extinctions, meteorites, searches for life in the solar system. Offered as BIOL 3316, GEOL 3316 and PHYS 3316; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent.

PHYS 3321. INTERMEDIATE ELECTRICITY AND MAGNETISM. 3 Hours.

Vector algebra and vector calculus applied to electrostatics, magnetostatics, the study of dielectric materials, and boundary value problems. Prerequisite: PHYS 2311 and MATH 3318 or MATH 3319.

PHYS 3341. INTRODUCTION TO BIOLOGICAL PHYSICS. 3 Hours.

This course will cover four parts: Part I - History of Biological Physics and the general introduction of Cell biology; Part II - Physics of Biomaterials including polymer Physics; DNA & RNA; Protein Structures, Functions and Physics; Part III - Physics of life genetics including molecular motors, ATP functions, Photosynthesis and Physics of genetic regulations; and Part IV - Physics of biological detection including Physics of Radiation diagnosis; Optical Imaging; Magnetic Resonance Imaging and Ultrasound imaging. Prerequisite: PHYS 1442 or PHYS 1444 or equivalent.

PHYS 3342. INTRODUCTION TO NANO-BIO PHYSICS. 3 Hours.

The objective of this course is to provide students with an in-depth understanding of the physics of nanotechnology and its biological applications. The course is composed of two parts: nanoparticle physics and nano-bio physics. In the first part, the physics of nanotechnology will be introduced. The second part is the biological applications of nanotechnology, for which the focus will be on how to understand the physics of these applications. The understanding of the physical objectives for these applications will be helpful for the exploration of nano-biotechnology. Key advances from the recent literature will be reviewed and introduced to students as supplemental topics. Prerequisite: PHYS 1442 or PHYS 1444 or equivalent.

PHYS 3358. ASTROBIOLOGY II. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include basic properties of life, habitability of Earth, studies of possible life regarding Mars, Europa & Titan, space missions, exoplanets and exomoons, stellar habitable zones, multistellar systems, exoEarths, biomarkers, SETI, Fermi paradox, Drake equation, cosmology. Offered as BIOL 3358, GEOL 3358, and PHYS 3358; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent. Note that Astrobiology I is strongly recommended to students to be taken prior to Astrobiology II, but is not a prerequisite.

PHYS 3360. PHYSICS OF THE HUMAN BODY. 3 Hours.

This course will explore the fundamental laws and natural processes related to the mechanics, fluid dynamics, optics, and biophysics of the human body. It is designed for kinesiology pre-health, biology and nursing students seeking to understand the foundations and biophysical principles of human life. Note that Kinesiology students seeking to apply to science based graduate programs are advised to take PHYS 1441 and PHYS 1442 so the prerequisite requirement of these courses will not preclude the students for whom PHYS 3360 is intended from taking the course. Prerequisite: PHYS 1441.

PHYS 3366. SPECIAL TOPICS IN PRE-COLLEGE PHYSICAL SCIENCE INSTRUCTION. 3 Hours.

A laboratory oriented curriculum for teaching physical science and/or physics is developed and experienced. The developed curriculum is particularly appropriate for pre-college instruction. May be repeated for credit as the subject matter changes, but not more than six hours credit may be accumulated. Prerequisite: junior standing, six hours of science, three hours of education, and consent of the instructor.

PHYS 3445. OPTICS. 4 Hours.

Fundamental principles of physical and geometric optics, absorption and scattering, Planck's quantum theory of radiation, diffraction, interference, light sources, and spectra. Prerequisites: PHYS 1444 or equivalent and MATH 2425.

PHYS 3446. NUCLEAR AND PARTICLE PHYSICS. 4 Hours.

The study of atomic nuclei and the fundamental constituents of matter. Topics include nuclear structure, radioactivity, nuclear reactions, fission, fusion, particles and their interactions, the standard model of particle physics, experimental methods, accelerators, and examples from current research topics. Prerequisite: PHYS 3313.

PHYS 3455. ELECTRONICS. 4 Hours.

A study of electronic components and quantum devices and their application to circuits and instrumentation. Prerequisites: PHYS 3313 and MATH 2425.

PHYS 4081. UNDERGRADUATE RESEARCH IN PHYSICS. 0 Hours.

Independent research conducted on a selected topic under the supervision of a member of the Physics faculty. This course may be repeated. This is a non-credit course so cannot be used to meet degree requirements. Prerequisite: Permission of instructor.

PHYS 4117. INDIVIDUAL LEARNING BY SEMINAR. 1 Hour.

Individual instruction on using the seminar as a model of learning current topics in physics. An individual report is required. Prerequisite: 18 hours of physics and senior standing.

PHYS 4171. ADVANCED OPTICS LABORATORY. 1 Hour.

Special laboratory projects in advanced optics. Prerequisite: PHYS 3445 or permission of the instructor.

PHYS 4181. SPECIAL PROBLEMS. 1 Hour.

Selected projects in research or teaching laboratories, which may be repeated in any order for a total credit not to exceed four hours, unless authorized by the undergraduate advisor. Prerequisite: Permission from instructor and Physics undergraduate advisor.

PHYS 4185. ADVANCED ELECTRICITY AND MAGNETISM LABORATORY. 1 Hour.

Supplements the topics covered in PHYS 3321 and PHYS 4324. Prerequisite: PHYS 4324 or concurrent enrollment.

PHYS 4191. SPECIAL TOPICS IN PHYSICS. 1 Hour.

Selected topics arranged on an individual basis, which may be repeated with permission from instructor and Physics undergraduate advisor. Prerequisite: as determined for topic or permission from instructor.

PHYS 4271. ADVANCED OPTICS LAB. 2 Hours.

Special laboratory projects in advanced optics. Prerequisite: PHYS 3445 or permission of the instructor.

PHYS 4281. SPECIAL PROBLEMS. 2 Hours.

Selected projects in research or teaching laboratories, which may be repeated in any order for a total credit not to exceed four hours, unless authorized by the undergraduate advisor. Prerequisite: permission from the instructor and the Physics undergraduate advisor.

PHYS 4291. SPECIAL TOPICS. 2 Hours.

Selected topics arranged on an individual basis, which may be repeated with permission from instructor and Physics undergraduate advisor. Prerequisite: as determined for topic or permission from instructor.

PHYS 4315. THERMODYNAMICS AND STATISTICAL MECHANICS. 3 Hours.

Topics in classical thermodynamics include the laws of thermodynamics, Gibbs' and Helmholtz's free energies, the Maxwell relations, heat capacities, entropy change calculations, phase and chemical changes. Statistical mechanics centers on the partition function and its applications, such as the entropy of an ideal gas, the Maxwell velocity distribution, the heat capacity of a solid, photon statistics, and blackbody radiation. Fermi-Dirac and Bose-Einstein statistics. Prerequisite: PHYS 3313 and MATH 2326 or permission of the instructor.

PHYS 4319. ADVANCED MECHANICS. 3 Hours.

Coupled oscillators, central forces, Lagrange's equations, Hamilton's canonical equations, the moment of inertia tensor, and the application of Euler's angles to rotational motion. Prerequisite: PHYS 2311, PHYS 3321, and MATH 3318 or MATH 3319, or permission of the instructor.

PHYS 4324. ADVANCED ELECTRICITY AND MAGNETISM. 3 Hours.

Electromagnetic phenomena based on Maxwell's equations and particle-field interactions. Prerequisite: PHYS 3321 or permission of the instructor.

PHYS 4325. SOLID STATE PHYSICS. 3 Hours.

Classification of crystalline solids and elastic and thermal properties, electric and magnetic properties, and electronic properties of solids. An introduction to current research problems. Prerequisite: PHYS 4315 or permission of the instructor.

PHYS 4326. INTRODUCTION TO QUANTUM MECHANICS. 3 Hours.

Schrodinger's equation and implications, the free particle, the one-electron atom, the potential barrier, and perturbation theory. Prerequisite: PHYS 3313, MATH 3318 or MATH 3319, or permission of the instructor.

PHYS 4327. INTRODUCTION TO QUANTUM MECHANICS II. 3 Hours.

This is a continuation of Introduction to Quantum Mechanics (PHYS 4326). The topics that will be covered will include: time-independent perturbation theory for non-degenerate states, degenerate perturbation theory, atoms with one or two electrons and molecules, Fermi and Bose gases, time-dependent perturbation theory, scattering theory, and introduction to relativistic quantum mechanics. Prerequisite: PHYS 4326 or permission from instructor.

PHYS 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with 4 independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: C or better in SCIE 1201 or SCIE 1334 or concurrent enrollment; junior or senior standing.

PHYS 4391. SPECIAL TOPICS. 3 Hours.

Selected topics arranged on an individual basis, which may be repeated with permission from instructor and Physics undergraduate advisor. Prerequisite: as determined for topic or permission from instructor.

PHYS 4393. HONORS THESIS IN PHYSICS. 3 Hours.

Required of all students in the University Honors College. During the senior year the honors physics major will perform a research project under the direction of a Physics Department faculty member.

PHYS 5193. READINGS IN PHYSICS. 1 Hour.

Conference course. May be repeated for credit.

PHYS 5194. RESEARCH IN PHYSICS. 1 Hour.

Conference course with laboratory. May be repeated for credit.

PHYS 5294. RESEARCH IN PHYSICS. 2 Hours.

Conference course with laboratory. May be repeated for credit.

PHYS 5305. CHAOS AND NONLINEAR DYNAMICS. 3 Hours.

Introduction to basic principles and concepts of chaos theory and their applications in diverse fields of research. Topics include chaotic and non-chaotic systems, stability analysis and attractors, bifurcation theory, routes to chaos and universality in chaos, iterated maps, Lyapunov exponents, fractal dimensions, multifractals, hamiltonian chaos, quantum chaos, controlling chaos, self-organized systems, and theory of complexity.

PHYS 5306. CLASSICAL MECHANICS. 3 Hours.

General principles of analytical mechanics, the kinematics of rigid bodies, canonical transformation, Hamilton-Jacobi theory.

PHYS 5307. QUANTUM MECHANICS I. 3 Hours.

Matrix formulation, theory of radiation, angular momentum, perturbation methods.

PHYS 5308. QUANTUM MECHANICS II. 3 Hours.

Approximate methods, symmetry and unitary groups, scattering theory. Prerequisite: PHYS 5307.

PHYS 5309. ELECTROMAGNETIC THEORY I. 3 Hours.

Boundary value problems in electrostatics and magnetostatics, Maxwell's equations.

PHYS 5310. STATISTICAL MECHANICS. 3 Hours.

Fundamental principles of statistical mechanics, Liouville theorem, entropy, Fermi-Dirac distribution, Bose-Einstein distribution, Einstein condensation, density matrix, quantum statistical mechanics, kinetic methods, and transport theory.

PHYS 5311. MATHEMATICAL METHODS IN PHYSICS I. 3 Hours.

Algebraic and analytical methods used in modern physics. Algebra: matrices, groups, and tensors, with application to quantum mechanics, the solid state, and special relativity. Analysis: vector calculus, ordinary and partial differential equations, with applications to electromagnetic and seismic wave propagation.

PHYS 5312. MATHEMATICAL METHODS IN PHYSICS II. 3 Hours.

Continuation of PHYS 5311 with a selection from the following topics. Algebra: matrix representations of the symmetric and point groups of solid state physics, matrix representations of the continuous groups $O(3)$, $SU(2)$, $SU(3)$, $SL(2, C)$, general covariance. Analysis: further study of analytic functions, Cauchy's theorem, Green's function techniques, orthogonal functions, integral equations. Prerequisite: PHYS 5311.

PHYS 5313. ELECTROMAGNETIC THEORY II. 3 Hours.

Modern tensorial treatment of classical electrodynamics, force on and field of a moving charge, derivation and application of 4-vector potential, Maxwell's equations in tensor form, field momentum and radiation. Prerequisite: PHYS 5309.

PHYS 5314. ADVANCED OPTICS. 3 Hours.

Electromagnetic wave equations, theory of diffraction, radiation scattering and dispersion, coherence and laser optics. Additional advanced topics of current interest.

PHYS 5315. SOLID STATE I. 3 Hours.

Crystal structure, lattice vibration, thermal properties, and band theory of solids.

PHYS 5316. SOLID STATE II. 3 Hours.

Electrical and magnetic properties of crystalline solids, magnetic resonance, and optical phenomena. Prerequisite: PHYS 5315.

PHYS 5317. STATISTICAL MECHANICS II. 3 Hours.

Methods in applied statistical mechanics. Topics may include fluctuations and critical phenomena, the Ising model, the master equation, transport in solids, and chaos. Prerequisite: PHYS 5310.

PHYS 5319. MATHEMATICAL METHODS IN PHYSICS III. 3 Hours.

Numerical methods for applied physics; computer techniques, numerical differentiation, integration, interpolation, extrapolation; differential equations, integral equations, statistical analysis; scientific computer library; artificial intelligence programming.

PHYS 5320. QUANTUM MECHANICS III. 3 Hours.

Quantum theory of radiation; relativistic equations; elements of quantum field theory; symmetries and gauge theories. Applications in elementary particle physics and solid-state physics. Prerequisite: PHYS 5308 and PHYS 5312.

PHYS 5325. INTRODUCTION TO ELEMENTARY PARTICLES I. 3 Hours.

An overview of particles and forces. Particle detectors and accelerators. Invariance principles and conservation laws. Standard model. Electromagnetic, weak, strong, and unified interactions.

PHYS 5326. INTRODUCTION TO ELEMENTARY PARTICLE PHYSICS II. 3 Hours.

Systematics of the quark model; the fundamental interactions of elementary particles; spin and relativistic kinematics; Dirac Equation; the standard electroweak model. Prerequisite: PHYS 5325.

PHYS 5328. SURFACE PHYSICS. 3 Hours.

Experimental and theoretical methods for the study of solid surfaces. Geometric and electronic structure of metals and semiconductors. Surfaces as model systems of reduced dimensionality. Adsorption phenomena and film growth.

PHYS 5330. PHYSICS OF SEMICONDUCTOR PROCESSING AND CHARACTERIZATION. 3 Hours.

Selection from the following topics: physics of crystal growth, lattice defects, impurity diffusion, ion-implantation, thin film growth and plasma etching. Physics of characterization techniques utilizing resistivity, carrier mobility and lifetimes, electrons, x-rays, ions, Rutherford backscattering, neutron activation analysis, positron annihilation spectroscopy, deep-level transient spectroscopy.

PHYS 5381. MECHANICS & HEAT FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Topics include: 1) Newton's laws of motion, gravitation, and planetary motion; 2) the basic laws of thermal and statistical physics; 3) oscillatory motion including waves and sound. Replaceable experiments will be demonstrated throughout the course.

PHYS 5382. ELECTROMAGNETISM FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Topics include: 1) Static charges, current flow, electric and magnetic fields; 2) simple DC/AC electrical circuits including examples from household circuit and practical electronic devices; 3) light and optics including examples such as cameras, microscopes and telescopes. Replaceable experiments will be demonstrated throughout the course.

PHYS 5383. MODERN PHYSICS FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Topics include: 1) Introduction to special relativity and quantum theory; 2) light and radiation; 3) applications to modern electrical devices; 4) nuclear and particle physics.

PHYS 5385. PHYSICS LAB TECHNIQUES FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Experiments demonstrating various topics are covered. Experiments include gravitational acceleration heat flow, harmonic motion, sound, electric magnetic fields, electric circuits, optic, x-rays and nuclear radiation.

PHYS 5391. SPECIAL TOPICS IN PHYSICS. 3 Hours.

Topics in physics, particularly from areas in which active research is being conducted, are assigned to individuals or small groups for intensive investigations. May be repeated for credit.

PHYS 5393. READINGS IN PHYSICS. 3 Hours.

Conference course. May be repeated for credit.

PHYS 5394. RESEARCH IN PHYSICS. 3 Hours.

Conference course with laboratory. May be repeated for credit.

PHYS 5398. THESIS. 3 Hours.**PHYS 5694. RESEARCH IN PHYSICS. 6 Hours.**

Conference course with laboratory. May be repeated for credit.

PHYS 5698. THESIS. 6 Hours.**PHYS 6301. METHODS OF APPLIED PHYSICS I--ELECTRONICS. 3 Hours.**

The analysis and design of electronic circuits for use in the laboratory. Transistors and integrated circuits in analog instrumentation. Digital logic. Information theory and signal processing.

PHYS 6302. METHODS OF APPLIED PHYSICS II--COMPUTERS IN PHYSICS. 3 Hours.

Applications of computers in physics. Acquisition and analysis of experimental data. Vector and parallel processing, image processing, simulation.

PHYS 6303. METHODS OF APPLIED PHYSICS III--SPECTROSCOPY. 3 Hours.

The principles (interactions, cross-sections, elastic and inelastic scattering, diffraction, coherence), the methodologies (sources, detectors, visualization), and applications (structure, dynamics, composition, excitations) of neutral and charged particle spectroscopies to condensed matter physics and materials science.

PHYS 6304. APPLIED PHYSICS INTERNSHIP. 3 Hours.

Applied physics and engineering research and training in industry or other science or engineering departments of U.T. Arlington or other institutions requiring applied physicists. Faculty supervision and submission of technical progress reports required.

PHYS 6391. SELECTED TOPICS IN APPLIED PHYSICS. 3 Hours.

Topics chosen from research areas in the Department of Physics or at one of the institutions or corporations participating in the traineeship program in applied physics; emphasis on industrial and engineering applications. May be repeated for credit.

PHYS 6399. DISSERTATION. 3 Hours.**PHYS 6604. APPLIED PHYSICS INTERNSHIP. 6 Hours.**

Applied physics and engineering research and training in industry or other science or engineering departments of U.T. Arlington or other institutions requiring applied physicists. Faculty supervision and submission of technical progress reports required.

PHYS 6699. DISSERTATION. 6 Hours.**PHYS 6904. APPLIED PHYSICS INTERNSHIP. 9 Hours.**

Applied physics and engineering research and training in industry or other science or engineering departments of U.T. Arlington or other institutions requiring applied physicists. Faculty supervision and submission of technical progress reports required.

PHYS 6999. DISSERTATION. 9 Hours.**PHYS 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Physics - Graduate Programs

Objective

The objective of graduate work in physics is to prepare the student for continued professional and scholarly development as a physicist. The Physics MS Degree Programs are designed to give the student advanced training in all fundamental areas of physics through formal courses and the options of some degree of specialization or participation in original research in one of a variety of projects directed by the faculty.

The Doctor of Philosophy in Physics and Applied Physics Program combines the traditional elements of a science doctoral program with courses in specifically applied topics and internship in a technological environment. It is designed to produce highly trained professionals with a broad perspective of the subject which may prepare them equally well for careers in academia or government or industry. Current research in the department is predominantly in the areas of condensed matter physics, materials science, astro physics, space physics and high-energy physics.

Admission Criteria

For unconditional admission to the Master of Science program in physics, the candidate must satisfy the general admission requirements of the University, including a minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by Graduate Admissions and favorable letters of recommendation from individuals able to assess the applicant's potential for success in a Masters program. In addition, the candidate should have satisfactorily completed at least 24 undergraduate hours of advanced physics and supporting courses and should have minimal GRE scores of 143 in Verbal and 151 in Quantitative.

Applicants not meeting the minimum requirements of the department or the University for either program may still be considered for unconditional acceptance if other information in their application indicates a reasonable probability of success in graduate studies in physics.

PROBATIONARY ADMISSION

If an applicant does not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in their first 12 hours of graduate coursework at UT Arlington.

DEFERRED AND PROVISIONAL ADMISSION

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

DENIAL OF ADMISSION

A candidate may be denied admission if he or she have less than satisfactory performance on the admission criteria described above.

SCHOLARSHIPS AND FELLOWSHIPS

Students who are admitted will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on consideration of the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by Graduate Admissions, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships.

Degree Requirements: Master of Science

For the Thesis Option, a minimum of 30 hours is required for the Master of Science degree, of which 24 hours, including a six hour thesis (minimum registration), will be in physics, and six hours may be selected from physics, mathematics, chemistry, earth & environmental sciences, biology, or engineering as approved by the Graduate Advisor.

For the Non-thesis Option, a minimum of 36 hours is required for the Master of Science degree. They will be in physics. But up to nine hours may be selected from mathematics, chemistry, earth & environmental sciences, biology, or engineering as approved by the Graduate Advisor. The student is required to pass an oral comprehensive exam in the last semester.

Admission Criteria

For unconditional admission to the Doctor of Philosophy program, an applicant must have a master's degree or 30 semester hours of graduate credit in physics or a related field and satisfy the general admission requirements of the University, including a minimum graduate coursework GPA of 3.0 on a 4.0 scale, as calculated by Graduate Admissions and favorable letters of recommendation from individuals able to assess the applicant's potential for success in a Ph.D. program. In addition, the applicant should have minimal GRE scores of 143 in Verbal and 151 in Quantitative.

Applicants not meeting the minimum requirements of the department or the University for either program may still be considered for unconditional acceptance if other information in their application indicates a reasonable probability of success in graduate studies in physics.

PROBATIONARY ADMISSION

If an applicant does not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in their first 12 hours of graduate coursework at UT Arlington.

DEFERRED AND PROVISIONAL ADMISSION

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

DENIAL OF ADMISSION

A candidate may be denied admission if he or she have less than satisfactory performance on the admission criteria described above.

SCHOLARSHIPS AND FELLOWSHIPS

Students who are admitted will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on consideration of the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships.

Degree Requirements: Doctor of Philosophy

Each candidate must complete the following program requirements:

1. Demonstration of competence in a minimum of 39 credit hours of core courses chosen under the guidance of the supervising committee from the following (or from courses approved in advance by the Graduate Studies Committee):

Traditional Core Courses

PHYS 5306	CLASSICAL MECHANICS	3
PHYS 5307	QUANTUM MECHANICS I	3
PHYS 5308	QUANTUM MECHANICS II	3
PHYS 5309	ELECTROMAGNETIC THEORY I	3
PHYS 5313	ELECTROMAGNETIC THEORY II	3
PHYS 5310	STATISTICAL MECHANICS	3
PHYS 5311	MATHEMATICAL METHODS IN PHYSICS I	3
PHYS 5312	MATHEMATICAL METHODS IN PHYSICS II	3
PHYS 5315	SOLID STATE I	3
PHYS 5316	SOLID STATE II	3

Applied Physics Core Courses

PHYS 5314	ADVANCED OPTICS	3
PHYS 5319	MATHEMATICAL METHODS IN PHYSICS III	3
PHYS 6301	METHODS OF APPLIED PHYSICS I--ELECTRONICS	3
PHYS 6302	METHODS OF APPLIED PHYSICS II--COMPUTERS IN PHYSICS	3
PHYS 6303	METHODS OF APPLIED PHYSICS III--SPECTROSCOPY	3

Computer Science as required by the supervising committee

Total Hours	45
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2. Dissertation and additional research and elective courses chosen under the guidance of the supervising committee.

Physics - Undergraduate Programs

Academic Advising: 107 Life Science Building • 817.272.9685

Degree Programs

The Department of Physics offers five Bachelor of Science degree programs, a Bachelor of Arts degree program, and a Bachelor of Science in Physics/Master's in Materials Science and Engineering Fast Track Program.

The Bachelor of Science degree programs include one which prepares students for careers in science and technology, another for medical school preparation, and a third for students wanting to minor in an Engineering discipline. When combined with the required UTeach education courses, the Bachelor of Science program is also appropriate for students who are interested in becoming schoolteachers.* The Bachelor of Arts degree in Physics is intended for students who seek a broader education while retaining a firm foundation in Physics. The Bachelor of Science degree in Physics/Master's degree in Materials Science and Engineering Fast Track Program enables outstanding senior undergraduate students in Physics to satisfy degree requirements leading to a Bachelor's degree in Physics while simultaneously pursuing a Master's degree in Materials Science and Engineering.

Students considering a Physics major should schedule an appointment with the undergraduate advisor in Physics to discuss their degree and career options. Physics majors are encouraged to participate in research projects under faculty guidance for course credit or financial reward. In this way, undergraduate students have the choice of gaining hands-on experience from a variety of research disciplines, including astrophysics, biophysics, computational physics, high energy physics, medical physics, optics, space physics, and theoretical and experimental condensed matter physics.

The faculty of the Physics Department encourages qualified students to participate in the university's Honors College. Scholarships may be offered every year to new students majoring in Physics.

* Students desiring certification for teaching at the secondary level must fulfill specific requirements for the appropriate Physics B.S. Teacher Certification degree.

Second Major in Physics

Students who satisfy the requirements for any other baccalaureate degree qualify to have Physics named as a second major upon completion of the following courses:

PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS electives approved by Physics undergraduate advisor and/or Chair of the Department of Physics		17
Total Hours		37

Teacher Certification

Students who are interested in earning a Bachelor of Science degree in Physics with Secondary Teacher Certification should refer to the Bachelor of Science in Physics with Physical Science Teacher Certification and the Bachelor of Science in Physics with Physics/Mathematics Teacher Certification degree plans for requirements. Teacher certification is offered through the UTeach program.

Requirements for a Bachelor of Science in Physics

This program provides students with a rigorous training in Physics, which is designed to prepare for a career in science, technology, and/or engineering research.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3

PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 2321	WORLD HISTORY TO 1400	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3
PROGRAM REQUIREMENTS		
Communication Competence - satisfied by PHYS 4117		
Computer Use Competence - satisfied by Computer Science requirement for major		
PROFESSIONAL COURSES		
Select one of the following for Computer Science requirement:		
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
or higher-numbered CSE course		
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
or other suitable course approved by Physics undergraduate advisor and/or Chair of the Department of Physics		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
courses for majors offered in the departments of Biology and/or Earth and Environmental Sciences		6
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
or MATH 3318	DIFFERENTIAL EQUATIONS	
MATH 4000-level elective		3
Students may obtain a Mathematics minor by consulting with the undergraduate advisor for the Department of Mathematics to discuss additional requirements.		
MAJOR		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
PHYS 4319	ADVANCED MECHANICS	3
PHYS 4324	ADVANCED ELECTRICITY AND MAGNETISM	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS electives approved by Physics undergraduate advisor and/or Chair of the Department of Physics		14
General Electives		10
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		123

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Physics undergraduate advisor, particularly since many courses in Physics are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year			
First Semester	Hours	Second Semester	Hours
PHYS 1443		4 PHYS 1444	4
MATH 1426		4 ENGL 1302	3

ENGL 1301		3 MATH 2425	4
HIST 1301		3 HIST 1302	3
		14	14
Second Year			
First Semester	Hours	Second Semester	Hours
PHYS 3313		3 PHYS 2311	3
MATH 2326		3 PHYS 3183	1
MATH 3319 or 3318		3 BIOL or GEOL course for majors	3
Creative Arts *		3 Social/Behavioral Science *	3
CHEM 1441		4 CHEM 1442	4
		16	14
Third Year			
First Semester	Hours	Second Semester	Hours
PHYS 3321		3 PHYS 4324	3
approved PHYS elective		4 approved PHYS elective	4
Data Science Course (DATA 3401 or CSE 1310 or higher-numbered CSE course, PHYS 2321, or MATH 3345)		4 MATH 4000-level elective	3
POLS 2311		3 POLS 2312	3
General Elective		3 Language, Philosophy and Culture *	3
		17	16
Fourth Year			
First Semester	Hours	Second Semester	Hours
PHYS 4315		3 PHYS 4117	1
PHYS 4326		3 PHYS 4319	3
approved PHYS course		3 approved PHYS elective	3
BIOL or GEOL course for majors		3 Foundational Component Area *	3
General Elective		3 General Electives	4
		15	14
Total Hours: 120			

* See General Core Requirements (p. 50) for approved courses.

Requirements for a Bachelor of Science in Physics with Engineering Emphasis

This program allows students to augment a rigorous training in Physics with the choice of a minor in a suitable engineering discipline, thus combining a theoretical understanding of the basic physical theories with a practical, more detailed understanding given in the College of Engineering. Such a combination would be a bonus for employment in the engineering-type professions often chosen by Physics majors.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - satisfied by PHYS 4117

Computer Use Competence - satisfied by Computer Science requirement for major

PROFESSIONAL COURSES

Select one of the following for Computer Science requirement:

DATA 3401	PYTHON FOR DATA SCIENCE 1	4
or higher-numbered CSE course		
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
or other suitable course approved by Physics undergraduate advisor and/or Chair of the Department of Physics		
CHEM 1441	GENERAL CHEMISTRY I	4
course for majors in the departments of Biology, Chemistry and Biochemistry, or Earth and Environmental Sciences		4
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
or MATH 3318	DIFFERENTIAL EQUATIONS	
ENGINEERING MINOR: 18 or more hours as required by the appropriate Engineering department		18
MAJOR		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
PHYS 4324	ADVANCED ELECTRICITY AND MAGNETISM	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS electives approved by Physics undergraduate advisor and/or Chair of the Department of Physics		12
General Electives		6
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		120

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Physics undergraduate advisor as well as the undergraduate advisor in the appropriate Engineering department. Many courses in Physics are not offered every semester, and Engineering coursework and sequences are determined by individual departments in the College of Engineering. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year			
First Semester	Hours	Second Semester	Hours
PHYS 1443		4 PHYS 1444	4
MATH 1426		4 ENGL 1302	3
ENGL 1301		3 MATH 2425	4
HIST 1301		3 HIST 1302	3
		14	14
Second Year			
First Semester	Hours	Second Semester	Hours
PHYS 3313		3 PHYS 2311	3
MATH 2326		3 PHYS 3183	1
MATH 3319 or 3318		3 Engineering minor course **	3
Engineering minor course **		3 BIOL, CHEM, or GEOL course for majors	4
CHEM 1441		4 Creative Arts*	3
		16	14
Third Year			
First Semester	Hours	Second Semester	Hours
PHYS 3321		3 PHYS 4324	3
approved PHYS elective		4 approved PHYS elective	4
Engineering minor course **		3 Engineering minor course **	3

Data Science Course (DATA 3401 or CSE 1310 or higher-numbered CSE course, PHYS 2321, or MATH 3345)	3-4	POLS 2312	3
POLS 2311	3	Social/Behavioral Science *	3
	16-17		16
Fourth Year			
First Semester	Hours	Second Semester	Hours
PHYS 4315		3 PHYS 4117	1
PHYS 4326		3 approved PHYS elective	4
Engineering minor course **		3 Engineering minor course **	3
Language, Philosophy and Culture *		3 Foundational Component Area *	3
General Elective		3 General Elective(s)	3-4
	15		14-15

Total Hours: 119-121

* See General Core Requirements (p. 50) for approved courses.

** Actual number of courses/hours and course sequence determined by appropriate Engineering department.

Requirements for a Bachelor of Science in Physics with Medical School Preparation

This program offers the broad background in fundamental science and strong problem-solving ability of a Physics degree as well as specific Biology and Chemistry medical school requirements. The combination of skills developed in this program is designed to provide the intellectual foundation necessary for excellence in research and the practice of medicine.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - satisfied by PHYS 4117

Computer Use Competence - satisfied by Computer Science requirement for major

PROFESSIONAL COURSES

Select one of the following for Computer Science requirement:		3
DATA 3401	PYTHON FOR DATA SCIENCE 1	4
or higher-numbered CSE course		
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
or other suitable course approved by Physics undergraduate advisor and/or Chair of the Department of Physics		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2321	ORGANIC CHEMISTRY I	3
CHEM 2181	ORGANIC CHEMISTRY I LABORATORY	1
CHEM 2322	ORGANIC CHEMISTRY II	3
CHEM 2182	ORGANIC CHEMISTRY II LABORATORY	1

MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
or MATH 3318	DIFFERENTIAL EQUATIONS	
BIOLOGY MINOR		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
BIOL electives to give the total of 18 hours, 6 hours of which must be advanced (3000/4000-level)		10
MAJOR		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
or PHYS 4319	ADVANCED MECHANICS	
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS electives approved by Physics undergraduate advisor and/or Chair of the Department of Physics		11
General Electives		3
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		124

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Physics undergraduate advisor, particularly since many courses in Physics are not offered every semester. Consultation with the Health Professions advisor is also encouraged. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year

First Semester	Hours	Second Semester	Hours
PHYS 1443		4 PHYS 1444	4
MATH 1426		4 MATH 2425	4
CHEM 1441		4 CHEM 1442	4
ENGL 1301		3 ENGL 1302	3
		15	15

Second Year

First Semester	Hours	Second Semester	Hours
MATH 2326		3 PHYS 2311	3
MATH 3319 or 3318		3 BIOL 1441	4
CHEM 2321		3 CHEM 2322	3
CHEM 2181		1 CHEM 2182	1
HIST 1301		3 HIST 1302	3
		13	14

Third Year

First Semester	Hours	Second Semester	Hours
PHYS 3313		3 approved PHYS elective	4
PHYS 3183		1 approved PHYS elective	3
PHYS 3321		3 BIOL minor course **	3
BIOL 1442		4 Data Science Course (DATA 3401 or CSE 1310 or higher-numbered CSE course, PHYS 2321, or MATH 3345)	3-4
BIOL minor course **		3 Social/Behavioral Science *	3
		14	16-17

Fourth Year

First Semester	Hours	Second Semester	Hours
PHYS 4315		3 PHYS 4117	1
PHYS 4326		3 approved PHYS elective	4

BIOL minor course **	4 POLS 2312	3
POLS 2311	3 Creative Arts *	3
Language, Philosophy and Culture *	3 Foundational Component Area *	3
	General Elective	2-3
	16	16-17

Total Hours: 119-121

* See General Core Requirements (p. 50) for approved courses.

** Coursework for Biology minor should be chosen in consultation with a Biology undergraduate advisor.

Requirements for a Bachelor of Arts in Physics

This program is intended for students who seek a broader education while retaining a firm foundation in Physics.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - satisfied by PHYS 4117

Computer Use Competence - satisfied by Computer Science requirement for major

PROFESSIONAL COURSES

Select one of the following for Computer Science requirement:		3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	3
or higher-numbered CSE course		
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
or other suitable course approved by Physics undergraduate advisor and/or Chair of the Department of Physics		
courses for majors in the departments of Biology, Chemistry and Biochemistry, and/or Earth and Environmental Sciences		8
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
or MATH 3318	DIFFERENTIAL EQUATIONS	
Modern and Classical Languages		4
MINOR: 18 or more hours as required by the appropriate department		18
MAJOR		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3

PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS electives approved by Physics undergraduate advisor and/or Chair of the Department of Physics		11

General Electives 7

36 hours of coursework must be advanced (3000/4000-level) to earn degree.

Total Hours 123

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Physics undergraduate advisor, particularly since many courses in Physics are not offered every semester, as well as the undergraduate advisor in the appropriate department for the minor. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year

First Semester	Hours	Second Semester	Hours
MATH 1426		4 PHYS 1443	4
BIOL, CHEM, or GEOL course for majors		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
HIST 1301		3 HIST 1302	3
		14	14

Second Year

First Semester	Hours	Second Semester	Hours
PHYS 1444		4 PHYS 2311	3
MATH 2326		3 PHYS 3313	3
MATH 3319 or 3318		3 PHYS 3183	1
minor course**		3 BIOL, CHEM, or GEOL course for majors	4
Creative Arts *		3 minor course**	3
		16	14

Third Year

First Semester	Hours	Second Semester	Hours
PHYS 3321		3 approved PHYS elective	4
approved PHYS elective		4 minor course**	3
minor course**		3 Computer Science course (CSE 1310 or higher-numbered CSE course, PHYS 2321, or MATH 3345)	3
Modern/Classical Language		4 POLS 2312	3
POLS 2311		3 Social/Behavioral Science *	3
		17	16

Fourth Year

First Semester	Hours	Second Semester	Hours
PHYS 4315		3 PHYS 4117	1
PHYS 4326		3 approved PHYS elective	3
minor course**		3 minor course**	3
Language, Philosophy and Culture *		3 Foundation Component Area *	3
General Elective		3 General Elective(s)	4
		15	14

Total Hours: 120

* See General Core Requirements (p. 50) for approved courses.

** Actual number of courses/hours and course sequence determined by appropriate department.

Requirements for a Bachelor of Science in Physics with Physical Science Teacher Certification (UTeach)

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES**RECOMMENDED CORE REQUIREMENTS**

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - satisfied by PHYS 4117

Computer Use Competence - satisfied by Computer Science requirement for major

PROFESSIONAL COURSES

Select one of the following for Computer Science requirement: 3

CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
or higher-numbered CSE course		
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
or other suitable course approved by UTeach advisor and/or Chair of the Department of Physics		
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
CHEMISTRY MINOR		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
CHEM 2335	QUANTITATIVE CHEMISTRY	3
CHEM 2285	QUANTITATIVE CHEMISTRY LABORATORY	2
CHEM 3315	INTRODUCTION TO BIOPHYSICAL CHEMISTRY	3
CHEM 3321	PHYSICAL CHEMISTRY I	3
CHEM 3181	PHYSICAL CHEMISTRY I LABORATORY	1
TEACHER CERTIFICATION REQUIREMENTS (UTEACH)		
SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
SCIE 4107	CLINICAL TEACHING SEMINAR	1
SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
MAJOR		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3

PHYS 4319	ADVANCED MECHANICS	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS 4391	SPECIAL TOPICS (Research Methods)	3
PHYS electives approved by UTeach advisor and/or Chair of the Department of Physics		6
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		127

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the UTeach advisor, particularly since many courses in Physics are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year

First Semester	Hours	Second Semester	Hours
MATH 1426		4 PHYS 1443	4
CHEM 1441		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
HIST 1301		3 HIST 1302	3
SCIE 1201		2 SCIE 1202	2
		16	16

Second Year

First Semester	Hours	Second Semester	Hours
PHYS 1444		4 PHYS 2311	3
MATH 2326		3 PHYS 3313	3
MATH 3319		3 PHYS 3183	1
CHEM 1442		4 CHEM 2335	3
EDUC 4331		3 CHEM 2285	2
		EDUC 4332	3
		17	15

Third Year

First Semester	Hours	Second Semester	Hours
PHYS 3321		3 PHYS 4391 (Research Methods)	3
CHEM 3315		3 approved PHYS elective	3
Computer Science course (CSE 1310 or higher-numbered CSE course, PHYS 2321, or MATH 3345)		3 POLS 2312	3
POLS 2311		3 Creative Arts	3
PHIL 2314		3 Social/Behavioral Science	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
PHYS 4315		3 PHYS 4117	1
PHYS 4326		3 PHYS 4319	3
approved PHYS elective		3 Language, Philosophy and Culture	3
CHEM 3321		3 Foundational Component Area	3
CHEM 3181		1 SCIE 4107	1
EDUC 4333		3 SCIE 4607	6
		16	17

Total Hours: 127

* See General Core Requirements (p. 50) for approved courses.

Requirements for a Bachelor of Science in Physics with Physics/Mathematics Teacher Certification (UTeach)

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES**RECOMMENDED CORE REQUIREMENTS**

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - satisfied by PHYS 4117

Computer Use Competence - satisfied by Computer Science requirement for major

PROFESSIONAL COURSES

Select one of the following for Computer Science requirement: 3

CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
or higher-numbered CSE course		
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
or other suitable course approved by UTeach advisor and/or Chair of the Department of Physics		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
MATHEMATICS MINOR		
MATH 2326	CALCULUS III	3
MATH 2330	FUNCTIONS AND MODELING	3
MATH 3300	INTRODUCTION TO PROOFS	3
MATH 3301	FOUNDATIONS OF GEOMETRY	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
MATH 3321	ABSTRACT ALGEBRA I	3
TEACHER CERTIFICATION REQUIREMENTS (UTEACH)		
SCIE 1201	STEP 1: INQUIRY APPROACHES TO TEACHING	2
SCIE 1202	STEP 2: INQUIRY-BASED LESSON DESIGN	2
SCIE 4107	CLINICAL TEACHING SEMINAR	1
SCIE 4607	CLINICAL TEACHING FOR SECONDARY GRADES	6
EDUC 4331	KNOWING AND LEARNING IN MATH AND SCIENCE	3
EDUC 4332	CLASSROOM INTERACTIONS	3
EDUC 4333	MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE	3
PHIL 2314	PERSPECTIVES ON SCIENCE AND MATHEMATICS	3
MAJOR		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
PHYS 4319	ADVANCED MECHANICS	3

PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS 4391	SPECIAL TOPICS (Research Methods)	3
PHYS electives approved by UTeach advisor and/or Chair of the Department of Physics		6
36 hours of coursework must be advanced (3000/4000-level) to earn degree.		
Total Hours		127

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the UTeach advisor, particularly since many courses in Physics are not offered every semester. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year

First Semester	Hours	Second Semester	Hours
MATH 1426		4 PHYS 1443	4
CHEM 1441		4 MATH 2425	4
ENGL 1301		3 ENGL 1302	3
HIST 1301		3 HIST 1302	3
SCIE 1201		2 SCIE 1202	2
		16	16

Second Year

First Semester	Hours	Second Semester	Hours
PHYS 1444		4 PHYS 2311	3
MATH 2326		3 PHYS 3313	3
MATH 3319		3 PHYS 3183	1
CHEM 1442		4 MATH 3300	3
EDUC 4331		3 MATH 3301	3
		EDUC 4332	3
		17	16

Third Year

First Semester	Hours	Second Semester	Hours
PHYS 3321		3 PHYS 4391 (Research Methods)	3
approved PHYS elective		3 approved PHYS elective	3
MATH 2330		3 POLS 2311	3
Computer Science course (CSE 1310 or higher-numbered CSE course, PHYS 2321, or MATH 3345)		3 Creative Arts *	3
PHIL 2314		3 Social/Behavioral Science *	3
		15	15

Fourth Year

First Semester	Hours	Second Semester	Hours
PHYS 4315		3 PHYS 4117	1
PHYS 4326		3 PHYS 4319	3
MATH 3321		3 Language, Philosophy and Culture *	3
POLS 2312		3 Foundational Component Area *	3
EDUC 4333		3 SCIE 4107	1
		SCIE 4607	6
		15	17

Total Hours: 127

* See General Core Requirements (p. 50) for approved courses.

Requirements for a Bachelor of Science in Physics with a Master's in Materials Science and Engineering (Fast Track Program)

The Fast Track Program enables outstanding senior undergraduate students in Physics to satisfy degree requirements leading to a Bachelor's degree in Physics while simultaneously pursuing a Master's degree (M. Engr.) in Materials Science and Engineering. The essential elements of the Fast Track Program involve the use of up to 9 hours of graduate coursework to apply towards an undergraduate degree in Physics.

Students who complete PHYS 1443 and PHYS 1444 with a GPA of 3.0 and express an interest in the Fast Track Program will be designated as "Fast Track Bound" and encouraged to maintain a GPA of 3.0 or better to retain their eligibility. Students who have been identified as "Fast Track Bound" as well as other outstanding undergraduates in Physics can apply for the Fast Track Program when they are within 30 hours of completing their Bachelor's degree. They must have completed at least 30 hours at UTA, have a GPA of at least 3.0 in those courses, and have an overall GPA of 3.0 or better in all college courses. Additionally, they must have completed 9 hours of specified undergraduate Foundation Courses that are listed below with a GPA of 3.3 in these courses.

FOUNDATION COURSES – Required for Admission into the Fast Track Program

MSE 3300	INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING	3
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3

Once admitted, students will be allowed to take a combination of advanced undergraduate and graduate courses. Students can use 9 hours of MSE graduate-level (or 3000/4000-level) coursework towards their Physics degree.

For more details about the program, please contact the Physics undergraduate advisor and/or the graduate advisor in Materials Science and Engineering.

The University Core Curriculum consists of 42 credit hours from University Core Curriculum (p. 50).

PRE-PROFESSIONAL COURSES

RECOMMENDED CORE REQUIREMENTS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts *		3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
Language, Philosophy and Culture *		3
PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
MATH 1426	CALCULUS I	4
MATH 2425	CALCULUS II	4
Social/Behavioral Science *		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area *		3

PROGRAM REQUIREMENTS

Communication Competence - satisfied by PHYS 4117

Computer Use Competence - satisfied by Computer Science requirement for major

PROFESSIONAL COURSES

Select one of the following for Computer Science requirement:		3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
or higher-numbered CSE course		
PHYS 2321	COMPUTATIONAL PHYSICS	
MATH 3345	NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS	
or other suitable course approved by Physics undergraduate advisor and/or Chair of the Department of Physics		
CHEM 1441	GENERAL CHEMISTRY I	4
CHEM 1442	GENERAL CHEMISTRY II	4
course for majors offered in the departments of Biology, Chemistry and Biochemistry, or Earth and Environmental Sciences		4
MATH 2326	CALCULUS III	3
MATH 3319	DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA	3
or MATH 3318	DIFFERENTIAL EQUATIONS	
MSE 3300	INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING	3
MSE graduate or advanced (3000/4000-level) courses approved by MSE graduate advisor		9
MAJOR		
PHYS 2311	MATHEMATICAL METHODS OF PHYSICS	3

PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS 3183	MODERN PHYSICS LABORATORY	1
PHYS 3321	INTERMEDIATE ELECTRICITY AND MAGNETISM	3
PHYS 3445	OPTICS	4
PHYS 4117	INDIVIDUAL LEARNING BY SEMINAR	1
PHYS 4315	THERMODYNAMICS AND STATISTICAL MECHANICS	3
PHYS 4326	INTRODUCTION TO QUANTUM MECHANICS	3
PHYS electives approved by Physics undergraduate advisor and/or Chair of the Department of Physics		12
General Electives		8
36 hours of coursework must be advanced (3000/4000-level) to earn degree; up to 9 hours can be graduate-level (only for approved MSE coursework).		
Total Hours		120

Students should refer to the M.Engr. degree in Materials Science and Engineering (p. 616) section of the catalog for detailed requirements for that degree.

* See General Core Requirements (p. 50) for approved courses.

TYPICAL COURSE SEQUENCE

Details of a personal course sequence should be made with the guidance of the Physics undergraduate advisor and, upon admission to the Fast Track Program, the graduate advisor in Materials Science and Engineering. Many courses in Physics are not offered every semester, and MSE coursework and sequences are determined by the Materials Science and Engineering Department. For all entering freshmen, it is important to begin the mathematics sequence, starting with MATH 1426 CALCULUS I, in the first semester.

First Year			
First Semester	Hours	Second Semester	Hours
MATH 1426		4 PHYS 1443	4
CHEM 1441		4 MATH 2425	4
ENGL 1301		3 CHEM 1442	4
HIST 1301		3 ENGL 1302	3
		14	15
Second Year			
First Semester	Hours	Second Semester	Hours
PHYS 1444		4 PHYS 2311	3
MATH 2326		3 PHYS 3313	3
MATH 3319 or 3318		3 PHYS 3183	1
MSE 3300		3 BIOL, CHEM, or GEOL course for majors	4
Creative Arts*		3 Language, Philosophy and Culture*	3
		16	14
Third Year			
First Semester	Hours	Second Semester	Hours
PHYS 3321		3 approved PHYS elective	4
PHYS 3445		4 approved PHYS elective	4
Computer Science course (CSE 1310 or higher-numbered CSE course, PHYS 2321, or MATH 3345)		3 HIST 1302	3
POLS 2311		3 POLS 2312	3
Social/Behavioral Science*		3	
		16	14
Fourth Year			
First Semester	Hours	Second Semester	Hours
PHYS 4315		3 PHYS 4117	1
PHYS 4326		3 approved PHYS elective	4
approved MSE course**		3 approved MSE course**	3
approved MSE course**		3 Foundational Component Area*	3
General Elective(s)		4 General Elective(s)	4
		16	15
Total Hours: 120			

* See General Core Requirements (p. 50) for approved courses.

** Actual courses and course sequence determined by Materials Science and Engineering Department.

Minor in Physics

A minimum total of 18 credit hours (including a minimum of 6 hours at the 3000/4000 level) are required. Transfer students must complete a minimum of 9 hours at UTA, 6 of which must be 3000/4000-level. A 2.0 GPA is required for coursework in the minor.

REQUIRED COURSES

PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	3
PHYS electives approved by Physics undergraduate advisor and/or Chair of the Department of Physics		7
Total Hours		18

Minor in Astronomy for Non-Physics Majors

A minimum total of 18 credit hours (including a minimum of 6 hours at the 3000/4000 level) are required. Transfer students must complete a minimum of 9 hours at UTA, 6 of which must be 3000/4000-level. A 2.0 GPA is required for coursework in the minor.

REQUIRED COURSES

PHYS 1441	GENERAL COLLEGE PHYSICS I	4
PHYS 1442	GENERAL COLLEGE PHYSICS II	4
PHYS 2315	INTRODUCTORY ASTROPHYSICS	3
PHYS 3315	ASTROPHYSICS AND COSMOLOGY	3
PHYS 3316	ASTROBIOLOGY I	3
Elective Courses - choose from the following (approval from the Physics undergraduate advisor is required):		1
Special Problems (PHYS 4181, PHYS 4281 - with Astronomy research faculty)		
Special Topics (PHYS 4191, PHYS 4291, PHYS 4391 - when a suitable topic is offered)		
Total Hours		18

Minor in Astrophysics for Non-Physics Majors

A minimum total of 18 credit hours (including a minimum of 6 hours at the 3000/4000 level) are required. Transfer students must complete a minimum of 9 hours at UTA, 6 of which must be 3000/4000-level. A 2.0 GPA is required for coursework in the minor.

REQUIRED COURSES

PHYS 1443	GENERAL TECHNICAL PHYSICS I	4
PHYS 1444	GENERAL TECHNICAL PHYSICS II	4
PHYS 2315	INTRODUCTORY ASTROPHYSICS	3
PHYS 3315	ASTROPHYSICS AND COSMOLOGY	3
Elective Courses - choose from the following:		4
PHYS 3313	INTRODUCTION TO MODERN PHYSICS	
PHYS 3316	ASTROBIOLOGY I	
PHYS 3445	OPTICS	
PHYS 3446	NUCLEAR AND PARTICLE PHYSICS	
Special Problems (PHYS 4181, PHYS 4281 - with Astronomy research faculty)		
Special Topics (PHYS 4191, PHYS 4291, PHYS 4391 - when a suitable topic is offered)		
Approval from the Physics undergraduate advisor is required for Special Problems and Special Topics courses.		
Total Hours		18

Psychology

Undergraduate Degrees

- Bachelor of Arts in Psychology (<http://catalog.uta.edu/science/psychology/undergraduate/#bachelorstext/#ba>)
- Bachelor of Science in Psychology (<http://catalog.uta.edu/science/psychology/undergraduate/#bachelorstext/#bs>)

Graduate Degrees

- Psychology, Industrial and Organizational, M.S. (<http://catalog.uta.edu/science/psychology/graduate/#masterstext/#msindustrial>)
- Psychology, Learning Analytics, M.S.
- Psychology, Experimental, Ph.D. (<http://catalog.uta.edu/science/psychology/graduate/#doctoralstext/#phdexperimental>)
 - Health Neuroscience concentration
 - Psychological Sciences concentration

COURSES

PSYC 1315. INTRODUCTION TO PSYCHOLOGY. 3 Hours. (TCCN = PSYC 2301)

The fundamental methods and content of scientific psychology. Concentration on the understanding of basic principles.

PSYC 2300. STATISTICS IN PSYCHOLOGY. 3 Hours.

This course covers descriptive and inferential statistics used in psychological research and assessment. It includes measurement, characteristics of distributions; measures of central tendency and variability; transformed scores; correlation and regression; probability theory; and hypotheses testing and inference. PSYC 2300 and PSYC 3300 can be taken concurrently. Prerequisite: PSYC 1315, MATH 1302 (or equivalent).

PSYC 2317. BASIC CONCEPTS IN HUMAN SEXUALITY. 3 Hours. (TCCN = PSYC 2306)

The physiological, psychological, and sociological aspects of human sexuality. Offered as BIOL 2317, HEED 2317, PSYC 2317, and WOMS 2317. Credit will be granted for one of these courses only. Students seeking certification in Health Education must enroll in HEED 2317. Students seeking credit toward their science requirement must enroll in BIOL 2317. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, medical technology, psychology, or sociology.

PSYC 3131. PSYCHOLOGY SERVICE LEARNING. 1 Hour.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

PSYC 3200. EXPERIENCING RESEARCH IN PSYCHOLOGY. 2 Hours.

This is a practical, project-based course that focuses on laboratory and field experience in designing, conducting, and reporting psychology research. It includes all stages of the research process including the formulation of research hypotheses, review and evaluation of published literature, choice of research design and measurement variables, data collection and analysis, and presentation of results in oral and written reports. Prerequisite: PSYC 2300 and PSYC 3300.

PSYC 3231. PSYCHOLOGY COMMUNITY SERVICE LEARNING. 2 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

PSYC 3300. RESEARCH METHODS IN PSYCHOLOGY. 3 Hours.

This course covers experimental designs and research methodologies commonly used in the field of psychology. It includes strategies for identifying meaningful hypothesis, conducting literature reviews, implementing research practices, and interpreting and evaluating statistical conclusions and empirical research findings. Challenges related to sociocultural factors will also be analyzed. PSYC 2300 and PSYC 3300 can be taken concurrently.

PSYC 3301. PSYCHOLOGY OF HUMAN RELATIONS. 3 Hours.

Workplace applications of topics including person perception, social influence, group processes and dynamics, interpersonal relations, teamwork, leadership, workplace discrimination, diversity, stress, and burnout.

PSYC 3302. BUSINESS PSYCHOLOGY. 3 Hours.

A survey of the fields of industrial and organizational psychology, focusing on the application of psychological theory to understanding and solving problems in the workplace. Topics include recruitment, employee selection and training, the effects of attitudes, motivation, group dynamics and leadership, job satisfaction, productivity and morale.

PSYC 3303. DRUGS AND BEHAVIOR. 3 Hours.

A survey of the psychoactive agents, their therapeutic uses, and social abuses. Alcohol, nicotine, caffeine, narcotics, hallucinogens, stimulants, and tranquilizers. Offered as BIOL 3303, HEED 3303, and PSYC 3303; credit will be granted only once. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology, microbiology, or medical technology. Students seeking certification in health education must enroll in HEED 3303.

PSYC 3304. ANALYSIS & MANAGEMENT OF BEHAVIOR. 3 Hours.

Behavioral control techniques for remediation and prevention of problem behaviors and for optimization of normal behaviors in real life settings. Contrasting therapeutic approaches, the ethics of behavior control, and the impact of behaviorism on society. Prerequisite: PSYC 1315 or permission of the instructor.

PSYC 3305. PSYCHOLOGY OF EMPLOYEE TRAINING. 3 Hours.

An introduction to theories, research, and techniques related to training needs analysis, program design and delivery, and training evaluation in organizational settings.

PSYC 3306. PSYCHOLOGY OF CREATIVITY AND CREATIVE THINKING. 3 Hours.

Research and theory relevant to the traits, attitudes, and abilities which are related to creative functioning with emphasis on the conceptual-cognitive components of creative formation and problem solving. Methods of stimulating creative behavior in individuals and in groups. Relevant research findings provide the substance of the course. Prerequisite: PSYC 1315.

PSYC 3307. UNDERSTANDING PSYCHOLOGY THROUGH FILM. 3 Hours.

An exploration of psychological issues represented in film. Using an interdisciplinary approach, the medium of film will be used to discuss psychological mechanisms as well as psychotherapeutic processes. Human behaviors such as those involved in character and plot development, as well as the perspectives of filmmakers and movie-goers will be explored. Prerequisite: Six hours of behavioral science (i.e., psychology, sociology, anthropology, and others).

PSYC 3308. FORENSIC PSYCHOLOGY. 3 Hours.

Examines the legal system's basic assumptions and procedures in light of social scientific evidence pertaining to human behavior relevant to the rights of defendants, victims, children, and mental patients, including areas of clinical psychology in which psychologists act as expert witnesses and consultants.

PSYC 3310. DEVELOPMENTAL PSYCHOLOGY. 3 Hours.

Human development and growth from conception through old age, concerned with the physical, behavioral, and social aspects. Prerequisite: PSYC 1315.

PSYC 3311. ADULTHOOD AND AGING. 3 Hours.

Developmental changes in major psychological processes and abilities are related to health, sex, ethnicity, socioeconomic status, and lifestyle. Emphasis is on models of psychobiological changes with age and current empirical knowledge having implications for the preservation of intellectual function, mental health, and physical condition. Prerequisite: PSYC 1315.

PSYC 3312. SOCIAL & PERSONALITY DEVELOPMENT. 3 Hours.

A review of psychological theory and research on age trends and individual differences in personality and social development. Topics include emotional development, aggression, identity and achievement, attachment, gender role development, and familial and extrafamilial influences on development. Prerequisite: PSYC 1315.

PSYC 3313. CULTURAL PSYCHOLOGY. 3 Hours.

Theory and research regarding psychological issues related to gender and cultural diversity. These issues will be approached from different perspectives within psychology, including clinical, developmental, social, health, and cognitive psychology. Prerequisite: PSYC 1315. Offered as PSYC 3313 and WOMS 3313; credit will be granted only once.

PSYC 3314. PSYCHOLOGY OF PERSONALITY. 3 Hours.

A broad survey of major theories, assessment methods, and representative research in the field of personality. The theoretical approaches considered include the psychoanalytic, neo-Freudian, trait, biological, humanistic, behavioral social/learning, and cognitive approaches. Prerequisite: PSYC 1315.

PSYC 3315. SOCIAL PSYCHOLOGY. 3 Hours.

The theories and research dealing with individual behavior in the social environment. Social influence processes, interpersonal attraction, group behavior, aggression, conformity, and attitude formation and change. Prerequisite: PSYC 1315.

PSYC 3317. INTRODUCTION TO CLINICAL AND COUNSELING PSYCHOLOGY. 3 Hours.

The student is introduced to psychodiagnostic procedures and the basic approaches of counseling and psychotherapy. Prerequisite: PSYC 1315.

PSYC 3318. ABNORMAL PSYCHOLOGY. 3 Hours.

Major forms of psychopathology. Classification, etiology, and treatment of major disorders. Prerequisite: PSYC 1315.

PSYC 3319. PSYCHOLOGY OF ADOLESCENCE. 3 Hours.

A topical study of adolescent behavioral and psychological development with emphasis on theory, methods of inquiry, and practical implications. Prerequisite: PSYC 1315.

PSYC 3320. BEHAVIOR AND MOTIVATION. 3 Hours.

Theory and research involving relation of motivation and emotion to learning theory, social behavior, personality, and development. Prerequisite: PSYC 1315.

PSYC 3322. BRAIN AND BEHAVIOR. 3 Hours.

An introduction to the anatomical structures and physiological processes that determine behavior. Topics include the acquisition and processing of sensory information, the neural control of movement, and the biological bases of complex behaviors (such as learning, memory, sex, language, and addiction), as well as the basic functioning of the nervous system. Offered as BIOL 3322 and PSYC 3322. Credit will be granted only once. BIOL 3322 prerequisite: BIOL 1441, BIOL 1442. PSYC 3322 prerequisite: BIOL 1441 or PSYC 1315.

PSYC 3326. ANIMAL BEHAVIOR. 3 Hours.

A survey of research and theory comparing behavior at various phyletic levels. Offered as BIOL 3326 and PSYC 3326. Credit will be granted for only one of these courses. Prerequisite: BIOL 1441, BIOL 1442.

PSYC 3331. PSYCHOLOGY COMMUNITY SERVICE LEARNING. 3 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

PSYC 3334. COGNITIVE PROCESSES. 3 Hours.

Current theory and research in cognitive processes such as memory, information processing, concept formation, and problem solving. Prerequisite: PSYC 1315.

PSYC 3351. PRACTICUM IN APPLIED BEHAVIOR ANALYSIS. 3 Hours.

Students receive supervised experience in the application of behavior modification procedures to everyday behavior problems. Practicum students work off-campus in a community setting. The course provides an opportunity to develop skills in setting behavior objectives, analyzing contingencies of reinforcement, and designing, writing, and implementing practical behavior change programs. Prerequisite: PSYC 3304, PSYC 4310 and Permission of the Instructor.

PSYC 3356. EVOLUTIONARY PSYCHOLOGY. 3 Hours.

A consideration of how evolution has influenced social, cognitive and developmental processes in humans. Comparisons between humans and other species, and between different human cultures will be included. Topics such as mate selection, marriage and family practices, child rearing, social relations, language, thinking, neuropsychology, learning and related topics will be considered. Methods of gathering data and theory about evolutionary processes will be stressed. Prerequisite: PSYC 1315.

PSYC 3443. RESEARCH DESIGN & STATISTICS II. 4 Hours.

Theoretical and practical approaches to research methodology, statistical analyses and techniques of report research. Prerequisite: PSYC 2443.

PSYC 4081. VOLUNTEER RESEARCH IN PSYCHOLOGY. 0 Hours.

Volunteer research hours (0 credit hours) Participation in a group research project on a selected topic as designated by the directing professor. Maybe repeated. Intended for advanced undergraduate majors. Prerequisite: Instructor permission; other prerequisites may be implemented at the discretion of each individual laboratory research mentor.

PSYC 4161. READINGS IN PSYCHOLOGY. 1 Hour.

Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper as arranged. Prerequisite: permission of the instructor.

PSYC 4181. RESEARCH IN PSYCHOLOGY. 1 Hour.

Research problems arranged on an individual basis, to be conducted by the student, and written in publishable journal format. Prerequisite: permission of the instructor.

PSYC 4191. UNDERGRADUATE TEACHING EXPERIENCE. 1 Hour.

Teaching effectively requires mastering the content of your discipline, but also numerous other skills. This course will prepare undergraduate students to be challenging, inspiring, engaging teachers and/or communicators of psychological topics by providing hands-on experience as teaching assistants. Prerequisite: Students must complete Introduction to Psychology (PSYC 1315) and PSYC 4391 (Undergraduate Teaching Experience) before enrolling in this course. Students must have a minimum GPA of 3.5 and be a psychology major (other majors may be approved with instructor permission). Students must have earned a B or better in the class for which they will serve as a TA and instructor approval is required.

PSYC 4261. READINGS IN PSYCHOLOGY. 2 Hours.

Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper as arranged. Prerequisite: permission of the instructor.

PSYC 4281. RESEARCH IN PSYCHOLOGY. 2 Hours.

Research problems arranged on an individual basis, to be conducted by the student, and written in publishable journal format. Prerequisite: permission of the instructor.

PSYC 4291. UNDERGRADUATE TEACHING EXPERIENCE. 2 Hours.

Teaching effectively requires mastering the content of your discipline, but also numerous other skills. This course will prepare undergraduate students to be challenging, inspiring, engaging teachers and/or communicators of psychological topics by providing hands-on experience as teaching assistants. Prerequisite: Students must complete Introduction to Psychology (PSYC 1315) and PSYC 4391 (Undergraduate Teaching Experience) before enrolling in this course. Students must have a minimum GPA of 3.5 and be a psychology major (other majors may be approved with instructor permission). Students must have earned a B or better in the class for which they will serve as a TA and instructor approval is required.

PSYC 4301. PRINCIPLES OF NEUROSCIENCE. 3 Hours.

An in depth understanding of the mechanisms underlying the function of the nervous system. Topics include cellular mechanisms of neural communication, neuroanatomy and neurophysiology of sensory, motor, and autonomic systems, cellular mechanisms of learning and memory, and neuropathological conditions that contribute to neurological disorders. Course offered as BIOL 4301 and PSYC 4301. Credit will be granted only once. Prerequisite: PSYC 3322 (BIOL 3322) or permission of instructor.

PSYC 4309. NEUROPHARMACOLOGY. 3 Hours.

A survey of how drugs affect the nervous system. General topics will include cellular and molecular foundations of neuropharmacology, receptors and modulation of neural signaling. The specific role of neurotransmitter systems (i.e. acetylcholine, dopamine, norepinephrine, serotonin, and opiate) will be explored. Offered as BIOL 4309 and PSYC 4309; credit will be granted only once. Prerequisite: one or more of the following courses or permission of instructor: BIOL 1441 or PSYC 3322/BIOL 3322 or BIOL 3301.

PSYC 4310. BEHAVIOR THERAPY. 3 Hours.

Current theory and practice in the analysis and treatment of psychological disorders using problem solving techniques derived from the experimental analysis of behavior. Behavioral treatment strategies are reviewed for chronic disorders such as fears and phobias, obsessive-compulsive disorder, depression, and anxiety as well as childhood disorders such as language delay, autism, attention deficits, and hyperactivity. Prerequisite: PSYC 1315.

PSYC 4325. DEVELOPMENTAL PSYCHOBIOLOGY. 3 Hours.

The biological basis of behavioral development. A survey of the influences of maternal factors, genes, hormones, teratogens, early nutrition, and environmental change upon the maturation of the central nervous system. Basic concepts such as critical periods, the organization of behavioral systems, neural plasticity, and the ontogeny of consciousness. Also offered as BIOL 4325; credit will be granted only once. Students seeking credit toward the science requirement must enroll in BIOL 4325. Prerequisite: PSYC 3310 or PSYC 3322 or BIOL 3322 or BIOL 3346.

PSYC 4327. BEHAVIORAL GENETICS. 3 Hours.

Genetic influences on behavioral phenotypes. Research strategies, quantitative methods, and pharmacogenetic approaches to the brain; sociality and altruism; the personality, emotionality and intelligence; psychopathology; chromosomal abnormalities; forensic implications of genetic counseling. Offered as BIOL 4327 and PSYC 4327; credit will be granted only once. Students seeking credit toward the science requirement must enroll in BIOL 4327. Prerequisite: PSYC 1315 or BIOL 1441.

PSYC 4329. ANIMAL LEARNING AND COGNITION. 3 Hours.

A comprehensive survey of psychological, biological, and ethological perspectives on learning, memory, and cognition in animals. Prerequisite: C or better in PSYC 3300 or permission of instructor.

PSYC 4332. THEORIES OF HUMAN LEARNING AND MEMORY. 3 Hours.

A comprehensive survey of theories and research concerning basic learning and memory processes and their application to a variety of areas, e.g., eyewitness memory, false memory syndrome, autobiographical memory, memory decline in aging. Theoretical and background perspectives include associative mechanism, information processing approaches, and neurophysiological bases for encoding, storage, and retrieval. Prerequisite: PSYC 1315, and Junior Standing.

PSYC 4335. COGNITIVE DEVELOPMENT. 3 Hours.

Theories and phenomena concerning development of all aspects of human cognition across the life span. Prerequisite: C or better in PSYC 3300.

PSYC 4338. COGNITIVE NEUROSCIENCE. 3 Hours.

Theory and research on the relationship between the brain and human cognition. Normal functioning and comparisons between normal and disordered states (e.g., Alzheimer's disease, amnesia, localized brain injury, age changes). Prerequisite: PSYC 4332 or PSYC 3334.

PSYC 4339. PSYCHOLOGY OF JUDGMENT AND CHOICE. 3 Hours.

Research and theory on the errors of intuitive judgment and how formal decision methods improve choices. Prerequisite: C or better in PSYC 2300.

PSYC 4350. SPORT PSYCHOLOGY. 3 Hours.

The course will provide an overview of the growing field of Sport Psychology, which involves applying psychological science to sports. Topics such as maximizing sports performance, elite performance and personality, motivation techniques in sports, leadership skills in sports, etc., will be covered.

PSYC 4355. THE HISTORY OF PSYCHOLOGY. 3 Hours.

The evolution of psychology as a science, up to and including contemporary developments. Prerequisite: nine hours of psychology.

PSYC 4357. HEALTH PSYCHOLOGY. 3 Hours.

This course provides a broad introduction to health psychology and its interface with the medical world. The course provides a balanced presentation of the important issues in the field, as well as specific content topics that are especially relevant today to better understand health and illness. Offered as BIOL 4357, HEED 4357, and PSYC 4357. Students seeking science requirement credit must enroll in BIOL 4357; students seeking Certification in Health must enroll in HEED 4357. Prerequisite: PSYC 1315 or BIOL 1333 or BIOL 1441 or BIOL 2457; junior standing recommended.

PSYC 4359. SELECTED TOPICS IN PSYCHOLOGY. 3 Hours.

Topics pertinent to the field of psychology. Topic, format, and prerequisites to be determined by the instructor. May be repeated for credit as different topics are offered. Prerequisite: to be determined by the instructor.

PSYC 4361. READINGS IN PSYCHOLOGY. 3 Hours.

Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper as arranged. Prerequisite: permission of the instructor.

PSYC 4381. RESEARCH IN PSYCHOLOGY. 3 Hours.

Research problems arranged on an individual basis, to be conducted by the student, and written in publishable journal format. Prerequisite: permission of the instructor.

PSYC 4391. FOUNDATIONS OF UNDERGRADUATE TEACHING EXPERIENCE. 3 Hours.

Teaching effectively requires mastering the content of your discipline, but also numerous other skills. This course will prepare undergraduate students to be challenging, inspiring, engaging teachers and/or communicators of psychological topics by covering important professional issues, including: planning a syllabus, structuring a lecture, navigating class discussions, communicating effectively with different types of classes, responding to student input, dealing with classroom incivilities, responding to student assignments, using technology, and responding to student work. This course will also assist students through the process of teaching as learning through addressing cognitive theories underlying the learning process. Prerequisite: Students must complete Introduction to Psychology (PSYC 1315) before enrolling in this course. Students must have a minimum GPA of 3.5 and be a psychology major (other majors may be approved with instructor permission). Students must have earned a B or better in the class for which they will serve as a TA and instructor approval is required.

PSYC 4398. HONORS THESIS. 3 Hours.

Students may take this course only at the invitation of the department. Consists of a research project of a type and level which would be publishable in one of the psychological journals. Particular emphasis is placed on independent work by the student. Prerequisite: departmental invitation.

PSYC 4410. ADVANCED TOPICS IN DEVELOPMENTAL PSYCHOLOGY. 4 Hours.

This course will cover current topics in Developmental Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Developmental Psychology. Completion of the course is essential for students who are interested in pursuing a career in Developmental Psychology research. Prerequisites: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3310. Junior standing recommended.

PSYC 4411. ADVANCED TOPICS IN PERSONALITY. 4 Hours.

This course will cover current topics in Personality using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Personality. Completion of the course is essential for students who are interested in pursuing a career in Personality research. Prerequisites: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3314. Junior standing recommended.

PSYC 4412. ADVANCED TOPICS IN SOCIAL PSYCHOLOGY. 4 Hours.

This course will cover current topics in Social Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Social Psychology. Completion of the course is essential for students who are interested in pursuing a career in Social Psychology research. Prerequisites: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3315. Junior standing recommended.

PSYC 4415. INTERNSHIP IN PSYCHOLOGY. 4 Hours.

Provides the student with an opportunity to apply academic experience to practical situations by serving for a specified number of hours as participant-observer in an off-campus activity. The activity will be reflected in the title on the transcript. Internships must be arranged with an internship supervisor and/or faculty member in the semester prior to enrolling for this course. Prerequisite: C or better in PSYC 2300 and PSYC 3300.

PSYC 4420. EXPERIMENTAL ANALYSIS OF BEHAVIOR. 4 Hours.

A laboratory course examining basic principles of behavior control and analysis with single animals and automated testing apparatus. Emphasis is placed on individualized, self-paced instruction and creative experimentation. Prerequisite: C or better in either PSYC 3304 or PSYC 4310. C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3304.

PSYC 4421. ADVANCED TOPICS IN NEUROSCIENCE. 4 Hours.

This course will cover current topics in Neuroscience using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Neuroscience. Completion of the course is essential for students who are interested in pursuing a career in Neuroscience research. Prerequisites: C or better in BIOL 3322 or PSYC 3322 required.

PSYC 4430. ADVANCED TOPICS IN CLINICAL COUNSELING. 4 Hours.

This course will cover current topics in Clinical and Counseling using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Clinical and Counseling. Completion of the course is essential for students who are interested in pursuing a career in Clinical and Counseling research. Prerequisite: PSYC 3317; PSYC 3318; C or better in PSYC 2300, PSYC 3200, and PSYC 3300; junior standing recommended.

PSYC 4431. ADVANCED TOPICS IN COGNITIVE SCIENCE. 4 Hours.

This course will cover current topics in Cognitive Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Cognitive Psychology. Completion of the course is essential for students who are interested in pursuing a career in Cognitive Psychology research. May be repeated for credit as specific topics vary. Prerequisite: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3334. Junior standing recommended.

PSYC 4432. ADVANCED TOPICS IN HEALTH. 4 Hours.

This course will cover current topics in Health Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Health Psychology. Completion of the course is essential for students who are interested in pursuing a career in Health Psychology research. May be repeated for credit as specific topics vary. Prerequisite: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 4357. Junior standing recommended.

PSYC 5110. PROFESSIONAL DEVELOPMENT. 1 Hour.

The philosophy and methods of conducting a university class for undergraduates are examined. Specific tips and suggestions for managing course materials, lectures, audiovisual aids, grading, etc. will be presented. The role of the university instructor as a researcher as well as a teacher will be elaborated. Specific topics will include the ethics and regulation of research, service as a journal referee, corresponding with peers, participating in a research team, manuscript preparation, presentation at professional conferences, and submitting material for publication. Prerequisite: admission to the graduate program in psychology or permission of the instructor. Graded F, P. Prerequisite: Admission to the graduate program in psychology or permission of the instructor.

PSYC 5127. INDUSTRIAL AND ORGANIZATIONAL INTERNSHIP. 1 Hour.

This course is preparation for and supervision of internship activities in an organization or organizations in an area related to area of interest or training. No credit will be given for previous experience or activities. Course may be repeated for credit. Prerequisite: Consent of instructor.

PSYC 5151. READINGS IN PSYCHOLOGY. 1 Hour.

Independent readings under the supervision of an individual faculty member. Students wishing to conduct research should sign up for PSYC 5191, PSYC 5291, or PSYC 5391. May be repeated for credit with consent of the Graduate Advisor. Graded A/B/C/D/F/I/P/W. Prerequisite: consent of the instructor.

PSYC 5191. RESEARCH IN PSYCHOLOGY. 1 Hour.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 5227. INDUSTRIAL AND ORGANIZATIONAL INTERNSHIP. 2 Hours.

This course is preparation for and supervision of internship activities in an organization or organizations in an area related to area of interest or training. No credit will be given for previous experience or activities. Course may be repeated for credit. Prerequisite: Consent of instructor.

PSYC 5251. READINGS IN PSYCHOLOGY. 2 Hours.

Independent readings under the supervision of an individual faculty member. Students wishing to conduct research should sign up for PSYC 5191, PSYC 5291, or PSYC 5391. May be repeated for credit with consent of the Graduate Advisor. Graded A/B/C/D/F/I/P/W. Prerequisite: consent of the instructor.

PSYC 5291. RESEARCH IN PSYCHOLOGY. 2 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 5301. BRAIN & BEHAVIOR. 3 Hours.

A comprehensive survey of physiological processes and structures underlying human and animal behavior.

PSYC 5307. RESEARCH METHODS. 3 Hours.

This course considers basic and advanced aspects of methodology used in psychological research, including experimental design, methodologies that combine disciplinary approaches (e.g., biomedical, behavioral, and field and laboratory approaches).

PSYC 5309. HEALTH PSYCHOLOGY. 3 Hours.

A survey of current theory and research in health psychology, including basic research in health and behavior, biobehavioral contributions to illness and disability, and fundamental relationships among the brain, bodily function, and behavior that may affect health and well-being. It will also include clinical and translational topics including patient interventions in medically-ill populations, pain management, and disease prevention.

PSYC 5310. MATHEMATICAL MODELS IN PSYCHOLOGY. 3 Hours.

Elementary probability theory, matrix algebra, and theory of linear difference equations applied to theoretical problems in learning, signal detection, decision processes, and social interactions.

PSYC 5313. COGNITIVE PSYCHOLOGY. 3 Hours.

Surveys current experimental and clinical research and theory relating the brain and cognition. Emphasizes selected areas i.e., perception, attention, memory, language, and thinking.

PSYC 5314. COGNITIVE DEVELOPMENT. 3 Hours.

A survey of current theories of cognitive development. Recent research within topic areas, such as physical reasoning, spatial cognition, memory, and symbol use, will be used to evaluate the theories presented.

PSYC 5315. BEHAVIOR ANALYSIS. 3 Hours.

Overview of operant theory with an emphasis upon contemporary problems. Basic concepts that are covered include: reinforcement and stimulus control, punishment, compound schedules, response topography, and chaining. Other topics include complex human operants, verbal behavior, behavior modification, and contingency management.

PSYC 5321. PERSONALITY PSYCHOLOGY. 3 Hours.

A survey of contemporary topics in personality psychology, including personality assessment, strategies for studying personality, temporal stability and cross-situational consistency in behavior, and personality influence on social behavior.

PSYC 5322. SOCIAL PSYCHOLOGY. 3 Hours.

A survey of contemporary topics in social psychology, including interpersonal attraction, altruism and aggression, attribution and social cognition, social influence, group dynamics, and social motivation.

PSYC 5323. GROUP PROCESSES. 3 Hours.

Survey of the major topics in group dynamics. Among the issues covered will be performance, motivation, goal setting, decision-making, creativity, social influence, memory, leadership, teamwork, and collective behavior.

PSYC 5324. APPLIED RESEARCH DESIGN. 3 Hours.

Basic aspects of organizational research methods will be covered including: research ethics, the scientific method, inductive and deductive reasoning, research questions, hypotheses, study designs, manipulation of variables, and various measures and methods used in organizational research. The history of Industrial and Organizational research will also be covered.

PSYC 5325. ORGANIZATIONAL BEHAVIOR. 3 Hours.

Survey of theory and research related to human behavior in organizations. Topics include job performance, motivation, job satisfaction, organizational commitment, work stress, organizational justice, leadership, groups and teams, and organizational theory.

PSYC 5326. EMPLOYEE SELECTION. 3 Hours.

Principles and techniques of employee selection, placement, and classification will be examined. Job analysis and competency modeling will be covered with a focus on the legal aspects of selection and promotion. The use of various methods and measures of job relevant individual differences will be examined within the context of predicting performance criteria.

PSYC 5327. INDUSTRIAL AND ORGANIZATIONAL INTERNSHIP. 3 Hours.

This course is preparation for and supervision of internship activities in an organization or organizations in an area related to area of interest or training. No credit will be given for previous experience or activities. Course may be repeated for credit. Prerequisite: consent of instructor.

PSYC 5328. EMPLOYEE ATTITUDES AND BEHAVIORS. 3 Hours.

Theory and research concerning the determinants, consequences, and measurement of job satisfaction and related constructs such as involvement, commitment and work motivation will be covered. Attitudes, opinions, and beliefs will be examined in relation to the behavioral intentions of individuals at work. Organizational interventions designed to improve and enhance employee motivation, attitudes and behaviors will be evaluated.

PSYC 5329. PERFORMANCE MANAGEMENT SYSTEMS. 3 Hours.

Principles and techniques of the performance appraisal and feedback process will be covered. Different sources of performance information will be evaluated. Mentoring and procedures for communicating performance evaluation information and improving job performance via development and training will be examined. Theories and techniques used to design, conduct, and evaluate training programs will be evaluated.

PSYC 5330. ADVANCE EMPLOYEE TRAINING AND DEVELOPMENT. 3 Hours.

Theoretical advancements, empirical research findings, and practical applications of psychological concepts related to employee training and development. This course focuses on the entirety of the employee training process, including topics and issues related to training needs analysis, program design and implementation, and the evaluation of training effectiveness.

PSYC 5331. PERCEPTION AND ATTENTION. 3 Hours.

Survey of methods and findings dealing with perception; emphasis will be upon behavioral rather than physiological considerations; particular topics include signal detection theory, form and pattern recognition, and attentional mechanisms.

PSYC 5333. BEHAVIORAL NEUROSCIENCE. 3 Hours.

A survey of biological and physical processes underlying behavior. Emphasis on neural, hormonal, and genetic determinants of behavior. Topics include regulatory behaviors, reward and nociceptive systems, differentiation and sociosexual behaviors, limbic and cortical functions.

PSYC 5334. HUMAN PHYSIOLOGY. 3 Hours.

This course will provide a comprehensive review of the human physiology that is categorized in 15 sections and 84 chapters. Some of them will be covered by different courses, such as Neuroscience, Immunology, and Endocrinology. Students are expected to learn how the human body works and what the underlying mechanisms that control the physiological responses are. In case of damage to these systems, what will happen to the body as a whole and what will be the impact on behaviors?.

PSYC 5337. ANIMAL COGNITION AND BEHAVIOR. 3 Hours.

A survey of theory and data on how animals learn and represent the world and the evolutionary processes that influence their individual and social behavior.

PSYC 5341. DECISION MAKING. 3 Hours.

Factors that influence categorical and numerical judgments, choices, and preference decisions. Comparison of human decision behavior with various quantitative theories.

PSYC 5342. LEADERSHIP IN ORGANIZATIONS. 3 Hours.

This course focuses on leadership theory and the applicability to modern organizations. Various approach to studying and understanding leadership, as well as the evolution of leadership theory over time will be discussion. Discussed approaches will include trait, situational, skill, contextual, style, cultural, and emerging theories of leadership. Additionally, this course will focus on designing effective leadership development programs.

PSYC 5343. ELECTRONIC HUMAN RESOURCE MANAGEMENT. 3 Hours.

A survey of theory and research related to the use of technology in organizational employment practices, including topics such as web-based recruitment, technology-based interviewing, online testing, cybervetting, e-training, e-performance monitoring, virtual teams, cyberdeviance, and telework.

PSYC 5345. HUMAN LEARNING AND MEMORY. 3 Hours.

Survey of current approaches to the study of human learning and memory.

PSYC 5348. EXPOSURE TO CONTEMPORARY PC MICROCOMPUTERS. 3 Hours.

Operating systems, ASCII editors, word processors, spreadsheets, graphics, data bases, programming languages, programming psychological experiments, statistical programming, using networks, the Internet, e-mail, Gopher, FTP, and Telnet.

PSYC 5351. READINGS IN PSYCHOLOGY. 3 Hours.

Independent readings under the supervision of an individual faculty member. Students wishing to conduct research should sign up for PSYC 5191, PSYC 5291, or PSYC 5391. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: consent of the instructor.

PSYC 5389. CONTEMPORARY PROBLEMS IN PSYCHOLOGY. 3 Hours.

Topics vary. May be repeated for credit with consent of Graduate Advisor.

PSYC 5391. RESEARCH IN PSYCHOLOGY. 3 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 5405. ADVANCED STATISTICS I. 4 Hours.

Basic descriptive and inferential statistics used in psychological research.

PSYC 5407. EXPERIMENTAL DESIGN. 4 Hours.

Statistical aspects of complex experimental designs used in psychological research. Prerequisite: PSYC 5405.

PSYC 5600. ADVANCED RESEARCH. 6 Hours.

Supervised research. May be repeated for credit. Graded P/F/R. Prerequisite: permission of instructor.

PSYC 5698. THESIS. 6 Hours.

Graded P/F/R. Can only be taken up to 4 times. Prerequisite: 12 hours of advanced psychology and an approved thesis proposal.

PSYC 6191. RESEARCH IN PSYCHOLOGY. 1 Hour.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 6291. RESEARCH IN PSYCHOLOGY. 2 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 6300. SEMINAR IN PSYCHOLOGY. 3 Hours.

Offered each semester. Topics vary. May be repeated for credit. Prerequisite: consent of instructor.

PSYC 6312. ANIMAL LEARNING. 3 Hours.

Survey of contemporary topics in animal learning.

PSYC 6316. HISTORY AND SYSTEMS. 3 Hours.

Consideration of the origins of psychology in the development of Western thought. Early conceptualization of problems and their modification with changes in evidence is emphasized.

PSYC 6318. SOCIAL AND PERSONALITY DEVELOPMENT. 3 Hours.

Theory and research on social and emotional development with an emphasis on the interaction between individual needs and abilities and societal expectations and demands.

PSYC 6320. NEUROPHARMACOLOGY. 3 Hours.

Survey of the basis of behavioral pharmacology including mechanisms and theories of drug actions, techniques and strategies of research, common psychoactive drugs, and the uses of drugs in clinical practice.

PSYC 6335. ANIMAL BEHAVIOR. 3 Hours.

Phylogenetic approach to some basic problems in behavior, with special emphasis on unlearned behavior.

PSYC 6336. COMPARATIVE PSYCHOLOGY. 3 Hours.

Theory and data about all aspects of behavior stressing similarities and differences across species.

PSYC 6338. NEURAL AND COGNITIVE MODELING. 3 Hours.

Principles of neural network and dynamical systems modeling; application of these principles to the simulation of cognitive processes in both brains and machines; models of associative learning, pattern recognition and classification, and individual and group behavior. Prerequisite: consent of instructor.

PSYC 6346. EVOLUTIONARY PSYCHOLOGY. 3 Hours.

Evolutionary processes influence behavior and thinking of humans and nonhuman species. Sociosexual behavior, aggression, cognition, and information processing from an evolutionary perspective will be among the topics covered.

PSYC 6347. ENVIRONMENTAL PSYCHOLOGY. 3 Hours.

Survey of the current literature on the impact of various features of the physical environment on human behavior. Topics covered include crowding, privacy, territoriality, personal space, noise, the natural environment, residential, educational and work environments, urban and community design, and pollution and resource management. Designed to be of interest to graduate students in architecture, urban affairs, environmental science and engineering, geology, sociology, as well as those in psychology.

PSYC 6349. PSYCHOMETRIC THEORY. 3 Hours.

Introduction to test construction. Topics include reliability theory, test validation, and item analysis. Prerequisite: C or better in PSYC 5405 and PSYC 5407.

PSYC 6355. MULTIVARIATE ANALYSIS. 3 Hours.

Application of general linear model to special cases such as factor analysis, multiple regression, and discriminant analysis. PSYC 5344 recommended.

PSYC 6391. RESEARCH IN PSYCHOLOGY. 3 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 6399. DISSERTATION. 3 Hours.

Graded R/F. Prerequisite: approved dissertation proposal.

PSYC 6699. DISSERTATION. 6 Hours.

Graded R/F/P/W. Prerequisite: approved dissertation proposal.

PSYC 6999. DISSERTATION. 9 Hours.

Graded P/F/R. Prerequisite: approved dissertation proposal.

PSYC 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Psychology - Graduate Programs

Objective

The objective of graduate work in psychology is to educate the student in the methods and basic content of the discipline and to provide an apprenticeship in the execution of creative research.

Graduate work in the master's program and doctoral program will be offered in psychology. Students' individual programs of work may be arranged to give emphasis to a particular aspect of the general program.

Within this framework, options include, but are not limited to: Animal Behavior and Animal Learning, Cognition and Perception, Developmental, Health Psychology and Neuroscience, Industrial/Organizational, Behavioral Neuroscience, and Social-Personality Psychology. Students specializing in Cognition and Perception may include advanced topical seminars in their area of specialty. In addition to core courses for those interested in Behavioral Neuroscience, seminars offered in the recent past include Aggression and Nociception. For those seeking expertise in the Social-Personality area, seminars have included topics such as Social Influence and Empathetic Accuracy and Intersubjectivity.

Research Involvement-Since the Department of Psychology believes that graduate training should involve the student continuously in the research process, students are encouraged to make personal contacts by letter or e-mail with faculty members of their choice. A description of the faculty and their areas of research may be obtained by consulting the department Web page at www.uta.edu/psychology (<http://www.uta.edu/psychology/>) or by writing to or calling the department at 817.272.2281. Every effort will be made to assign the incoming student to a faculty member of choice, but priority is given to those who have discussed their placement in advance.

Deadline for Financial Aid Applications-Students who wish to be considered for assistantships should have their applications and departmental forms sent to The University of Texas at Arlington by February 1 for the fall Semester.

Admissions Criteria

There are no fixed criteria for admission to the M.S. or Ph.D. programs in Psychology; many aspects of the student's application inform our admission decisions, but a complete application package **before February 1st** is highly recommended to ensure a timely review of the student file. There are, though, some standard requirements. A student is expected to have successfully completed the appropriate work prior to admission, including an undergraduate B.A. or B.S. degree. The Office of Graduate Studies requires a minimum grade point average of 3.0 in undergraduate work for unconditional admission to the program. **Graduate coursework will also be reviewed for those who are applying to a degree bound or direct Ph.D. program, if any. For those applying to the direct Ph.D. program already having earned or will earn a masters, a minimum of 28-30 graduate hours with a GPA of 3.0 or better as calculated by the Graduate School is typically required.** The Department of Psychology strongly encourages undergraduate courses in statistics and experimental methods prior to admission.

A. Admissions Focus

Graduate admissions committees are subcommittees of the Graduate Studies Committee. Each specialization (i.e., Psychological Sciences, Health/Neuroscience, I/O) will convene an admissions committee to make recommendations to the Graduate Studies Committee regarding advisors of applicants. Each is composed of faculty representatives from the specialization, the graduate advisor and the Department Chairperson. Admissions decisions are based on interpretation of indications of potential success in the program. The following points are generally considered:

1. Grade point average. Most candidates for admissions present averages greater than 3.2. We do, however, examine the applicant's coursework as evidence of research interest. Positive indicators of success in our program include greater than average work in biological and physical sciences, mathematics and psychology. In similar fashion, evidence of research experience is viewed as a predictor of future research potential. For students interested in specialization in Industrial/Organizational (I/O) Psychology at the Master's level, appropriate coursework is taken into consideration.
2. Submission of Verbal and Mathematics GRE scores is required. High GRE scores are viewed positively, but lower GRE scores need not exclude a candidate who shows positive indicators in other areas. We do not require the GRE Subject Test in Psychology.
3. If applicable, submission of language based tests for applicants who do not have a US-based degree: An applicant whose native language is not English must demonstrate a sufficient level of skill with the English language to assure success in graduate studies. This requirement will be waived for non-native speakers of English who possess a Bachelor's degree from an accredited US institution. Applicants are expected to submit a score of at least 550 on the paper-based TOEFL, a score of at least 213 on the computer-based TOEFL, a minimum score of 40 on the TSE, a minimum score of 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79. Further, When the TOEFL iBT is taken, sectional scores of at least 22 on the writing section, 21 on the speaking section, 20 on the reading section, and 16 on the listening section are preferred. However, admission to any graduate program is limited and competitive. Meeting the minimum admission requirements does not guarantee acceptance and programs may give preference to students with higher scores. Only scores submitted directly by ETS or IELTS to UT Arlington are acceptable. **English Proficiency for Graduate Teaching Assistants**: Students whose native language is not English must provide a score on the Test of Spoken English (TSE) of at least 45, a minimum score of 23 on the Speaking portion of the TOEFL iBT exam or a minimum score of 7 on the Speaking portion of the IELTS exam. The English proficiency requirement will be waived for non-native speakers of English who possess a Bachelor's degree from an accredited US institution.

4. Letters of reference. These are important insofar as they offer evidence of commitment to research, the ability to think independently, critically and creativity, and to integrate knowledge. Letters also provide additional information about a candidate's experience and interests. Evidence of success in employment relevant to I/O psychology will be considered for the Master's degree in that area.
5. The personal statement ("essay on educational goals") is required. **Please note that this is a separate and more detailed essay than the graduate application essay. It is not acceptable to copy and paste your graduate application essay and use it as your personal statement.** The personal statement is meant to be more specific concerning your career goals/interests regarding our program. This should describe the applicant's laboratory, field, or applied interests, career plans, and a discussion of how the UT Arlington program can serve to further these interests and plans. The statement is required and will be examined for evidence of the appropriateness of the candidate to the UT Arlington program. The personal statement should contain information about the student's intended specialization and preferred faculty mentor(s). Students are encouraged to contact specific faculty members during the application process.
6. Finally, successful completion of a Master's degree in another department may be viewed positively even when the degree was received in an area outside of psychology. In this latter case, some conditions in terms of make-up (or deficiency) coursework may be specified.

B. Admission Status and Eligibility for Assistantship/Fellowship

As noted in the Graduate Catalog, there are several categories of admission in addition to unconditional admission to the Graduate Program in Psychology.

1. Probationary Admission: If an applicant does not evidence a majority of the positive indicators for the unconditional admission described above, they may, after careful examination of their application materials be given probationary admission. Probationary admission requires that the new student receive a 3.0 (B average) GPA or better in the first 9-12 hours of graduate course work at UT Arlington.
2. Deferred Admission: A deferred decision may be granted when a file is incomplete or when denial of admission is not currently appropriate.
3. Provisional Admission: An applicant unable to supply all documentation (including certified transcripts, GRE scores, letters of reference, and personal statements) prior to the admission deadline, but otherwise appears to meet admission requirements, may be granted provisional admission.
4. Denial of Admission: Applicants whose records in the aggregate do not show sufficient positive indications of potential success will be denied admission. Please note that not all "qualified" applicants are admitted. Successful admission depends upon the competitiveness of the applicant pool, the number of positions available, and the applicant's fit with the current research interests of the faculty.
5. Eligibility for Assistantship/Fellowship available for PHD Applicants Only: PHD students who wish to be considered for assistantships should have their application and Department forms sent to The University of Texas at Arlington by **February 1st** for the Fall Semester. Students unconditionally admitted to the program are eligible for scholarship and fellowship support. Students who are provisionally admitted (pending receipt of their transcript or because they are international students who have not yet met the English language requirement) can receive 1-semester waiver from the Graduate School to hold the assistantship until these missing items have been received. International graduate teaching assistants who make scores that fall below the required test score on the TSE, SEA, or Speaking Section of the TOEFL iBT test must contact the English Language Institute Office at 817-272-2730 or at <http://eli.uta.edu>. No funding available for master programs.

The criteria applied will be the same as those applied to admission decisions. To be eligible, candidates typically must: be a new student, have a GPA of 3.0 or higher in their last 60 undergraduate credit hours, plus any graduate credit hours as calculated by the Office of Graduate Studies; and be enrolled in a minimum of 9 hours of course work in both long semesters (6 hours in the Summer) to retain their fellowships (see section entitled "Department Enrollment Policy" below). Assistantship assignments are made by the Department Chairperson in consultation with the Associate Chair and the Graduate Advisors. Students may be eligible for other forms of support including fellowships. Please refer to the Office of Graduate Studies for further information under Financial Aid Resources(<http://grad.pci.uta.edu/students/finances/>).

C. UT Arlington Graduates

GRE requirements: Submission of Verbal, Quantitative and Analytical Writing GRE score is **required** of *all* applicants unless otherwise indicated, including UT Arlington alumni, with the exception of "Facilitated Admission" (see below).

Facilitated Admission of Outstanding UT Arlington Undergraduates: Students with extraordinarily strong undergraduate records at UT Arlington may receive advanced admission to the program without having to pass through the normal application process. Qualified students will be able to gain admission without completing a formal application or paying application fees. The following conditions must be met in order to qualify for advanced admission of outstanding undergraduates:

1. The student must have graduated from a commensurate bachelor's degree program at UT Arlington no more than one academic year prior to the semester for which admission to a graduate program is sought. A commensurate bachelor's degree program is one that is a normal feeder program for the master's degree or doctoral degree bound program to which the student seeks admission. Undergraduate students in their final year of study are also eligible; in such cases, facilitated admission is a conditional upon a successful completion of the bachelor's degree.
2. The student's GPA must equal or exceed 3.5 in each of the following calculations:
 - a. The grade-point average in the last 60 hours of study as calculated in the Office of Graduate Studies for admission purposes.
 - b. All work completed at UTA to date.
3. The student's record will be assessed for strengths relevant to success in the program. All prospective facilitated admission applicants must also submit a personal statement and two (2) letters of recommendation with the understanding that submitting the facilitated admission form does not

guarantee admission into the program; all facilitated admission applicant's will be reviewed by committee the same as applicants applying via regular application.

Students who are accepted via facilitated admission will be admitted directly to graduate school without completing the application for admission, submitting an application evaluation charge, or taking the GRE. **Students who believe they qualify for this program should contact the appropriate Graduate Advisor in the Department of Psychology.**

Master's Degree Requirements (Earning a Master's in Passing)

MASTER OF SCIENCE IN PSYCHOLOGY

As soon as is feasible, a student should decide on an area for specialization and research. After discussion with, and consent of the involved faculty members, the student selects a supervising professor and a thesis committee. No student may enroll in PSYC 5698 (Thesis - 6 hours) until the thesis committee has approved a proposal for the thesis project and cannot be retaken more than 4 times.

The MS program in Psychology requires completion of a Master's thesis (with the exception of the I/O program) and may be considered as preparation for doctoral work. Progress toward the Ph.D. degree requires completion of a Master's degree in a specialization in psychology or a "Master's equivalency paper". The MS thesis proposal must be approved by a thesis committee consisting of at least three members of the Psychology graduate faculty (additional members are optional) before the candidate for the MS degree may enroll in PSYC 5698 (Thesis - 6 hours). The completed thesis must receive final approval by the committee in an oral defense, which is open to any interested member of the Department, including students.

Students are to post signs and make e-mail announcements informing the local academic community about their upcoming defense no later than two weeks prior to the defense date. A *Final Master's Examination Report* must be completed, signed and filed no later than **two weeks** before the date on which the candidate expects the degree to be conferred. For students who elect the thesis substitute, the final examinations(s) will be determined and administered by all of the members of the student's supervising committee. As above, a *Final Examination Report* must be filed by the dates listed in the Graduate Calendar.

Specialization in Psychological Sciences or Health/Neuroscience Psychology (Masters in Passing)

Thirty (30) credit hours, including six hours of thesis (PSYC 5698), are required to earn a masters in passing while remaining in your Ph.D. program. The masters in passing is designed to form the basis for the doctoral program. Required courses are the following: PSYC 5110, 5405, 5407, 5307 (or 5324), 5333 (or 5334), 5313, 5322, and a 3 hour research course (a combination of 5191 and 5291 or 5391, or 5600). Thesis research and thesis document, approved by a thesis committee, are also required for the Psychological Sciences and Health/Neuroscience specializations. More details about each course can be found at <http://catalog.uta.edu/science/psychology/#courseinventory>

Master of Science in Industrial/Organizational Psychology

Forty-one (41) hours in psychology are required for this degree. The program and curriculum are designed for students who intend to pursue an applied, professional career as practitioners in the field. The program offers both a thesis and a non-thesis option; however, all students enter the program under the non-thesis option. The decision to change to a thesis option will be made on a case-by-case basis and will be based on the student's aptitude and career focus, as well as on the fit between the student and the faculty mentor. Whether thesis or non-thesis option is chosen, all students earn a Master of Science in I/O Psychology and will therefore be required to conduct research related to I/O Psychology. Required psychology courses include PYSC 5405, 5407, 5322, 5325, 5326, 5327 (5127 and 5227), 5330, 5342, 5343 and 6349. Students are also required to complete 400-hours of an outside internship. Students typically complete their thesis or non-thesis option (Individual Research) at the end of their second year.

A typical program of study looks like this (pending final University approval):

First Year			
First Semester	Hours	Second Semester	Hours
PSYC 5325		3 PSYC 5326	3
PSYC 5405		4 PSYC 5407	4
PSYC 5322		3 PSYC 5227	2
		10	9
Second Year			
First Semester	Hours	Second Semester	Hours
PSYC 5330 (Advanced Employee Training & Development)		3 PSYC 5342 (Leadership in Organization)	3
PSYC 6349		3 PSYC 5343 (Electronic Human Resource Management)	3
3 hour Restricted Elective*		PSYC 5391	3
		or	
		PSYC 5698	6
		PSYC 5127	1

	3 hour Restricted Elective*	
	6	16
Total Hours: 41		

*Restricted Electives (6 credits required for non-thesis track students; 3 credits required for thesis track students):

MANA 5322	COMPENSATION & REWARD SYSTEMS	3
MANA 5327	HUMAN RESOURCE LAW	3
MANA 5329	HR METRICS AND ANALYTICS	3
MANA 5332	MANAGING DIVERSITY IN ORGANIZATIONS	3
MANA 5334	ORGANIZATION CONSULTING & RESEARCH	3
MANA 5344	EVIDENCE-BASED MANAGEMENT	3
MANA 6348	SEMINAR IN HUMAN RESOURCE MANAGEMENT	3
MARK 6302	CONSUMER BEHAVIOR I	3
BSAD 6311	EXPERIMENTAL DESIGN AND RESEARCH METHODS	3
INSY 5336	PYTHON PROGRAMMING	3
INSY 5340	MANAGING THE DIGITAL ENTERPRISE	3
INSY 5360	COMPUTATIONAL TECHNIQUES FOR BUSINESS ANALYTICS	3
INSY 5375	MANAGEMENT OF INFORMATION TECHNOLOGIES	3
INSY 5377	WEB AND SOCIAL ANALYTICS	3

Other courses upon approval

Master of Science in Learning Analytics

Thirty-six (36) credit hours are required for the Master of Science in Learning Analytics. Required courses are the following:

- Core Courses (18 hours): LAPS 5310, 5320, 5330, 5340, 5350, 5360
- Four Electives (12 hours) from: LAPS 5370, 5375, 5376, 5377, 5378, 5380, 5388, 5390, 5391, 5392, 5393, 5394, 5395
- Capstone (6 hours): LAPS 5610

Details about each course can be found at <https://catalog.uta.edu/coursedescriptions/laps/>.

If a prospective student does not have sufficient statistical experience in prior coursework, they may be required to take LAPS 5370 – Introduction to Statistical Analysis as a leveling course at the end of their core coursework. This course would count as one of four required electives.

After completing 30 hours of coursework (18 hours core, 12 hours elective) and receiving approval from the program coordinator, students may enroll in the LAPS 5610 Capstone course. Students will work in diverse groups of 5 to 6 students along with a faculty mentor, and the small groups will be designed to combine students with diverse skill sets and emphasize community and collaboration. Students will apply program knowledge and skills learned in prior coursework to complete a small-scale, integrative project involving the analysis of a real world, educational data set. Students will have the opportunity to apply for competitive internships that will provide small scholarships. Once the student enrolls in this course, they must continuously enroll in it until they successfully complete their capstone, but no more than 4 times.

****NOTE:** At this time, students in the Learning Analytics program may not earn a Master's in Passing in order to complete a Ph.D.

Here is a sample program of study:

- Year 1 (Fall)
 - LAPS 5310 Learning Analytics Fundamentals
 - LAPS 5360 Introduction to Data Analysis and R
- Year 1 (Spring)
 - LAPS 5320 Experimental Design and Methodology
 - LAPS 5330 Psychology of Learning and Learning Sciences
- Year 1 (Summer)
 - LAPS 5340 Big Data Methods
 - LAPS 5350 Privacy & Ethics in Learning Analytics
- Year 2 (Fall)
 - Two (2) electives
- Year 2 (Spring)
 - Two (2) electives

- Year 2 (Summer)
 - LAPS 5610 Capstone

Current electives include:

- LAPS 5370 Introduction to Statistical Analysis (leveling course)
- LAPS 5375 Probability and Statistical Inference
- LAPS 5376 Applied Regression Analysis
- LAPS 5377 Linear Models and Experimental Design
- LAPS 5378 Multidimensional Scaling and Clustering
- LAPS 5380 Causal Inference for Program Evaluation
- LAPS 5388 Advanced Methods in Educational Data Management and Learning Analytics
- LAPS 5390 Learning Design Analytics
- LAPS 5391 Independent Study
- LAPS 5392 Cognition, Computers, and Metacognition
- LAPS 5393 Natural Language Processing for Educational Research
- LAPS 5394 Social Network Analysis
- LAPS 5395 Human and Artificial Cognition

Doctoral Degree Requirements

DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy in psychology requires distinguished accomplishments in both scholarship and original research, and a deep understanding of the strategic role of thoughtful research in the development of an empirical science. Although the student must meet the minimum requirements of a planned course of study, the ultimate basis for conferring the degree must be the demonstrated ability to do independent and creative work, and the exhibition of a profound grasp of the subject matter of the field.

Specializations in Psychological Sciences (Graduate Advisor: Dr. Jared Kenworthy) and Health/Neuroscience (Graduate Advisor: Dr. Yuan Bo Peng)

The specialization in Psychological Sciences allows students to work in a general experimental context while specializing in one of several areas (e.g., cognitive, social, developmental, personality, industrial/organizational, etc.) The specialization in Health/Neuroscience Psychology is designed to train researchers in health/neuroscience and behavior, working at the cutting-edge of interdisciplinary, biomedical and bio behavioral investigation in areas such as pain, addiction, stress, psycho-immunology, memory, cancer and aging. Most research activity is based on the neurophysiological, bio-behavioral, or biopsychosocial model of health and illness.

Core Course requirements: Graduate students entering the Psychological Sciences specialization will be required to take the following core courses during their first four semesters of enrollment (24 hours). Exceptions may be made only with written permission of the Graduate Studies Committee. It should also be mentioned that students are expected to maintain their GPA at or above a 3.0 average each term to ensure the successful completion of the program. Therefore, a grade of D is not considered to be acceptable at the doctoral level and if earned, the student risks being dropped from the program. Grades of C have been found to slow down adequate academic progress and should not be taken lightly. All students are expected to consult their faculty mentors if such grades are earned to see how the GPA can be improved.

PSYC 5110	PROFESSIONAL DEVELOPMENT	1
PSYC 5405	ADVANCED STATISTICS I	4
PSYC 5407	EXPERIMENTAL DESIGN	4
PSYC 5307	RESEARCH METHODS	3
or PSYC 5324	APPLIED RESEARCH DESIGN	
PSYC 5333	BEHAVIORAL NEUROSCIENCE	3
or PSYC 5334	HUMAN PHYSIOLOGY	
PSYC 5313	COGNITIVE PSYCHOLOGY	3
PSYC 5322	SOCIAL PSYCHOLOGY	3
PSYC 5391	RESEARCH IN PSYCHOLOGY (*Or a combination of 5191/5291 or 5600)	3

Having fulfilled the above, the following are also required:

Four courses (12 hours) from among electives and seminars (PSYC 6300), including Human Physiology (PSYC 5334) or Behavioral Neuroscience (PSYC 5333), Personality Psychology (5321), Human Learning & Memory (PSYC 5345), Neuropharm (PSYC 6320), Group Processes (PSYC 5323), Social & Personality Development (PSYC 6318), Health Psychology (PSYC 5309). The other required elective course must be approved by the

appropriate Graduate Advisor and/or Committee on Graduate Studies and can include a graduate level course in statistics, genetics, immunology, endocrinology, or other specialized biomedical topic available at UT Southwestern or another UT Arlington department.

1. Two six-hour research courses. These may be taken from Thesis PSYC 5698 or Advanced Research PSYC 5600. Students who plan to obtain the MS should elect PSYC 5698 as one of the research courses and students who do not plan to obtain the MS should select two sections of PSYC 5600. If the student does not elect to obtain the MS, one of the research courses must result in a formal thesis-equivalent paper, which will be evaluated by a committee and defended in an oral examination. The two research courses are a minimum requirement. Students are strongly encouraged to take Research in Psychology PSYC 5391 before taking PSYC 5600 and PSYC 5698. Please note that PSYC 5698 should not be taken more than 4 times. Students should only enroll in PSYC 5698 once they have successfully proposed their thesis.
2. Additional hours of coursework to be determined by the Graduate Advisor and dissertation committee. The student should plan to take approximately 67 hours including PSYC 6999. Please note that a total of 9 dissertation hours are required for graduation (a combination of 6399, 6699, 6999, and 7399). At least 31-34 of these hours must be in organized courses, lectures or seminars. No student may enroll in a dissertation course until the dissertation committee has approved a proposal for the dissertation project.

Students with prior graduate work may be waive up to 9 hours from any of the above requirements by a written request to the Graduate Studies Committee. The request should include a syllabus or other documentation showing that a prior course and one of our required courses are equivalent. Students should discuss course equivalency with the professor(s) who teach the course(s) in question before submitting the request.

A student has completed the course requirements when he or she has maintained at least a B average in all courses.

A typical program of study might look like this:

First Year			
First Semester	Hours	Second Semester	Hours
Statistics I		4 Statistics II	4
Required Core Course		3 Required Core Course	3
Professional Development		1 Readings and/or Research elective	2
Research and Reading		1	
		9	9
Second Year			
First Semester	Hours	Second Semester	Hours
Required Core Course		3 Thesis	6
Research and Reading/Elective/Thesis		6 Research and Reading/Elective	3
		9	9
Third Year			
First Semester	Hours	Second Semester	Hours
MAP hours		3 MAP hours	3
Advanced Research or Research and Reading/Elective		6 Advanced Research or Research and Reading/Elective	6
		9	9
Fourth Year			
First Semester	Hours	Second Semester	Hours
Advanced Research		6 Advanced Research	6
Research and Reading/Elective		3 Research and Reading/Elective	3
		9	9
Fifth Year			
First Semester	Hours	Second Semester	Hours
Dissertation		6 Dissertation	3
		6	3
Total Hours: 81			

Note: This is based on a 5-year program of study. Students may adjust the speed at which milestones are achieved by adding 4th year courses earlier. A doctoral student must pay non-resident tuition beginning the first long semester (Fall or Spring) in which a) the student has been enrolled previously as a graduate student for 14 or more long semesters, AND b) the student has accumulated more than 99 semester credit hours of graduate study at any Texas state university. Students exceeding either limit will not be eligible for assistantships supported by state funds.

Research Requirements

Research requirements include general expectations of student involvement in research throughout their graduate career and specific milestones that must be accomplished in order, including the Research Progress Symposium, the Master's Thesis or equivalent paper, the Major Area Paper (MAP);

Diagnostic/Qualifying Exam), the Dissertation Proposal (Comprehensive Exam), and the Dissertation Defense. University requirements mandate the completion of six hours of Master's research and another "nine total hours of Dissertation research in the semester that degree requirements will be completed. **Please see the section entitled "Dissertation Hours" for an explanation of the different dissertation registration options.*

Prerequisite Conditions for the Major Area Paper

In order to begin working on the Major Area Paper (MAP; diagnostic examination), students must complete:

1. The Departmental Core Curriculum requirements as set forth elsewhere in the catalog. Generally, these course requirements will be met within the first two years of graduate enrollment.
2. Students must also satisfactorily participate in the Research Progress Symposium (RPS), a twelve-minute presentation of original research, taking place in the fourth long semester (Spring of the 2nd year)
3. Finally, a Master's Thesis (or equivalent) must be completed. Students entering the program with a master's degree must complete the Departmental Core Curriculum requirements and participate in the RPS before being invited to begin work on the MAP.

Major Area Paper (MAP)/Diagnostic/ Qualifying Examination:

Upon completion of these prerequisite conditions, students will be invited to begin consulting with their major Major Area Paper (MAP) committee regarding the project, and are expected to finish within one year. Students should enroll in Psyc 6391 in the first long semester following the MAP invite and continue to the course as long as they are working on their MAP.

MAP and MAP Oral Defense

The MAP consists of a comprehensive review paper, which is a summary, integration, and critical review of the literature relevant to a general theme or topic. It is expected that the student will offer a novel and forward-thinking perspective on the topic area. The MAP does not directly propose research hypotheses and designs, nor does it involve the collection of primary-level data. It may be either a quantitative review (i.e., a meta-analysis) or a more qualitative review. It should contain a concluding section in which novel theoretical ideas are proposed and elaborated upon, and which will form a basis for the MAP Oral Defense. The topic area, scope, and timeline of the MAP will be developed with the student's primary faculty mentor and one or two other Department of Psychology Faculty members.

MAP candidates shall convene a prospectus meeting with their MAP Committee before beginning the work on their MAP, in which they present and discuss a 1-2 page abstract or prospectus, outlining the aims, scope, feasibility and structure of the MAP. This abstract should be accompanied by an annotated reference list of key works, indicating an understanding of the literature to which the MAP will continue. Before beginning the MAP, documentation of this meeting shall be submitted to the department for the student's file.

The topic and content of the MAP should not have substantial overlap with either the student's Thesis or with their eventual Dissertation proposal or project. In accordance with the University policy, MAP Committees must be comprised of three (3) members of the Graduate Faculty. Students should consult their Committee members for general comments and direction before beginning work on the MAP, but Committee member involvement in the writing of the MAP (including that of the student's Faculty mentor) is expected to be minimal. Any feedback from others should not be substantive, but should instead resemble the feedback given by article or grant reviewers.

Upon submission of the MAP document to the Committee, the Committee will evaluate the MAP in terms of its potential contribution to the student's chosen field, and in terms of the degree to which it represents Ph.D.-level thinking, communication, independence, and scholarship. Ordinarily, the Committee will take no longer than 2-3 weeks to evaluate the MAP and communicate their decision regarding the document to the student. If the Committee determines that the MAP document is unacceptable, the student will be given one opportunity to revise it for a second evaluation by the Committee. If the revised version of the MAP is also judged to be unacceptable, the student will not be invited to pursue the Ph.D. degree in the UT Arlington Graduate Program in Psychology. Such a student's Master's degree will thus be his/her terminal degree.

If and when the MAP document is deemed acceptable by the Committee, the Committee will invite the student to schedule a MAP Oral Defense, which will take place no sooner than two weeks following communication from the Committee to the student that the student's MAP is acceptable. The MAP Oral Defense consists only of the student and Committee members, and is not open to other students, faculty, staff, or the general public. In this meeting, which will normally last between 90 and 120 minutes, Committee members will assess the student's knowledge of the topic area, the theoretical background, the methodologies likely to be employed in related research, limitations to the ideas, and conceptual and practical connections to related issues. The Committee will determine whether or not the student has clearly passed the examination, clearly failed, or passed with conditions which must be met before Ph.D. Candidacy is recommended. Upon passing both the MAP and the MAP Oral Defense, a Diagnostic Evaluation Report form must be completed, signed, and filed. In order to be deemed making satisfactory academic progress, students are expected to complete the MAP within one calendar year once invited.

DISSERTATION

Dissertation Proposal:

Students who pass their MAP/diagnostic examinations may continue in the Ph.D. program after having a **dissertation proposal** approved by their dissertation supervising committee. The committee is formed by a student in consultation with his or her major advisor and the Graduate Advisor, and consists of at least five members, at least three of whom are from the psychology Graduate Faculty (additional members are optional).

The meeting with members of the dissertation committee is a closed one so that the proposed project can be discussed in a confidential manner. The oral presentation of the dissertation proposal satisfies the University requirement that a graduate student must take and pass a "comprehensive examination" prior to advancement to candidacy for the PhD degree. During the presentation, the student responds to any questions the committee members may have about the project. The committee may approve the project, suggest modifications that would make the project acceptable, or reject the proposal and require a new one. In addition to satisfying the comprehensive examination requirement, approval of the dissertation proposal implies that the project is acceptable as a research topic that the project's conceptualization, design, and proposal methods are acceptable and that particular results ("positive results") are not required. As noted above, approval of the dissertation proposal also is the final step for the student to be admitted to candidacy for the PhD degree. The dissertation course (PSYC 6399, 6699, 6999 or 7399) can be taken (see dissertation hours section below). During this period, meetings with the committee are on an "as needed" basis. The dissertation project is then carried out as approved, or as modified with prior approval of the committee members, and the dissertation is written. When a student has completed a draft of the dissertation that the primary mentor deems appropriate for his or her committee, a date for the oral defense is scheduled, and written drafts must be provided to committee members at least two weeks before this date.

Dissertation Hours:

Doctoral students must take a minimum of 9 hours of dissertation. This can be accomplished by taking 6999 or a combination of other dissertation course options. A doctoral student working on a dissertation should be enrolled in an approximate 6X99 or 7399 dissertation course. A student receiving advice and assistance from a faculty member in the preparation of a dissertation must register in the course even if the student is not on campus. Doctoral students must enroll in the appropriate 6699, 6999, or 7399 Dissertation Completion course the semester in which the dissertation is defended. Students that typically enroll in these courses defend and apply for graduation in the same term. There are 4 options for dissertation registration:

- **6399** is the most basic dissertation course and is repeatable, however, this course only has graded options of R and F. P grades cannot be assigned in this course and therefore dissertation defenses must not be conducted when a student is enrolled exclusively in a 6399 course. **It is a requirement for graduation that a student be awarded a P grade for a successful defense** and this is not a grading option for this course.
- **6699** is repeatable with grade options of **P, F, or R** and should be taken when a student expects to work approximately 6 hours per week on their dissertation.
- **6999** is repeatable with grade options of **P, F, or R**. It should be taken when a student expects to work approximately 9 hours per week on their dissertation.
- **7399** should be taken only in the term in which a student expects to complete all requirements and graduate. Grade options are **P, F, and R**. This course is **not repeatable** under any circumstances. If a student receives an R grade in 7399, they must enroll in 6699 in next and any future terms. Enrolling in 7399 meets the university full-time enrollment requirements (note that financial aid, loan agencies, and other organizations may not accept 3 hours as full-time enrollment. It is the student's responsibility to find out).

Dissertation Defense:

The PhD final oral examination (that is, the "dissertation defense") is conducted by the dissertation committee in a meeting that is open to any member of the University community and to guests. Graduate students are urged to attend all dissertation defenses, an especially those in their own area(s) of specialization. Defending students will post fliers approved for posting and stamped by the Student Governance Office and make e-mail announcements informing the local academic community about the defense at least **two weeks prior** to the defense date. The PhD oral examination is conducted by the dissertation committee. The first part of the examination is an oral presentation of the research and its findings. This portion of the meeting is open to any member of the University community and guests. The second part is a closed examination and consists of specific detailed questions about the dissertation. Both oral defense and the written dissertation must be passed. A **Dissertation Defense Report** form must be filed in conjunction with the oral dissertation proposal presentation.

Specialization in Industrial/Organizational Psychology

The doctorate of psychology with an emphasis in I/O is designed for students who intend to conduct research in I/O psychology and begin their professional career as either an academician or a research-oriented practitioner in the field. Students working toward the I/O doctoral degree are expected to develop, implement, and complete research as part of the degree requirements. Additionally, students have the opportunity to be involved with a student-staffed consulting organization, The Industrial and Organizational Psychology Center. The I/O specialization is currently a part of the Experimental program and requires completion of psychology, methods, and I-O specific courses.

Due to the applied nature of I/O MS programs, if an MS degree has been conferred or is conferred en route to the Ph.D., then it is not necessary to conduct a thesis or a formal thesis-equivalent paper. Students may take 6 hours of Advanced Research (PSYC 5600), under the supervision of their major professor, to work toward obtaining additional publications and strengthening research-oriented skills.

Current I/O MS students

Students currently enrolled in the I/O MS program who wish to be considered for admission into a PhD program must submit the Change of Program form for either Psychological Sciences or Health/Neuroscience and must follow the formal admission procedures as stated previously. Students must meet the criteria for admission to the PhD program which will be determined, in part, by the scholarly achievements accomplished as well as the fit between the student and faculty mentor.

SOME UNIVERSITY AND DEPARTMENT POLICIES

Deadlines:

A variety of University and Office of Graduate Studies deadlines are published each year by the Office of Graduate Studies. Students are responsible for meeting any deadlines that may apply to them. For your convenience, the link to the Office of Graduate Studies Calendar is provided here: <http://www.uta.edu/uta/acadcal.php>

Department Enrollment Policy

All full-time doctoral students are recommended to enroll in at least six hours of course work each regular semester. State law requires that students on support enroll in at least nine hours of course work during the Fall and Spring Semesters (six hours during Summer Semesters) until a student is post-comprehensive examination, at which time the student can drop to 6 and/or 3 hours in their last two semesters and still maintain an assistantship. Please see the Department's Administrative Assistant for additional information regarding this policy. The nine-hour requirement may be reduced to six hours during the Fall and Spring Semesters (three hours during Summer Semesters) when enrolled in course work in other UT Arlington departments (see **Credit for Courses Taken in Other Departments on the UT Arlington Campus in our graduate student handbook on our website**).

Enrollment in Readings (PSYC 5151, 5251, 5351) will not be allowed without prior approval of both an appropriate Faculty member and the Graduate Advisor. (See also the enrollment requirements for teaching assistants under section IV.B **Teaching Skills Requirement**.) International students are required to enroll in nine hours each semester that they are in attendance.

Academic Honesty

Every student is expected to be intellectually honest and professionally ethical in all aspects of graduate work. Academic dishonesty, such as cheating on examinations, falsification of data or student records, or plagiarism, will result in a review by the Graduate Studies Committee and a potential dismissal from the Graduate Program. All students are expected to be familiar with American Psychological Association and American Psychological Society publications on ethical principles in the conduct of research using online databases, as well as human and/or animal subjects.

Grade Grievances

The student must first discuss the appeal of a course grade with the instructor who issued the grade. This step must be taken promptly. The student must file the grievance within one (1) year from the date that grades are posted, and preferably within 45 days. If the instructor is unavailable, the student may proceed in the appeal process and discuss the matter with the Department Chairperson responsible for the course for which the grade is being appealed.

In the event the student and the instructor are unable to reach agreement, or the instructor is unavailable, the student must follow the departmental protocol for grade appeals:

1. The student is responsible for contacting the Department Chairperson
2. The Department Chairperson will convene a subcommittee
3. The subcommittee will review the appeal and relevant documents, and will provide a recommendation to the Department Chairperson.
4. The Department Chairperson will review the subcommittee's recommendation and make a decision.
5. If the student wishes to pursue a grade appeal beyond the Department Chairperson, the student must complete the Student Grade Appeal Form and deliver it to the Dean's Office, College of Science, with any supporting documentation the student wishes to provide.
6. The Dean's decision is final.

Withdrawing from the University:

Students requiring a medical withdrawal should speak to their faculty mentor and department staff as soon as possible to determine the appropriate course of action and paperwork required. Please refer to the University catalog to review all appropriate procedures and regulation regarding medical withdrawals. In contrast, those needing to withdraw for non-medical reasons (ex. dismissal from the program) are responsible for dropping their own classes prior to the start of the semester. If the classes are not dropped prior to the first day of class, the student accepts financial responsibility for any issues regarding a refund or lack thereof. It is also the student's responsibility to contact the graduate coordinator to determine how to drop their classes.

Psychology - Undergraduate Programs

Academic Advising: 320/321 Life Science Bldg. • 817-272-0858

Overview

The Department of Psychology offers two programs of study leading to the bachelor's degree. It also offers courses of interest to the general public.

The Bachelor of Arts degree in psychology is for those who wish to obtain a broad liberal arts education with a concentration in psychology. It is also a preparation for graduate studies in psychology and many other fields.

The Bachelor of Science degree in psychology is intended for those students preparing for work and study in fields requiring more mathematics and sciences. It is also suitable for pre-medical and pre-dental students. Students preparing for study in the health professions including medicine, dentistry, pharmacology, optometry, occupational therapy, and veterinary medicine should also be advised by the Health Professions Advisor in, Room 107 A, Life Science Building in order to meet the requirements of the corresponding professional schools.

Courses of general interest to the academic community include the following, which have no prerequisites:

PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
PSYC 2317	BASIC CONCEPTS IN HUMAN SEXUALITY	3
PSYC 3301	PSYCHOLOGY OF HUMAN RELATIONS	3
PSYC 3302	BUSINESS PSYCHOLOGY	3
PSYC 3303	DRUGS AND BEHAVIOR	3
PSYC 3305	PSYCHOLOGY OF EMPLOYEE TRAINING	3
PSYC 4350	SPORT PSYCHOLOGY	3

UNIV 1101 Career Preparation and Student Success

All transfer students are required to enroll in a 1-credit hour career preparation course, UNIV 1101 or UNIV-SC 1101. Transfer students need to take this course before the end of the first year at UTA unless they meet any of the following criteria:

- Non-degree seeking status
- Post-baccalaureate status
- Have an equivalent Transfer course

UNIV 1131 Issues in College Adjustment

All entering freshman are required to enroll in a 1-credit hour college adjustment course, UNIV 1131.

Acceptance Requirements for a Major in Psychology

Students who wish to apply for major status in psychology must first meet the University and College of Science requirements for admission to major status and the specific requirements of the Department of Psychology listed below.

Overall and Psychology GPA of at least 2.25. To be changed to full major you must first complete PSYC 2300, PSYC 3200 and PSYC 3300 with a C or better in each course.

Academic Probation (College of Science): Majors whose overall GPA or GPA in major courses falls below 2.25 will be placed on probation and must consult with the Department Advisor prior to enrolling in additional courses.

Admission to Upper-Level Laboratory Courses:

To enroll in the Advanced Topic courses¹ the student must make a C or better in both PSYC 2300, PSYC 3200 and PSYC 3300 or equivalent courses and must have completed the associated upper-division lecture course.

¹ Advanced Topic courses: PSYC 4410, PSYC 4411, PSYC 4412, PSYC 4415, PSYC 4420, PSYC 4421, PSYC 4430, PSYC 4431.

Distinguished Scholars in Psychology

The Department of Psychology offers a Distinguished Scholars program in psychology. This program is intended to provide students with the opportunity for intellectual and professional development that will take them beyond the requirements of the basic B.A. or B.S. degrees. Thus, the program serves to promote and acknowledge the special achievements of participating students.

To qualify, the student must have completed 30 hours with a grade point average of 3.0 or better in residence at UT Arlington, including 10 hours in psychology, with a minimum grade point average of 3.5 or better. The student does background reading and designs a study with a faculty sponsor in

PSYC 4361, then performs the research project and writes an honors thesis in PSYC 4398. In most cases, the six hours of Distinguished Scholar credit will not increase the total hours necessary to complete the B.A. or B.S. degree.

Qualified students or students who believe they may qualify should contact the undergraduate advisor as soon as possible after completing PSYC 3300.

Requirements for a Bachelor of Science Degree in Psychology

The requirements to receive a Bachelor of Science Degree in Psychology can be achieved through a degree plan under any one of the two options (i.e., Option 1-BS in Psychology with a minor from a different discipline, Option 2- BS in Psychology with an Emphasis in Psychology). Before choosing a degree program under one of these options, please consult with the psychology undergraduate advisor. Click here for a sample degree plan: BS_DEGREE_PLAN_.xlsx (http://catalog.uta.edu/science/psychology/undergraduate/BS_DEGREE_PLAN_.xlsx)

Pre-Professional Courses

General Core Requirements (p. 50) 42

RECOMMENDED CORE REQUIREMENTS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts ¹		3

POLS 2311	GOVERNMENT OF THE UNITED STATES (or any three hours meeting the legislative requirement)	3
POLS 2312	STATE AND LOCAL GOVERNMENT (or any three hours meeting the legislative requirement)	3
Language, Philosophy and Culture ¹		3

MATH 1421	PREPARATION FOR CALCULUS ²	4
MATH 1426	CALCULUS I ²	4
Life and Physical Science		

BIOL 1441	CELL AND MOLECULAR BIOLOGY	4
BIOL 1442	EVOLUTION AND ECOLOGY	4
Social/Behavioral Science ¹		3

HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area ¹		3

Program Requirements

Select one of the following in computer literacy: 0-3

CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	
Or any equivalent course		
Or passing the university computer proficiency test ³		

Select one of the following in oral communication competency: 3

COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	
Or an equivalent three hour course approved by the Undergraduate Advisor		

Modern Language Level III and IV or Courses from the Cultural Studies List (see psyc advisor for list) 6

Need a total of 15-16 hours in Life & Physical Sciences including the 8 hours from the biology sequence. Select from the following sciences, or seven additional hours in biology for science majors courses. 7-8

CHEM 1441 & CHEM 1442	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II	
GEOL 1301 & GEOL 1302	EARTH SYSTEMS and EARTH HISTORY	
PHYS 1441 & PHYS 1442	GENERAL COLLEGE PHYSICS I and GENERAL COLLEGE PHYSICS II	
PHYS 1443 & PHYS 1444	GENERAL TECHNICAL PHYSICS I and GENERAL TECHNICAL PHYSICS II	

Professional Programs

Major		
PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
UNIV 1131	STUDENT SUCCESS	1

or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
PSYC 2300	STATISTICS IN PSYCHOLOGY	3
PSYC 3300	RESEARCH METHODS IN PSYCHOLOGY	3
PSYC 3200	EXPERIENCING RESEARCH IN PSYCHOLOGY	2
Required Core Lectures		
PSYC 3315	SOCIAL PSYCHOLOGY	3
PSYC 3322	BRAIN AND BEHAVIOR	3
PSYC 3334	COGNITIVE PROCESSES	3
Lecture Groups		
Select one three-hour lecture course from each of the Groups I, II, and III; plus one three-hour course from either Group I, II, or III:		12
Group I		
PSYC 3310	DEVELOPMENTAL PSYCHOLOGY	
PSYC 3311	ADULTHOOD AND AGING	
PSYC 3312	SOCIAL & PERSONALITY DEVELOPMENT	
PSYC 3313	CULTURAL PSYCHOLOGY	
PSYC 3314	PSYCHOLOGY OF PERSONALITY	
PSYC 3319	PSYCHOLOGY OF ADOLESCENCE	
Group II		
PSYC 3304	ANALYSIS & MANAGEMENT OF BEHAVIOR	
PSYC 3320	BEHAVIOR AND MOTIVATION	
PSYC 3326	ANIMAL BEHAVIOR	
PSYC 3356	EVOLUTIONARY PSYCHOLOGY	
PSYC 4301	PRINCIPLES OF NEUROSCIENCE	
PSYC 4309	NEUROPHARMACOLOGY	
PSYC 4325	DEVELOPMENTAL PSYCHOBIOLOGY	
PSYC 4327	BEHAVIORAL GENETICS	
PSYC 4329	ANIMAL LEARNING AND COGNITION	
Group III		
PSYC 3317	INTRODUCTION TO CLINICAL AND COUNSELING PSYCHOLOGY	
PSYC 3318	ABNORMAL PSYCHOLOGY	
PSYC 4310	BEHAVIOR THERAPY	
PSYC 4332	THEORIES OF HUMAN LEARNING AND MEMORY	
PSYC 4339	PSYCHOLOGY OF JUDGMENT AND CHOICE	
PSYC 4357	HEALTH PSYCHOLOGY	
Advanced Topics Course		
Select one four-hour advanced topics course from either Group I, II, or III:		4
Group I		
PSYC 4410	ADVANCED TOPICS IN DEVELOPMENTAL PSYCHOLOGY	
PSYC 4411	ADVANCED TOPICS IN PERSONALITY	
PSYC 4412	ADVANCED TOPICS IN SOCIAL PSYCHOLOGY	
Group II		
PSYC 4420	EXPERIMENTAL ANALYSIS OF BEHAVIOR	
PSYC 4421	ADVANCED TOPICS IN NEUROSCIENCE	
Group III		
PSYC 4415	INTERNSHIP IN PSYCHOLOGY	
PSYC 4430	ADVANCED TOPICS IN CLINICAL COUNSELING	
PSYC 4431	ADVANCED TOPICS IN COGNITIVE SCIENCE	
PSYC 4432	ADVANCED TOPICS IN HEALTH	
Minor or Emphasis		
Either a minor of 18 hours in a discipline other than Psychology or an Emphasis in Psychology(General, Clinical Health, Neuroscience or Organizational Science), which consists of 18 hours of Psychology course work, is required. (See Minor page on the Psychology website for details)		18

Electives

Sufficient hours to complete the total required for the degree.

Total

120 hours, of which at least 36 hours must be 3000/4000-level.

- ¹ See General Core Requirements (p. 50) for approved courses.
- ² Prerequisites may add hours to the total required for the degree.
- ³ Computer Skills Placement Test Website link below:
<https://www.uta.edu/studentsuccess/testing-services/proficiency-and-other-exams/csp.php>

SUGGESTED COURSE DISTRIBUTION FOR BACHELOR OF SCIENCE DEGREE WITH MINOR ¹**First Year**

First Semester	Hours	Second Semester	Hours
UNIV 1131 or UNIV-SC 1101		1 ENGL 1302	3
ENGL 1301		3 MATH 1426	4
MATH 1421		4 BIOL 1442	4
PSYC 1315		3 INSY 2303 or CSE 1310 ^{or} take the CSP TEST	3
BIOL 1441		4 HIST 1301	3
		PSYC 3315 (take this course if you take the CSP test instead of a computer class)	3
		15	20

Second Year

First Semester	Hours	Second Semester	Hours
Life & Physical Science ²		4 Life & Physical Science ²	3-4
PSYC 2300		3 POLS 2311	3
PSYC 3310 (or pick a different group I)		3 PSYC 3300	3
Creative Arts		3 Minor Course	3
HIST 1302		3 PSYC 3320 (or pick a different group II)	3
		16	15-16

Third Year

First Semester	Hours	Second Semester	Hours
PSYC 3322		3 PSYC 3334	3
Minor Course		3 Minor Course	3
PSYC 3200		2 Minor Course	3
Modern Language Level III or substitution		3 Language/Philosophy/Culture	3
POLS 2312		3 COMS 1301, 2302, or 2305	3
		14	15

Fourth Year

First Semester	Hours	Second Semester	Hours
Modern Language level IV or substitution		3 Advanced Topics in Psychology	4
PSYC 3318 (or a different group III)		3 Advanced Elective	3
Minor Course		3 Advanced Elective	3
Minor Course		3 Advanced Elective	3
PSYC 3317 (or a different class from either group I, II or III)		3	
		15	13

Total Hours: 123-124

- ¹ These are suggestions only. See your academic advisor for an actual degree worksheet.
- ² See catalog for acceptable courses.

Requirements for a Bachelor of Arts Degree in Psychology

The requirements to receive a Bachelor of Arts Degree in Psychology can be achieved through a degree plan under one of the two options (i.e., Option 1-BA in Psychology with a minor from a different discipline, Option 2- BA in Psychology with an Emphasis in Psychology). Before choosing a degree program under one of these options, please consult with the psychology undergraduate advisor. Click here for a sample degree plan: BA_DEGREE_PLAN.xlsx (http://catalog.uta.edu/science/psychology/undergraduate/BA_DEGREE_PLAN.xlsx)

Pre-Professional Courses

General Core Requirements (p. 50)	42
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RECOMMENDED CORE REQUIREMENTS

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
Creative Arts ¹		3
POLS 2311	GOVERNMENT OF THE UNITED STATES (or any three hours meeting the legislative requirement)	3
POLS 2312	STATE AND LOCAL GOVERNMENT (or any three hours meeting the legislative requirement)	3
Language, Philosophy and Culture ¹		3
MATH 1302	COLLEGE ALGEBRA ²	3
or MATH 1315	COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS	
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS	3
Life & Physical Science		
BIOL 1333	DISCOVERING BIOLOGY: MOLECULES, CELLS AND DISEASE	6
& BIOL 1334	and LIFE ON EARTH: EVOLUTION, ECOLOGY AND GLOBAL CHANGE	
or		
BIOL 1441	CELL AND MOLECULAR BIOLOGY	8
& BIOL 1442	and EVOLUTION AND ECOLOGY	
Social/Behavioral Science ¹		3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
Foundational Component Area ¹		3
Program Requirements		
14 hours in a single modern or classical language or eight hours in a language plus six hours of designated courses ^{1,2}		14
Select one of the following in computer literacy:		0-3
CSE 1310	INTRODUCTION TO COMPUTERS & PROGRAMMING	
INSY 2303	INTRODUCTION TO M.I.S. AND DATA PROCESSING	
Or any equivalent course		
Or by the University computer proficiency test ³		
Select one of the following in oral communication:		3
COMS 1301	FUNDAMENTALS OF PUBLIC SPEAKING	
COMS 2302	PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING	
COMS 2305	BUSINESS AND PROFESSIONAL COMMUNICATION	
Or an equivalent three hour course approved by the Undergraduate Advisor		
Need a total of 11 hours in Life & Physical Sciences. including the 6-8 hours from the biology sequence, approved by the Undergraduate Advisor.		3-5

Professional Courses

Major		
PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
UNIV 1131	STUDENT SUCCESS	1
or UNIV-SC 1101	CAREER PREPARATION AND STUDENT SUCCESS	
PSYC 2300	STATISTICS IN PSYCHOLOGY	3
PSYC 3300	RESEARCH METHODS IN PSYCHOLOGY	3
PSYC 3200	EXPERIENCING RESEARCH IN PSYCHOLOGY	2
Required Core Lectures		
PSYC 3315	SOCIAL PSYCHOLOGY	3
PSYC 3322	BRAIN AND BEHAVIOR	3
PSYC 3334	COGNITIVE PROCESSES	3
Lecture Groups		
Select one three-hour lecture course from each of the Groups I, II, and III:		9
Group I		
PSYC 3310	DEVELOPMENTAL PSYCHOLOGY	
PSYC 3311	ADULTHOOD AND AGING	

PSYC 3312	SOCIAL & PERSONALITY DEVELOPMENT
PSYC 3313	CULTURAL PSYCHOLOGY
PSYC 3314	PSYCHOLOGY OF PERSONALITY
PSYC 3319	PSYCHOLOGY OF ADOLESCENCE
Group II	
PSYC 3304	ANALYSIS & MANAGEMENT OF BEHAVIOR
PSYC 3320	BEHAVIOR AND MOTIVATION
PSYC 3326	ANIMAL BEHAVIOR
PSYC 3356	EVOLUTIONARY PSYCHOLOGY
PSYC 4301	PRINCIPLES OF NEUROSCIENCE
PSYC 4309	NEUROPHARMACOLOGY
PSYC 4325	DEVELOPMENTAL PSYCHOBIOLOGY
PSYC 4327	BEHAVIORAL GENETICS
PSYC 4329	ANIMAL LEARNING AND COGNITION
Group III	
PSYC 3317	INTRODUCTION TO CLINICAL AND COUNSELING PSYCHOLOGY
PSYC 3318	ABNORMAL PSYCHOLOGY
PSYC 4310	BEHAVIOR THERAPY
PSYC 4332	THEORIES OF HUMAN LEARNING AND MEMORY
PSYC 4335	COGNITIVE DEVELOPMENT
PSYC 4338	COGNITIVE NEUROSCIENCE
PSYC 4339	PSYCHOLOGY OF JUDGMENT AND CHOICE
PSYC 4357	HEALTH PSYCHOLOGY

Advanced Topics course

Select one four-hour advanced topics course from either Group I, II, or III:

4

Group I	
PSYC 4410	ADVANCED TOPICS IN DEVELOPMENTAL PSYCHOLOGY
PSYC 4411	ADVANCED TOPICS IN PERSONALITY
PSYC 4412	ADVANCED TOPICS IN SOCIAL PSYCHOLOGY
Group II	
PSYC 4420	EXPERIMENTAL ANALYSIS OF BEHAVIOR
PSYC 4421	ADVANCED TOPICS IN NEUROSCIENCE
Group III	
PSYC 4415	INTERNSHIP IN PSYCHOLOGY
PSYC 4430	ADVANCED TOPICS IN CLINICAL COUNSELING
PSYC 4431	ADVANCED TOPICS IN COGNITIVE SCIENCE
PSYC 4432	ADVANCED TOPICS IN HEALTH

Minor or Emphasis

Either a minor of 18 hours in a discipline other than Psychology or an emphasis in Psychology (General, Clinical Health, Neuroscience or Organizational Science), which consists of 18 hours of Psychology course work, is required. (See minor page on Psychology website for details)

18

Electives

5

Sufficient hours to complete the total required for the degree.

Total

120 hours, of which at least 36 hours must be 3000/4000-level.

- ¹ See General Core Requirements (p. 50) for approved courses.
- ² Prerequisites may add hours to the total required for the degree.
- ³ Computer Skills Placement Test Website Link Below:
<https://www.uta.edu/studentsuccess/testing-services/proficiency-and-other-exams/csp.php>

SUGGESTED COURSE DISTRIBUTION FOR BACHELOR OF ARTS DEGREE ¹**First Year**

First Semester	Hours	Second Semester	Hours
UNIV 1131 or UNIV-SC 1101		1 ENGL 1302	3
PSYC 1315		3 MATH 1308	3
BIOL 1333 or 1441		3 - 4 HIST 1301	3
ENGL 1301		3 CSE 1310 or INSY 2303 (or take the CSP Test)	3
MATH 1302		3 PSYC 3315 (take this course if you take the CSP test)	3
		BIOL 1334 or 1442	3-4
		13-14	18-19

Second Year

First Semester	Hours	Second Semester	Hours
Modern Language I		4 Modern Language II	4
PSYC 2300		3 PSYC 3300	3
Creative Arts Elective		3 Minor Course	3
HIST 1302		3 PSYC 3334	3
PSYC 3310 (or pick a different group I course)		3 POLS 2311	3
		16	16

Third Year

First Semester	Hours	Second Semester	Hours
Minor Course		3 Minor Course	3
Life & Physical Sciences		3 PSYC 3318 (or pick a different group III course)	3
PSYC 3200		2 Minor Course	3
PSYC 3320 (or pick a different group II course)		3 Modern Language III or substitution	3
POLS 2312		3 Language/Philosophy/Culture Class	3
		14	15

Fourth Year

First Semester	Hours	Second Semester	Hours
Minor Course		3 Minor Course	3
Advanced Elective		3 Advanced Topics Course	4
Advanced Elective		3 COMS 1301, 2302, or 2305	3
PSYC 3322		3 Life & Physical Science	3
Modern Language IV or substitution		3 Advanced Elective	3
		15	16

Total Hours: 123-125

¹ These are suggestions only. See your academic advisor for an actual degree worksheet.² See catalog or handbook for course options.**General Psychology Minor**

A minor consists of 18 credit hours or more in Psychology (PSYC) courses. 9 of the 18 hours must be completed at UT Arlington. Six of the 9 hours must be 3000-4000 level. A 2.0 grade point average(*calculated only by the PSYC courses you take in residency*) must be maintained in the minor. To request a minor be added to your degree plan, please complete the minor request form (https://www.uta.edu/psychology/undergraduate/Psychology%20Minor%20Form_06.05.17_2019.pdf) and seek approval from your academic advisor.

Clinical Health Psychology Minor

The Clinical Health Psychology minor consists of 18 credit hours or more in Psychology (PSYC) courses. A 2.0-grade point average(*calculated only by the PSYC courses you take in residency*) must be maintained in the minor. To request a minor be added to your degree plan, please complete the minor request form (http://catalog.uta.edu/science/psychology/undergraduate/Psychology_MINOR_FORM_FOR_CLINICAL_HEALTH_and_ORGANIZATIONAL.xlsx) and seek approval from your academic advisor.

Courses you can take towards the minor are:

Prerequisite of PSYC 1315 (Intro to Psychology) with a C or better before starting any of the following courses.

PSYC 3304 Analysis and Management of Behavior

PSYC 3310 Developmental Psychology

PSYC 3311 Adulthood and Aging

PSYC 3312 Social and Personality Development

PSYC 3314 Psychology of Personality

PSYC 3317 Introduction to Clinical and Counseling Psychology

PSYC 3318 Abnormal Psychology

PSYC 3319 Psychology of Adolescence

PSYC 3320 Behavior and Motivation

PSYC 3322 Brain and Behavior

PSYC 4301 Principles of Neuroscience

PSYC 4309 Neuropharmacology

PSYC 4310 Behavior Therapy

PSYC 4325 Developmental Psychobiology

PSYC 4327 Behavioral Genetics

PSYC 4357 Health Psychology

PSYC 4410 Advanced Topics in Developmental Psychology

PSYC 4411 Advanced Topics in Personality

PSYC 4421 Advanced Topics in Neuroscience

PSYC 4430 Advanced Topics in Clinical and Counseling

PSYC 4432 Advanced Topics in Health Psychology

PSYC 4398 Honors Thesis**

PSYC 4161, 4261, 4361 Readings in Psychology**

PSYC 4181, 4281, 4381 Research in Psychology**

** A maximum of 6 hours of honors thesis, research, or readings credits may be applied to the minor

Courses may be added to the list as they are offered.

Neuroscience Minor

A Neuroscience minor consists of 18 credit hours or more in Psychology (PSYC) courses. A 2.0 grade point average(*calculated only by the PSYC courses you take in residency*) must be maintained in the minor. To request a minor be added to your degree plan, please complete the minor request form (http://catalog.uta.edu/science/psychology/undergraduate/NEUROSCIENCE_MINOR.docx) and seek approval from your academic advisor.

Courses you can take towards the minor are:

Prerequisite of PSYC 1315 (Intro to Psychology) with a C or better before starting any of the following courses.

PSYC 3304 Analysis Management of Behavior

PSYC 3320 Behavior and Motivation

BIOL/PSYC 3322 Brain and Behavior

BIOL/PSYC 3326 Animal Behavior

PSYC 3334 Cognitive Processes

PSYC 3356 Evolutionary Psychology

BIOL/PSYC 4301 Principles of Neuroscience**

BIOL/PSYC 4309 Neuropharmacology **

BIOL/PSYC 4327 Behavioral Genetics

PSYC 4329 Animal Learning and Cognition

PSYC 4420 Experimental Analysis of Behavior

BIOL/PSYC 4421 Advanced Topics in Neuroscience **

PSYC 4431 Advanced Topics in Cognitive Science

***Additional prerequisite of BIOL/PSYC 3322 required.*

Courses may be added to the list as they are offered.

Organizational Science Minor

The Organizational Science minor consists of 18 credit hours or more in Psychology (PSYC) courses. A 2.0-grade point average must be maintained in the minor. To request a minor be added to your degree plan, please complete the minor request form (http://catalog.uta.edu/science/psychology/undergraduate/Psychology_MINOR_FORM_FOR_CLINICAL_HEALTH_and_ORGANIZATIONAL.xlsx) and seek approval from your academic advisor.

Courses you can take towards the minor are:

Prerequisite of PSYC 1315 (Intro to Psychology) with a C or better before starting any of the following courses.

PSYC 3301 Psychology of Human Relations

PSYC 3302 Business Psychology

PSYC 3305 Psychology of Employee Training

PSYC 3306 Psychology of Creativity and Creative Thinking

PSYC 3313 Gender and Culture Diversity

PSYC 3314 Psychology of Personality

PSYC 3315 Social Psychology

PSYC 3320 Behavior and Motivation

PSYC 3334 Cognitive Processes

PSYC 4332 Theories of Human Learning and Memory

PSYC 4339 Psychology of Judgment and Choice

PSYC 4398 Honors Thesis**

PSYC 4161, 4261, 4361 Readings in Psychology**

PSYC 4181, 4281, 4381 Research in Psychology**

Courses may be added to the list as they are offered.

School of Social Work

Overview

The School of Social Work (SSW) has a long, well established history at UTA. Initially, beginning in 1967, only the MSW degree was offered. In 1979, The Bachelors of Social Work (BSW) degree was founded but under the auspices of the Department of Sociology, Anthropology, and Social Work. The Doctor of Philosophy (Ph.D.) in Social Work degree program was initiated in 1983. On September 1, 1991, the graduate and undergraduate programs were brought together into a unified administrative and academic unit, the School of Social Work.

The School now has a diverse student body of over 1,800 students enrolled in four degree programs: the Bachelor of Social Work (BSW) (<https://www.uta.edu/academics/schools-colleges/social-work/programs/bsw/>), Bachelor of Science in Substance Use & Treatment (BSSUT) (<https://www.uta.edu/academics/schools-colleges/social-work/programs/bssut/>), Master of Social Work (MSW), (<https://www.uta.edu/academics/schools-colleges/social-work/programs/msw/>) and the Ph.D. in social work (<https://www.uta.edu/academics/schools-colleges/social-work/programs/phd/>). The BSW and MSW programs are fully accredited by the Council on Social Work Education.

With a commitment to social justice, the School is also home to the Diversity Studies programs (<https://www.uta.edu/academics/schools-colleges/social-work/programs/minors/diversity-studies/>), where undergraduate students can enroll in a cluster of courses to earn a certificate or minor in diversity. Additionally, undergraduate students may choose to minor in Social Justice and Social Welfare or Substance Use Treatment.

The MSW program is offered in a variety of settings including the main UTA campus, the UTA Fort Worth campus (<https://fortworth.uta.edu/academics/>), fully online, and through joint programs at Lubbock Christian University and Angelo State University. In the BSW program, students may take courses at the UTA main campus, the UTA Fort Worth Campus, and online.

In the BSW program, we prepare students for a wide range of entry level, generalist practice and social service positions. The BSSUT program prepares students for careers in the field of substance use disorder assessment and treatment. In the MSW program students prepare for advanced level positions with specializations in either direct clinical practice with families and children, mental health and substance abuse, aging, or health, or in community and administrative practice. In the Ph.D. program students are prepared for positions in academia where they can teach and continue research in areas of importance to the social work profession. All four programs offer challenging courses, internships, and practicums designed to teach practice knowledge and skills while instilling the value orientations of the profession.

Mission and Philosophy

The School of Social Work (SSW) strives to educate leaders to create community partnerships for promoting a just society. The School promotes the highest standards of integrity and excellence in research, teaching and service, and creates collaborative scholarly and educational opportunities for students and the community, with the goal of achieving a just society.

The SSW has identified several broad program objectives: engaging in evidence-informed research, teaching and practice, preparing students to assume leadership roles and activities in the local community and beyond, and to conduct community-based research to address complex and pressing social issues at the local, national and global levels.

Office of Advising and Student Success

To help students in the SSW reach their graduation goals we established the Office of Advising and Student Success. Through this office students receive timely and accurate professional and academic advising, connection to the larger campus, and referrals to additional services to facilitate academic achievement. For more information contact the Office of Student Success at (817) 272-3647.

Scholastic Activity and Research Interests of the Faculty

In the SSW there are four research centers: the Birmingham Center for Child Welfare, the Center for Addictions & Recovery Studies (CARS) and the Center for Clinical Social Work, (CCSW). The centers offer training, research, and service opportunities to faculty and students.

Our faculty are outstanding scholars and teachers in the domains of child welfare, family violence, health, mental health, aging and disability and are active in developing new knowledge in their respective fields, producing significant numbers of peer-reviewed journal articles, books, and book chapters each year.

Research produced by faculty has generated not only new knowledge, but also intervention outcomes that have garnered national attention and recognition, with a number of faculty members serving either as editors-in-chief of peer-reviewed journals, or as members of editorial review boards.

COURSES

SOCW 1231. SOCIAL WORK PROFESSIONALISM. 2 Hours.

Equips students with skills and resources to prepare for academic and professional success. Empowers diverse students to identify their individual needs, reflect on opportunities for growth, determine what resources and self-care strategies are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. This course is reserved exclusively for students planning to major in Social Work (e.g., BSW-Intended status) who are freshmen; this will be taken concurrently with UNIV 1131. This course or SOCW 3300 is required for admission to the BSW major.

SOCW 1350. SPECIAL ISSUES IN SOCIAL WORK. 3 Hours.

Relevant social work topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration. We sometimes transfer in 1000 level courses and need a generic 1000 level for allocation.

SOCW 2302. LIFE SPAN DEVELOPMENT AND HUMAN BEHAVIOR. 3 Hours.

This course explores, within the context of a strengths and empowerment based perspective, the bio-psycho-social development of persons from birth to death. It is strongly recommended that this course be taken before SOCW 3301. This course is required for Social Work Field Instruction and Seminar I (SOCW 4951). This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences. For students seeking the BSW major who are Field of Study complete in Social Work, this course is not required.

SOCW 2325. INTRODUCTION TO STATISTICS FOR SOCIAL WORK AND THE SOCIAL SCIENCES. 3 Hours.

This course is designed to enhance students' skills as research consumers and in performing research and statistical analyses in social work and the social sciences. Included in the course are descriptive statistical procedures including measures of central tendency, variability, shape and distribution along with associations between two variables. In addition, inferential statistics are covered including estimation and hypothesis testing.

SOCW 2350. SPECIAL ISSUES IN SOCIAL WORK. 3 Hours.

Relevant social work topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration.

SOCW 2361. INTRODUCTION TO SOCIAL WORK. 3 Hours.

An overview of the social work profession, its fields of practice, methods of social intervention, its historical context, and its relationship to the social welfare system. This course is open to all students and satisfies the requirement for Social and Behavioral Sciences in the core curriculum. This course is required for the Bachelor of Social Work (BSW) program.

SOCW 3300. SOCIAL WORK PROFESSIONALISM AND STUDENT SUCCESS. 3 Hours.

Equips students with skills and resources to prepare for academic and professional success. Empowers diverse students to identify their individual needs, reflect on opportunities for growth, determine what resources and self-care strategies are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. This course is reserved exclusively for students planning to major in Social Work (e.g., BSW-Intended status) who have transferred from another institution; this fulfills the university requirement for UNIV 1101. This course or SOCW 1231 is required for admission to the BSW major. Co-requisite: SOCW 2361.

SOCW 3301. THEORIES OF HUMAN BEHAVIOR. 3 Hours.

This course explores, within the context of a strengths and empowerment perspective, theories of human behavior. For social work majors, it is strongly recommended that SOCW 2302 be taken before this course. Offered as AAST 3301 and SOCW 3301; credit will be granted in only one department. This course is required for Social Work Field Instruction and Seminar I (SOCW 4951).

SOCW 3303. SOCIAL WELFARE POLICY AND SERVICES. 3 Hours.

Examines how social goals are met by social welfare institutions. Conceptual schemes are developed for analyzing the structure of social welfare institutions and evaluating social welfare sub-systems. The social work profession is also examined in the context of the evolution and function of the contemporary American social welfare system. This course is required for Social Work Field Instruction and Seminar II (SOCW 4952).

SOCW 3305. SOCIAL WORK PRACTICE I. 3 Hours.

Critical evaluation of the value base of the social work profession and basic practice concepts including interviewing, communication and problem solving skills at the individual, family, and group levels in diverse settings. This course is required for admission to the Bachelor of Social Work (BSW) program.

SOCW 3306. SOCIAL WORK PRACTICE III: MACRO PRACTICE. 3 Hours.

Examines generalist community and administrative practice roles and includes the perspectives of historical inequities and social injustice and the impact on communities and diverse groups, strengths, empowerment, evidence-based practice, and global practice along with the values of social justice, diversity, and participation. Specific attention is given to assessing community assets and needs. Prerequisite: SOCW 1231, SOCW 3300, SOCW 2361, SOCW 3305, SOCW 3307, and MATH 1308 or other equivalent statistics course approved by the BSW Director.

SOCW 3307. DIVERSE POPULATIONS. 3 Hours.

Introduction to theoretical, practical, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior. This course is required for admission to the Bachelor of Social Work (BSW) program. Offered as AAST 3317, SOCW 3307 and MAS 3319; credit will be granted in only one department.

SOCW 3308. SOCIAL WORK RESEARCH METHODS. 3 Hours.

This course is designed to provide students with the fundamental skills to understand, use, and conduct research to advance the knowledge base of the social work profession and assess the effectiveness of social work interventions in generalist social work practice. The course addresses elements of the research process, quantitative and qualitative methods, research ethics, and approaches to data analysis. Particular attention will be given to the role of research with populations-at-risk, social and economic justice, and cultural diversity. Prerequisite: SOCW 1231, SOCW 3300, SOCW 2361, SOCW 3305, SOCW 3307, and MATH 1308 or other equivalent statistics course approved by the BSW Director.

SOCW 3309. SOCIAL WORK PRACTICE II. 3 Hours.

Theories and methodologies of social work assessment, case management, and other generalist intervention at the individual, family, and group levels in diverse settings through the lens of intersectionality of race, gender, sexuality, age educational level and other aspects of identity. Prerequisite: SOCW 1231, SOCW 3300, SOCW 2361, SOCW 3305, SOCW 3307, and MATH 1308 or other equivalent statistics course approved by the Director of Undergraduate Programs.

SOCW 3310. ENVIRONMENTAL JUSTICE & GREEN SOCIAL WORK. 3 Hours.

This course examines how a variety of vulnerable or marginalized populations are impacted by environmental injustices, and explores ways that social service professionals can solve environmental justice issues on the micro, mezzo and macro level. Students will explore how issues such as climate change, extreme weather events and environmental toxins intersect with health, mental health, children & youth, older adults, indigenous populations, food deserts, climate-forced migration, international conflict, environmental racism, and more and examine solutions including ecotherapy, climate policy, and community organizing. This course is also offered at the Master's level as SOCW 5310. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 3312. DISABILITY & SOCIAL WORK. 3 Hours.

Examines major themes in disability and social work. Topics include basic understandings of disability, lived experiences of people with disabilities, legal and policy perspectives, working with adults and children with a variety of disabilities, history of disability policy and disability rights, disability advocacy, and resources in the community, among others. Offered as DS 3312 and SOCW 3312; credit will only be granted in one department.

SOCW 3314. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

SOCW 3315. INTRODUCTION TO SUBSTANCE USE DISORDERS. 3 Hours.

This is an entry-level course that provides foundation-level social work students with the fundamental concepts of Substance Use Disorders (SUD) and the addictive process. Students will examine the prevalence and characteristics of substance use disorders and the impact of such disorders on the individual, family, and the community. Theories of addiction and application of these theories will be examined. Students will develop conceptual knowledge and self-awareness concerning the etiology of addiction, assessment strategies, and wellness strategies for facilitating optimal development and preventing SUD. The course will cover the prevalence of SUD varies among ethnic and cultural groups, between men and women, across the life span, and through different socio-economic levels. This course is taught as SOCW 3315 and SUT 3315. Credit will be granted only once.

SOCW 3318. SCREENING, ASSESSMENT, & ENGAGEMENT. 3 Hours.

Introduces screening and diagnostic instruments and techniques appropriate for determining whether a substance use disorder might exist. Explores the therapeutic alliance and practice engagement techniques taking into account intersections of race, gender, sexuality, age, educational level, and other aspects of identity. Students learn to assess suicide risk and a client's readiness for change. Students learn to diagnose substance use disorders and recognize intoxication, withdrawal, substance, and medication induced disorders. Offered as SUT 3318 and SOCW 3318. Credit will be granted only once. Prerequisite: Prerequisite OR Corequisite: SUT 3315 or SOCW 3315.

SOCW 3319. TREATMENT PLANNING, COLLABORATION & REFERRAL. 3 Hours.

This course addresses the clinical application of the biopsychosocial assessment in the development of a treatment plan. Potential treatment issues will be identified and a client-specific problem list will be developed. Individualized treatment goals will be established in collaboration with diverse clients. Client objectives and clinical interventions will also be developed. This course explores dynamics of the therapeutic alliance, and clinician-client collaboration within the context of a strengths and empowerment-based perspective. The student will gain insight into and an appreciation of collaboration, consultation, and referral throughout the continuum of care. Offered as SUT 3319 and SOCW 3319. Credit will be granted only once. Prerequisite: SOCW 3318 or SUT 3318.

SOCW 3320. U.S. IMMIGRATION POLICY AND THE AMERICAN DREAM. 3 Hours.

Focus on American identity through the examination of immigration to the United States, past and present, and the evolution of U.S. immigration policy. Topics include U.S. attitudes and policy responses to European, Asian, and Latin American immigration and to the incorporation of the descendants of African slaves and Native Americans. Emphasis on the decline of the melting pot idea and the incorporation of recent immigrants. Offered as MAS 3320, AAST 3319, and SOCW 3320. Credit will be granted only once.

SOCW 3321. SUBSTANCE USE TREATMENT. 3 Hours.

This course is the culmination of the fundamentals of substance use disorders, treatment planning, collaboration and referral, and substance use treatment. Students will learn and acquire the special skills necessary to assist individuals, families, and groups through the sequela of substance use and addiction. Focus on cognitive-behavioral therapy, motivational interviewing, 12-step programs, nutrition and exercise, meditation, and other alternative treatment options. Students will study treatment modalities that consider the social, cultural, and economic influences that shape the client's world view and substance use experience. Offered as SUT 3321 and SOCW 3321. Credit will be granted only once. Prerequisite: Prerequisite or corequisite: SUT 3319 or SOCW 3319.

SOCW 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: Permission of the Director.

SOCW 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: Permission of the Director.

SOCW 4310. SOCIAL WORK WITH CHILDREN AND FAMILIES. 3 Hours.

A critical examination of social policies, research, and practices impacting at-risk children and families in child welfare, child mental health, and school settings. Emphasis is placed on the role of the social work practitioner in enhancing the well-being of children and families in contemporary society.

Prerequisite: SOCW 3301, and SOCW 3309. BSW majors only.

SOCW 4314. INTIMATE PARTNER VIOLENCE. 3 Hours.

This course covers interdisciplinary theoretical frameworks for understanding and addressing intimate partner violence in diverse relationships, including critical feminism, psychological, and sociological models, as well as prevention and intervention practices that reflect a stance of cultural and critical humility. This course is also offered at the Master's level as SOCW 5314. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 4335. AGING IN AMERICAN SOCIETY. 3 Hours.

This course presents the major theories of aging, in the United States and across cultures, and explores the diverse factors of aging through the lens of intersectionality taking into account intersections of race, gender, sexuality, educational level and other aspects of identity. It includes various perspectives including psychological, biological, sociological, and spiritual. Theories are integrated into practice thus providing students a sound foundation for social work practice with diverse older adults. Students develop skills for completing multi-dimensional assessments, and effective social work interventions with and on behalf of older adults. This is offered at the MSW level as SOCW 5335. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 2302, SOCW 3301, and SOCW 3307.

SOCW 4344. HEALTH INSURANCE AND ACCESS TO CARE. 3 Hours.

Explores the history and underlying philosophy of managed care in health and social services, reviews interdisciplinary approaches and principles for understanding and critiquing health care systems, and covers current trends and practice issues. Assesses the potential for conflict between social work values and managed care systems. Builds skills for advancing health equity through administrative roles in managed care settings. This is offered at the MSW level as SOCW 5344. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 4350. SPECIAL ISSUES IN SOCIAL WORK. 3 Hours.

Relevant social work topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration. Prerequisite: Permission of the Director.

SOCW 4364. PERSONAL RELATIONSHIPS. 3 Hours.

Explores theoretical and empirical data on diverse personal relationships at the follow stages of relationship: initiation, maintenance, and termination. Identifies areas for intervention. Also offered as SOCW 5364 in the MSW program. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 3301, SOCW 2302, and SOCW 3307. Co-requisite: Social Work Practice II (SOCW 3309 [formerly 3304]).

SOCW 4366. SEMINAR IN WOMEN'S ISSUES. 3 Hours.

Explores women's issues in human behavior theory, practice theory, and policy. Using an intersectional lens, the historical, political, and socioeconomic forces that maintain sexism among diverse groups are discussed. Environmental influences are examined in relation to social justice, social work values, knowledge, and skills. This course is also offered as SOCW 5366 in the MSW program. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 3301, and SOCW 3307. Co-requisite: Social Work Practice II (SOCW 3309).

SOCW 4370. SOCIAL WORK IN THE SCHOOLS. 3 Hours.

The purpose of this course is to provide an overview of the various social work-related theoretical perspectives, models, and programs for intervention with diverse children and their families in the school setting. This includes skills in assessment, prevention, and intervention in providing services to students that are marginalized for numerous reasons including race, gender, skin color, religion, immigrant status, disability, sexual orientation, and socioeconomic status among other factors. Students will learn to use intervention skills that address each level of the ecosystem's perspective in schools. This is offered at the Master's level as SOCW 5370. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 3309.

SOCW 4371. INEQUITIES AND INCARCERATION. 3 Hours.

This course surveys mass incarceration in the U.S. criminal justice system as a racialized and classist system of control. First, this course will contextualize the US criminal justice system, both historically and through global comparisons. Then students will be introduced to four broad content areas: entering the criminal justice system (school-to-prison pipeline and policing), who is detained (demographics and common mental health and substance use issues) and what they experience in detention (including covid-19 in jails and prisons), experiences and problems encountered when returning citizens reenter society, and trends in criminal justice reform advocacy (including problem-solving courts and advocacy efforts such as Black Lives Matter). Finally, the course considers the social work grand challenge of smart decarceration as a path towards reform specific to social workers. Also offered as SOCW 5371 in the MSW program. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: Permission of the Director.

SOCW 4951. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR I. 9 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. For additional information and requirements, see the Field website. Prerequisite: SOCW 2302, SOCW 3301, SOCW 3303, SOCW 3305, SOCW 3306, SOCW 3308, SOCW 3309, and 1 Social Work Elective.

SOCW 4952. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR II. 9 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. For additional information and requirements, see the Field website. Prerequisite: SOCW 4951 and 3 social work electives. BSW Majors Only.

SOCW 4955. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 1. 9 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Must be taken concurrently with SOCW 4956. For additional information and requirements, see the Field website. Prerequisite: Core curriculum and all social work required courses except Field Internship (SOCW 4955 and 4956), and a minimum of 102 total credit hours.

SOCW 4956. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 2. 9 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. For additional information and requirements, see the Field website. Must be taken concurrently with SOCW 4955. Prerequisite: Core curriculum and all social work required courses except Field Internship (SOCW 4955 and 4956), and a minimum of 102 total credit hours.

SOCW 5281. FOUNDATION FIELD SPLIT II. 2 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5681 and SOCW 5307.

SOCW 5285. FOUNDATION FIELD BLOCK II. 2 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5307. Co-requisite: SOCW 5685. Please note if co-requisite is dropped, this course will be dropped as well.

SOCW 5301. HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT I. 3 Hours.

Exploration of behavioral and social science knowledge of human behavior and development of diverse persons through the life course. Examines major systems in society: individual, group, family, and community; and the diversity of ethnicity, race, class, sexual orientation, and culture.

SOCW 5303. FOUNDATIONS OF SOCIAL POLICY AND SERVICES. 3 Hours.

Examines how social goals of diverse populations are met by social welfare institutions. Conceptual schemes are developed for analyzing the structure of social welfare institutions and evaluating social welfare sub-systems. The social work profession also is examined in the context of the evolution and function of the contemporary American social welfare system.

SOCW 5304. GENERALIST MICRO PRACTICE. 3 Hours.

This foundation level course introduces graduate students to both theory and methods for social work practice with diverse individuals, families, and small groups. It emphasizes a generalist perspective, beginning interviewing and relationship skills, problem assessment, goal setting, and contracting. Special attention is given to the common roles assumed by social workers (e.g. facilitator, broker, advocate) as well as development of self-reflection skills in relationship to the dynamics of intersectionality of those served.

SOCW 5306. GENERALIST MACRO PRACTICE. 3 Hours.

Examines generalist community and administrative practice roles and includes the perspectives of historical inequities and social injustice and the impact on communities and diverse groups, strengths, empowerment, evidence-based practice, and global practice along with the values of social justice, diversity, and participation. Specific attention is given to assessing community assets and needs.

SOCW 5307. DIVERSE POPULATIONS. 3 Hours.

Introduction to theory, practice, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior.

SOCW 5308. RESEARCH AND EVALUATION METHODS IN SOCIAL WORK I. 3 Hours.

This course is designed to provide students with an understanding of and ability to use the evidence-informed practice process to identify, analyze and apply evidence-informed interventions. Students will be able to comprehend both quantitative and qualitative research and to synthesize strengths and weaknesses of the social work literature. Students will be able to synthesize and evaluate research in terms of its content, quality, and applicability to clients. Students will understand scientific and ethical approaches to building knowledge to apply to and evaluate the impact of interventions on clients or clients' presenting problems.

SOCW 5310. ENVIRONMENTAL JUSTICE & GREEN SOCIAL WORK. 3 Hours.

This course examines how a variety of vulnerable or marginalized populations are impacted by environmental injustices, and explores ways that social service professionals can solve environmental justice issues on the micro, mezzo and macro level. Students will explore how issues such as climate change, extreme weather events and environmental toxins intersect with health, mental health, children & youth, older adults, indigenous populations, food deserts, climate-forced migration, international conflict, environmental racism, and more and examine solutions including ecotherapy, climate policy, and community organizing. This course is also offered at the undergraduate level as SOCW 3310. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 5311. ADVANCED MICRO PRACTICE. 3 Hours.

Builds on the generalist perspective and the basic familiarity with social work processes (such as problem identification, assessment, contracting, plan implementation, and outcome evaluation) in the context of (1) existing psychosocial intervention modalities; (2) the particular client values, personal goals, treatment preferences, and characteristics such as racial, ethnic, gender, sexual orientation, age, and ability identities; and (3) selection of change modalities appropriate in relation to clients' characteristics, social justice, and the client's presenting issues. Required of all Direct Practice students. Prerequisite: Advanced Standing OR SOCW 5304 AND SOCW 5681 OR SOCW 5881.

SOCW 5312. COMMUNITY AND ADMINISTRATIVE PRACTICE. 3 Hours.

This course surveys theory and builds skills in roles associated specifically with understanding the complex history and multilayered intersections, e.g. discrimination, oppression, disparities or other lived experiences that influence diverse community practice (e.g. community/locality history and development, social planning, social action) and culturally inclusive and sensitive administrative practice (e.g. supervision, administration, diverse management and management systems). Students complete an advanced culturally informed assignment in community and/or organizational assessment and program design. Required of all CAP (Community and Administrative Practice) students. Prerequisite: Advanced Standing Student OR SOCW 5306 AND SOCW 5681 OR SOCW 5881.

SOCW 5313. RESEARCH AND EVALUATION METHODS IN SOCIAL WORK II. 3 Hours.

This course is designed to provide students with an understanding of and ability to analyze, monitor, and evaluate evidence informed interventions and human service programs. In this course quantitative and qualitative research methods and approaches are applied to the scientific and ethical evaluation of evidence informed interventions and human service programs. Research skills and knowledge are presented from the perspective of promoting diversity and social and economic justice in anti-oppressive research and evaluation of social work. Prerequisite: Advanced Standing OR SOCW 5308.

SOCW 5314. INTIMATE PARTNER VIOLENCE. 3 Hours.

This course covers interdisciplinary theoretical frameworks for understanding and addressing intimate partner violence in diverse relationships, including critical feminism, psychological, and sociological models, as well as prevention and intervention practices that reflect a stance of cultural and critical humility. This course is also offered at the Bachelor's level as SOCW 4314. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Co-requisite: SOCW 5311. If the co-requisite is dropped, this course will be as well.

SOCW 5315. BRAIN AND BEHAVIOR. 3 Hours.

The focus of this course is on current advances in knowledge of the neurobiological underpinnings of human behavior and development, the interaction between those underpinnings and the social context and environment, the relevance to social work practice with individuals, families, groups, programs/organizations, and communities, and related assessment and intervention practice behaviors across several practice domains. The domains include human development, genetics, mental health and substance abuse, cognition, stress and trauma, and violence and aggression. The implications of neurobiological and environmental influences (including public health issues and health disparities) will be examined in terms of social justice, social work values, knowledge, and skills, as well as in terms of those populations who have historically been harmed by structural and systematic arrangement and delivery of social welfare services at the micro, mezzo, and macro levels. Co-requisite: SOCW 5311. Please note that if the co-requisite course is dropped, this one will be also.

SOCW 5316. STRESS, CRISIS, AND COPING. 3 Hours.

The impact of specific crises on individuals and families will be examined including the unique stresses, crises and coping responses of diverse cultural and social identities as these relate to the stresses of oppression and social injustice and inequity. Variations in cultural wellness and health relative to stress and recovery will also be explored. Typical crises will include life-threatening illness, trauma, physical and mental disability, and death. Assessment and evaluation of an individual's coping ability and appropriate strategies for social work interventions will be studied. Differential therapeutics relative to ethnicity, cultural norms, inclusiveness and access to wellness resources, will be infused into course assignments and discussion. Co-requisite: SOCW 5311. Please note that if the co-requisite is dropped, this will be also.

SOCW 5318. DEATH & DYING. 3 Hours.

This course will give students an overview of the principles of thanatology from anthropological, sociological, psychological, medical, historical, spiritual, cultural, and political perspectives and the role(s) that social work can play in helping individuals, families, and communities from diverse backgrounds. Using life course and life span approaches, course content will include personal death awareness, the integration of theoretical perspectives and evidence-based practice interventions in working with dying, death, and bereavement with emphasis on cultural and religious/spiritual perspectives, bioethical principles, and end-of-life decision making, social justice, and advocacy for the dying. Particular attention is given to the intersections of older adults with gender, race, sexuality, age, education level, and other aspects of identity. Therefore, the class content promotes individual self-reflection and discussion through the lens of diversity and intersectionality across the developmental life span and life course about the meaning of life and death and implications for social work practice. This dialog is a precursor to engagement with clients, caregivers, grieving persons, and health care personnel about sensitive and culturally diverse issues around the experience of dying and death. Co-requisite: 5311. Please note that if the co-requisite is dropped, this course will be dropped as well.

SOCW 5320. ADVANCED ADMINISTRATIVE PRACTICE. 3 Hours.

Focuses on selected topics, issues, and skills for effective social work administration. Content includes inclusive and anti-oppressive approaches to leadership, worker motivation, resource development, stakeholder engagement, interagency relations, and managing conflict and diversity in a climate of scarce resources. Prerequisite: SOCW 5312 or concurrent enrollment. Please note that if SOCW 5312 is dropped, this course will be dropped as well.

SOCW 5321. ADVANCED COMMUNITY PRACTICE. 3 Hours.

This course explores research, theory and evidence-based approaches to community practice. Content is focused on the development of skills for partnering with neighborhoods, communities, and groups to address community problems rooted in structural inequalities. Major topics include the politics of empowerment, mobilizing coalitions, locating resources, and mediating conflict. Prerequisite: SOCW 5312 or concurrent enrollment.

SOCW 5323. PROGRAM EVALUATION. 3 Hours.

This course explores research, theory and evidence-based approaches to community practice. Content is focused on the development of skills for partnering with neighborhoods, communities, and groups to address community problems rooted in structural inequalities. Major topics include the politics of empowerment, mobilizing coalitions, locating resources, and mediating conflict. Prerequisite: SOCW 5308.

SOCW 5324. SOCIAL WORK SUPERVISION. 3 Hours.

This course introduces the culturally diverse roles, functions, and contexts of social work supervision between the supervisor and supervisee. Covers culturally sensitive administrative and clinical perspectives on the social work supervisor as a manager, educator, mentor, mediator, and leader in diverse human service organizations. Co-requisite: SOCW 5311 or SOCW 5312. Please note if co-requisite is dropped, this course will be dropped as well.

SOCW 5325. BUDGETING AND FINANCIAL MANAGEMENT. 3 Hours.

This course provides a basic overview of financial management applied specifically to human service agencies. Grounded in a historical lens that examines power relationships in human service financial management, this course emphasizes basic concepts and skill building in budgeting and fund raising; accounting principles; financial statements, and computerized financial information systems. Special emphasis is given to the role of participatory approaches in resource allocation and distribution for human services. Co-requisite: SOCW 5312. Please note that if the co-requisite is dropped, these course will be dropped also.

SOCW 5326. GRANT PROPOSAL DEVELOPMENT SEMINAR. 3 Hours.

Grant proposal development is a fundamental method of accessing funds and developing new programs in the social service arena. In this class, students will identify key funding opportunities in their fields of interest and will write a proposal using an actual federal application and a foundation funding announcement. The majority of the course will be devoted to the development of the skills and knowledge necessary to produce a competitive proposal. These include, but are not limited to: a) needs and capacities assessment, b) program development, c) strategic planning, d) budgeting, e) evaluation, and f) community collaboration. Co-requisite: SOCW 5312. If the co-requisite is dropped, this one will be as well.

SOCW 5327. HUMAN BEHAVIOR IN MACRO ENVIRONMENTS. 3 Hours.

Offers advanced students the opportunity to study diverse people's behavior within large and complex social settings including: natural helping networks and ontological communities, organizations, and bureaucracies, and social and political movements. Prerequisite: Advanced Standing OR SOCW 5301 and SOCW 5307.

SOCW 5328. ADVOCACY AND SOCIAL POLICY. 3 Hours.

Politics are key to developing equitable social policy. Students learn theory and skills to impact social and distributive justice at local, state, and national levels. Examines the role of the social work profession in politics. Prerequisite: SOCW 5303.

SOCW 5329. POVERTY, INEQUALITY AND SOCIAL POLICY. 3 Hours.

This course examines the nature and extent of poverty and inequality in the United States, their causes and consequences, and the debate concerning the role of government in providing anti-poverty programs. Many points of view concerning social and distributive justice are presented, from the radical left to radical right. Prerequisite: SOCW 5303.

SOCW 5332. DIRECT PRACTICE WITH AGING. 3 Hours.

Course presents an overview of current issues, trends, and practice in the care, treatment, and delivery of social services to diverse older adults and their families. Students learn practice procedures designed to equip them with the skills needed for effective social work practice, review major theories on aging, as well as evaluate needs and gaps in services to diverse older adults and their families. Particular attention is given to the intersections of older adults with gender, race, sexuality, age, education level, and other aspects of identity. Co-requisite: 5311. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5333. AGING AND SOCIAL POLICY. 3 Hours.

Social welfare policies and programs are examined in terms of the overall impact on older adults and society. Needs and gaps in services to older adults and their families are evaluated. Current issues in aging policy are examined. Particular attention is given to the intersections of policy with gender, race, sexuality, age, education level, and other aspects of identity. Prerequisite: SOCW 5303.

SOCW 5334. FAMILY CAREGIVING & AGING. 3 Hours.

This course will give students an overview of the individual and social impact of family caregiving and aging within a bio-psycho-social-spiritual context and the role(s) of social workers in helping individuals, families, and communities face the contemporary challenges of caregiving. Course content will be underscored by a strengths-based framework and will include the effects of culture on family caregiving, families' process of providing care to persons with chronic and/or complex illness across levels of care (e.g. hospital/rehabilitation/hospice), working with family caregivers within long-term care settings (e.g. nursing homes), dementia caregiving, end of life care as well as evidence-based assessment and intervention with family caregivers. Social services and policy related to effective practice with older adults and family caregivers are also discussed, including innovative and emerging approaches (e.g. technology). Particular attention is given to the intersections of family caregiving with gender, race, sexuality, age, education level, and other aspects of identity. Co-requisite: SOCW 5311. Please note if the co-requisite is not met, the course will be dropped.

SOCW 5335. AGING IN AMERICAN SOCIETY. 3 Hours.

This course presents the major theories of aging, in the United States and across cultures, and explores the diverse factors of aging through the lens of intersectionality taking into account intersections of race, gender, sexuality, educational level and other aspects of identity. It includes various perspectives including psychological, biological, sociological, and spiritual. Theories are integrated into practice thus providing students a sound foundation for social work practice with diverse older adults. Students develop skills for completing multi-dimensional assessments, and effective social work interventions with and on behalf of older adults. Prerequisite: SOCW 5301 and SOCW 5307.

SOCW 5342. DIRECT PRACTICE IN HEALTH CARE. 3 Hours.

Using a bio-psycho-social risk and resilience perspective this direct practice course focuses on assessment, intervention and appropriate evidence based practices with those evidencing acute and chronic mental health problems, and disabilities in diverse populations. Applying a critical lens, students will explore the delivery of services, review historical and current service delivery systems (community mental health, transinstitutionalization, managed behavioral health care), and a wide range of community mental health problems. Additional topics include the function and critique of the Diagnostic Statistical Manual with a social justice perspective, mental health recovery principles, ethics, case management, treatment planning, person in environment, and substance abuse. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5343. HEALTH POLICY AND SOCIAL JUSTICE. 3 Hours.

Provides a critical historical overview of health policy in the United States, current and projected national and local health policies and roles of providers and consumers of health care and public health is examined; service demands, economic, access, and regulatory issues analyzed; relationships between governmental, voluntary, and commercial sectors studied; analytic frameworks for developing and understanding the impact of policy on diverse populations explored. Prerequisite: SOCW 5303.

SOCW 5344. HEALTH INSURANCE AND ACCESS TO CARE. 3 Hours.

Explores the history and underlying philosophy of managed care in health and social services, reviews interdisciplinary approaches and principles for understanding and critiquing health care systems, and covers current trends and practice issues. Assesses the potential for conflict between social work values and managed care systems. Builds skills for advancing health equity through administrative roles in managed care settings. Co-requisite: SOCW 5311 OR SOCW 5312. Please note that if the co-requisite is dropped, this course will be dropped as well. This course is offered at the undergraduate level as SOCW 4344. Students who take this at the undergraduate level may not repeat it at the graduate level.

SOCW 5345. SPECIAL TOPICS IN HEALTH EQUITY. 3 Hours.

Building on a social determinants of health theoretical perspective and research methods in health care, this course undertakes a critical examination of both historical and present day policies, research and practices that contribute to health inequities across communities disproportionately impacted by health inequities. Topics vary each semester depending on the needs and interests of students and faculty. Potential topics may include, but are not limited to: community health, homelessness, HIV/AIDS, maternal and child health, immigrant health, and veteran health. Emphasis is placed on the role of the social work practitioner in promoting health equity and reducing health inequities. Co-requisites: SOCW 5311 OR SOCW 5312. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5352. DIRECT PRACTICE IN MENTAL HEALTH. 3 Hours.

Using a bio-psycho-social risk and resilience perspective this direct practice course focuses on assessment, intervention and appropriate evidence based practices with those evidencing acute and chronic mental health problems, and disabilities in diverse populations. Applying a critical lens, students will explore the delivery of services, review historical and current service delivery systems (community mental health, transinstitutionalization, managed behavioral health care), and a wide range of community mental health problems. Additional topics include the function and critique of the Diagnostic Statistical Manual with a social justice perspective, mental health recovery principles, ethics, case management, treatment planning, person in environment, and substance abuse. Co-requisite: SOCW 5311. Please note that if the co-requisite is dropped, this course will be dropped as well.

SOCW 5353. SOCIAL POLICY AND MENTAL HEALTH. 3 Hours.

This course explores programs, policies and systems in the field of mental health, and their impact on mental health consumers. Disparities occurring within mental healthcare systems will be explored using a health equity framework focusing on the differential impact policies may have on women, children and youth, individuals from diverse racial/ethnic backgrounds, LGBTQ+ individuals, veterans and immigrants/refugees. Approaches to policy analysis and implementation will be presented. Prerequisite: SOCW 5303.

SOCW 5354. PRINCIPLES OF SUBSTANCE USE TREATMENT. 3 Hours.

This course provides a solid grounding in theory and treatment of substance use disorders (SUDs). In keeping with the social work values of respecting the worth and dignity of all persons, the use of affirming and destigmatizing language is paramount. The application of assessment and screening tools, and implementation of evidence-based interventions, skills and techniques will be examined to include culturally informed diagnosis and treatment across a variety of behavioral health treatment settings. We will consider the importance of integrating identity into treatment through the consideration of gender, race, ethnicity, culture, age, and SOGIE (sexual orientation, gender identity and expression). This course will be taught from a strength-based social justice and trauma-informed perspective, with a focus on harm reduction, relapse prevention and sustained recovery. Prerequisite: SOCW 5311.

SOCW 5355. MILITARY SOCIAL WORK. 3 Hours.

The focus of this course is to examine military culture using a diversity framework that involves considering ethical implications for practice, comprehending prevalent social and health issues, and the effects of policies and health disparities across diverse social identities within varied military environments. Students enrolled in this course will analyze current advances in knowledge on the neurobiological underpinnings of human behavior and development pertinent to social and health issues as well as resilience to stress and adversity among diverse members of the military population. Students will identify and evaluate the relevant implications for social work practice with individuals, families, groups, programs/organizations, and communities using a multicultural multidimensional perspective in connection with social justice, social work values, knowledge, and skills. Students will also examine the structural and systematic arrangement and delivery of social welfare services at the micro, mezzo, and macro levels of social work practice. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5356. SEMINAR IN COGNITIVE-BEHAVIORAL INTERVENTION STRATEGIES. 3 Hours.

Explores the three historical phases CBT's development: (1) Behavioral, (2) Cognitive, and now (3) Mindfulness, Acceptance, and Commitment. Addresses interventions across life-span development, culture, etc., to address such clinical issues as depression, anxiety, trauma, substance abuse, cognitive disorders, bereavement, etc., using a multicultural multidimensional perspective. Teaches assessment and interventions drawn from evidence-based practice knowledge and informed practice wisdom and includes a variety of interventions, such as DBT, behavioral activation, cognitive restructuring, mindfulness, etc. Prerequisite: SOCW 5311.

SOCW 5357. GROUP DYNAMICS AND SOCIAL WORK PRACTICE. 3 Hours.

Examines contemporary social-psychological concepts and small group research using a multicultural framework, with a view to testing their applicability to practice propositions and operational principles, in work with both task and treatment groups that include diverse populations. Group work will be examined in terms of social justice, social work values, knowledge, and skills, as well as in terms of those populations who have historically been harmed by structural and systematic arrangement and delivery of social welfare services at the micro, mezzo, and macro levels. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be as well.

SOCW 5358. TREATMENT OF CHILDREN AND ADOLESCENTS. 3 Hours.

Overview of the literature which describes physical, psychological, and the multitude of diverse cultural characteristics unique to childhood and adolescence. Attention then turned to treatment principles, and the specification of procedures for the amelioration of problems common to children and adolescents of diverse populations. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be as well.

SOCW 5362. DIRECT PRACTICE WITH CHILDREN AND FAMILIES. 3 Hours.

This course focuses on the preparing students for social work practice who will work with children, youth, and families in various employment settings. Throughout this course students will examine evidence-based interventions (and their theoretical roots) that build on strengths and resources of families with the intention of promoting social justice and cultural competence in social work practice with children, youth, and families. The course will address key areas of diversity among children, youth, and families, such as family structure, age, ability, religion, spirituality, sexual orientation, gender (including gender identity and expression), racial and ethnic identity, class, and culture. Specific techniques considered include child therapy, play therapy, behavioral contracting, cognitive-behavioral interventions, and crisis intervention. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be as well.

SOCW 5363. SOCIAL POLICY FOR CHILDREN & YOUTH. 3 Hours.

Examination of current policies, programs and practices impacting children and youth. Disproportionality and disparities occurring within child and youth serving systems (such as child welfare, the education system, the healthcare system and the juvenile justice system) will be explored, focusing on the differential impact of these policies on youth from diverse racial/ethnic backgrounds, LGBTQ+ youth and immigrant/refugee youth. Through analysis, research, and advocacy, students will increase their knowledge of trauma informed, equitable policies and practice with children and youth. Prerequisite: SOCW 5303.

SOCW 5364. PERSONAL RELATIONSHIPS. 3 Hours.

Explores theoretical and empirical data on diverse personal relationships at the follow stages of relationship: initiation, maintenance, and termination. Identifies areas for intervention. This course is also offered as SOCW 4320 in the BSW Program. Prerequisite: SOCW 5301 and SOCW 5307.

SOCW 5365. CLINICAL ASSESSMENT OF CHILD MALTREATMENT. 3 Hours.

Examines knowledge/technique in child physical/emotional/sexual abuse, physical/emotional neglect, among diverse populations. Includes interviewing, identification, legal issues, assessment/evaluation, and follow-up with an intersectional lens to examine the role of each of these in diverse communities. Prerequisite: SOCW 5311; Co-requisite: SOCW 5362 OR SOCW 5352 OR SOCW 5342. Please note that if the co-requisite course is dropped, this will be as well.

SOCW 5366. SEMINAR IN WOMEN'S ISSUES. 3 Hours.

Explores women's issues in human behavior theory, practice theory, and policy. Using an intersectional lens, the historical, political, and socioeconomic forces that maintain sexism among diverse groups are discussed. Environmental influences are examined in relation to social justice, social work values, knowledge, and skills. This course is also offered as SOCW 4366 in the BSW Program. Prerequisite: SOCW 5301, SOCW 5307.

SOCW 5367. TREATING PARENT-CHILD RELATIONSHIPS. 3 Hours.

Evidence-based treatment strategies and evaluation methods relevant to treating parent-child relationships in diverse families; intervention strategies and evaluation methods will be explored taking into account the developmental, social, and cultural factors that may influence the diversified parent-child dynamics, such as gender, power, socialization practices, race, ethnicity, and among others. Co-requisite: SOCW 5311. Please note if the co-requisite course is dropped, this will be dropped as well.

SOCW 5368. SEMINAR IN DIRECT METHODS IN COUPLES COUNSELING. 3 Hours.

Examination of various psychological, social, and cognitive-behavioral treatment approaches to problems in intimate couples across a variety of client populations. Emphasis is placed on the social environment, and its impact on the sources and patterns of intimate partner dissatisfaction and conflict. An additional focus will be on identifying components of mutually satisfying intimate partner relationships. Ways to appropriately adapt intervention approaches to be inclusive of couples of diverse sexual orientations/gender identities and from a wide range of religious, ethnic and cultural backgrounds will be explored. Prerequisite: SOCW 5311 or concurrent enrollment. Please note if the co-requisite course is dropped, this will be dropped as well.

SOCW 5369. SEMINAR IN FAMILY THERAPY. 3 Hours.

SOCW 5369 aims to compare various approaches to working with the family as a total system; enhance cognitive understanding of similarities and differences in theory and goals of family treatment in many fields of practice; and integrate strategies and techniques of each method into an individual style of therapy. Additionally, in recognition of power structures that have silenced indigenous and minority voices in assessing and treating families, this course will assign readings from diverse authors, as well as encourage student discussion and assignments in an activist-oriented classroom environment that seeks to understand how social work benefits from and perpetuates colonialism. Prerequisite: SOCW 5311.

SOCW 5370. SOCIAL WORK IN SCHOOLS. 3 Hours.

The purpose of this course is to provide an overview of the various social work-related theoretical perspectives, models, and programs for intervention with diverse children and their families in the school setting. This includes skills in assessment, prevention, and intervention in providing services to students that are marginalized for numerous reasons including race, gender, skin color, religion, immigrant status, disability, sexual orientation, and socioeconomic status among other factors. Students will learn to use intervention skills that address each level of the ecosystem's perspective in schools. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be dropped also.

SOCW 5371. INEQUITIES AND INCARCERATION. 3 Hours.

This course surveys mass incarceration in the U.S. criminal justice system as a racialized and classist system of control. First, this course will contextualize the US criminal justice system, both historically and through global comparisons. Then students will be introduced to four broad content areas: entering the criminal justice system (school-to-prison pipeline and policing), who is detained (demographics and common mental health and substance use issues) and what they experience in detention (including COVID-19 in jails and prisons), experiences and problems encountered when returning citizens reenter society, and trends in criminal justice reform advocacy (including problem-solving courts and advocacy efforts such as Black Lives Matter). Finally, the course considers the social work grand challenge of smart decarceration as a path towards reform specific to social workers. Also offered as SOCW 4371 in the BSW program. Students who take this course at the undergraduate level may not repeat it at the graduate level.

SOCW 5390. INDEPENDENT STUDY. 3 Hours.

Arrangements may be made for a directed and supervised independent study in a select area of special interest to the student.

SOCW 5392. SELECTED TOPICS IN SOCIAL WELFARE. 3 Hours.

Topics vary from semester to semester depending on the needs and interest of the students.

SOCW 5395. INTEGRATIVE SEMINAR. 3 Hours.

This course focuses on the cycle of practice from assessment and engagement to termination and evaluation. This course serves as the capstone for non-thesis MSW students and integrates an anti-oppressive lens toward promoting social justice across all aspects of practice. Prerequisite: SOCW 5482 or SOCW 5882.

SOCW 5396. THESIS RESEARCH. 3 Hours.

Initial research in the student's area of concentration, leading to thesis.

SOCW 5398. THESIS. 3 Hours.

Requires an individual research project in the individual's area of concentration, with a minimum of six semester hours total needed for the project. Satisfactory completion requires approval of the instructor in charge, a supervising committee appointed by the Dean of Graduate Studies. Defense in a final oral examination is required.

SOCW 5482. ADVANCED FIELD SPLIT I. 4 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate advanced (Aging, Children & Families, Community and Administrative Practice, Health, or Mental Health) social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362.

SOCW 5483. ADVANCED FIELD SPLIT II. 4 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate advanced (Aging, Children & Families, Community and Administrative Practice, Health, or Mental Health) social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362.

SOCW 5485. ADVANCED FIELD BLOCK I. 4 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362; Co-requisite: SOCW 5486.

SOCW 5486. ADVANCED FIELD BLOCK II. 4 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate advanced (Aging, Children & Families, Community and Administrative Practice, Health, or Mental Health) social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362; Co-requisite: SOCW 5485.

SOCW 5681. FOUNDATION FIELD SPLIT I. 6 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Prerequisite: SOCW 5301, SOCW 5304, SOCW 5306, SOCW 5307.

SOCW 5685. FOUNDATION FIELD BLOCK I. 6 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Prerequisite: SOCW 5307. Co-requisite: SOCW 5285. Please note that if the co-requisite is dropped, this course will also be dropped.

SOCW 5698. THESIS. 6 Hours.

Requires an individual research project in the individual's area of concentration, with a minimum of six semester hours total needed for the project. Satisfactory completion requires approval of the instructor in charge, a supervising committee appointed by the Dean of Graduate Studies. Defense in a final oral examination is required.

SOCW 6190. TUTORIAL. 1 Hour.

Arrangements may be made for a directed and supervised tutorial in a select area of special interest to the student.

SOCW 6328. SOCIAL POLICY RESEARCH AND ANALYSIS. 3 Hours.

Seminar examining methods for analyzing social policies and for assessing effects of policy. Students evaluate and apply different models for social policy analysis, including comparative models. Students work with social indicators and other data sources used in policy research. Prerequisite: acceptance into the Ph.D. program.

SOCW 6340. ADVANCED RESEARCH METHODS IN HUMAN SERVICES. 3 Hours.

Acquaints students at an advanced level with research methodology as it applies to the human services. Includes techniques and tools of research, problem conceptualization, measurement, research and instrument design and data collection methods. Prerequisite: acceptance into the Ph.D. program.

SOCW 6341. ADVANCED STATISTICAL METHODS IN HUMAN SERVICES. 3 Hours.

Advanced statistical applications in the human services. Emphasis on multivariate statistical approaches including multiple regression analysis, logistic regression, and advanced general linear modeling approaches to analyzing data from social work research. Prerequisite: SOCW 6347.

SOCW 6346. TEACHING PRACTICUM. 3 Hours.

Introduces students to the academic role through teaching practice at graduate and/or undergraduate level supervised by a full-time faculty member. Prerequisite: SOCW 6328, SOCW 6340, SOCW 6348, SOCW 6373.

SOCW 6347. INTERMEDIATE STATISTICS. 3 Hours.

Statistical applications for doctoral social work students. Emphasizes both parametric and non-parametric techniques, including t-tests, ANOVA, correlation and regression, chi-square, and other non-parametrics. Designed to provide a foundation for advanced multivariate statistical techniques. Prerequisite: acceptance into the Ph.D. program.

SOCW 6348. SEMINAR IN QUALITATIVE RESEARCH METHODS. 3 Hours.

Explores a variety of qualitative approaches to knowledge building and research. Designed to prepare students to carry out research projects within their areas of interest. Content includes discussions of knowledge development, study designs, data collection, analysis, and report writing. Prerequisite: acceptance into the Ph.D. program.

SOCW 6356. SEMINAR IN PROGRAM AND PRACTICE EVALUATION. 3 Hours.

This course provides hands on opportunities to develop program and clinical evaluation plans for social work/welfare agencies. Educational principles and theoretical foundations are discussed as the actual plans are developed. Students work with agency decision makers and the instructor to generate a plan acceptable to the agency for implementation. Prerequisite: SOCW 6347.

SOCW 6367. SEMINAR IN ADVANCED STATISTICAL APPLICATIONS. 3 Hours.

This seminar covers statistical analysis of complex data and statistical modeling including latent variables. Emphasis is on structural equation model analysis using AMOS, LISREL, or EQS. The course focuses on applications of statistics using various data sets. Prerequisite: Knowledge of SPSS; SOCW 6341 and SOCW 6347.

SOCW 6373. THEORY AND MODELING BUILDING IN SOCIAL WORK RESEARCH. 3 Hours.

This course gives special emphasis on ways in which theory informs social work research. This course prepares students to perform application and critical analysis of social science and social work theory and theory-driven research. The course involves students in integrating theory, research, and social work practice with the goal of producing models of interventions, programs, and policies. Prerequisite: acceptance into the Ph.D. program.

SOCW 6390. TUTORIAL. 3 Hours.

Arrangements may be made for a directed and supervised tutorial in a select area of special interest to the student.

SOCW 6392. SELECTED TOPICS IN SOCIAL WELFARE. 3 Hours.

Topics vary from semester to semester based on the needs and interests of students.

SOCW 6393. GRANT WRITING. 3 Hours.

This course introduces the student to the process of writing grants. This includes knowledge of sponsors and opportunities as well as practical "know-how" in writing competitive grants for supporting research in social service and health service provision. The emphasis of the course will be on federal grants, but state and foundation grants will also be cited as case illustrations. Prerequisite: Doctoral standing or permission of the instructor.

SOCW 6394. APPLIED RESEARCH PRACTICUM. 3 Hours.

Students engage in an active program of applied research under direct supervision of a faculty member.

SOCW 6395. PSYCHOMETRICS AND MEASUREMENT IN HUMAN SERVICES. 3 Hours.

This course focuses on psychometrics and measurement within social work research. Highlighting the importance of measurement in research, the course emphasizes the defining key theoretical constructs and the methodology needed to measure them. This course prepares students to develop and validate instruments. Prerequisite: Doctoral standing or permission of the instructor.

SOCW 6396. SOCIAL WORK EDUCATION: PRINCIPLES AND SKILLS. 3 Hours.

Considers a range of ideas in educational thought relevant to the formulation of an analytical appraisal of social work education and training. Educational methods and skills relevant to social work are addressed and practice opportunities offered. Prerequisite: acceptance into the Ph.D. program.

SOCW 6397. WRITING FOR PUBLICATION. 3 Hours.

This course will explore the world of academic publishing. Students will provide peer reviews of manuscripts, prepare and critique their ideas and draft sections of a manuscript, and present a final manuscript and publication plan. The intent is to help the students increase their chance of publishing manuscripts as a Ph.D. student and as a new faculty member. Although nothing can substitute for having information and research relevant for the field, the art of writing for publication should not be underestimated. Journal publishing, like any other human service endeavor, is easier as you become proficient. Most academics become proficient at communicating their ideas and research through trial and error. However, one's chances of becoming published can be increased by learning from experts in the field. Prerequisite: acceptance into the Ph.D. program.

SOCW 6399. DISSERTATION. 3 Hours.

Preparation and submission of a doctoral dissertation in an area in social work.

SOCW 6694. APPLIED RESEARCH PRACTICUM. 6 Hours.

Students engage in an active program of applied research under direct supervision of a faculty member.

SOCW 6699. DISSERTATION. 6 Hours.

Preparation and submission of a doctoral dissertation in an area in social work.

SOCW 6999. DISSERTATION. 9 Hours.

Preparation and submission of a doctoral dissertation in an area in social work.

SOCW 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Social Work - Graduate Programs

MSW Program Goals

Goal 1: The MSW Program prepares students to practice effectively and ethically with the full range of social systems, emphasizing evidence-informed practice, a strengths approach, diversity, social justice, empowerment, and a critical thinking perspective.

Goal 2: The MSW program prepares students who understand the global and organizational contexts of social work practice and who are prepared to assume the responsibility for leadership positions, as well as engaging in life long-learning.

Goal 3: The MSW Program prepares students, by valuing social work history and the integration of social work knowledge, to understand professional social work and to be prepared for advanced level concentration in either:

Concentration 1: Direct Practice with a specialization in one of four areas, including:

1. Aging (<https://www.uta.edu/ssw/academics/msw/programs/specialties/aging.php>)
2. Children and Families (<https://www.uta.edu/ssw/academics/msw/programs/specialties/children-and-families.php>)
3. Health (<https://www.uta.edu/ssw/academics/msw/programs/specialties/health.php>)
4. Mental Health and Substance Abuse (<https://www.uta.edu/ssw/academics/msw/programs/specialties/mental-health-substance-abuse.php>)

Concentration 2: Community and Administrative Practice (<https://www.uta.edu/ssw/academics/msw/programs/specialties/community-and-administrative-practice.php>).

MSW Program Objectives

Upon graduation from the MSW Program, students will demonstrate advanced knowledge and skills in their chosen concentration and specialty across in each of the nine Competencies developed by the Council on Social Work Education, as indicated below.

Competency 1: Demonstrate Ethical and Professional Behavior

Social workers understand the value base of the profession and its ethical standards, as well as relevant laws and regulations that may impact practice at the micro, mezzo, and macro levels. Social workers understand frameworks of ethical decision-making and how to apply principles of critical thinking to those frameworks in practice, research, and policy arenas. Social workers recognize personal values and the distinction between personal and professional values. They also understand how their personal experiences and affective reactions influence their professional judgement and behavior. Social workers understand the profession's history, its mission, and the roles and responsibilities of the profession. Social workers also understand the role of other professions when engaged in inter-professional teams. Social workers recognize the importance of life-long learning and are committed to continually updating their skills to ensure they are relevant and effective. Social workers also understand emerging forms of technology and the ethical use of technology in social work practice. Social workers:

- make ethical decisions by applying the standards of the NASW Code of Ethics, relevant laws and regulations, models for ethical decision-making, ethical conduct of research, and additional codes of ethics as appropriate to context;
- use reflection and self-regulation to manage personal values and maintain professionalism in practice situations;
- demonstrate professional demeanor in behavior; appearance; and oral, written, and electronic communication;
- use technology ethically and appropriately to facilitate practice outcomes; and
- use supervision and consultation to guide professional judgment and behavior.

Competency 2: Engage Diversity and Difference in Practice

Social workers understand how diversity and difference characterize and shape the human experience and are critical to the formation of identity. The dimensions of diversity are understood as the intersectionality of multiple factors including but not limited to age, class, color, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration status, marital status, political ideology, race, religion/spirituality, sex, sexual orientation, and tribal sovereign status. Social workers understand that, as a consequence of difference, a person's life experiences may include oppression, poverty, marginalization, and alienation as well as privilege, power, and acclaim. Social workers also understand the forms and mechanisms of oppression and discrimination and recognize the extent to which a culture's structures and values, including social, economic, political, and cultural exclusions, may oppress, marginalize, alienate, or create privilege and power. Social workers:

- apply and communicate understanding of the importance of diversity and difference in shaping life experiences in practice at the micro, mezzo, and macro levels;
- present themselves as learners and engage clients and constituencies as experts of their own experience; and
- apply self-awareness and self-regulation to manage the influence of personal biases and values in working with diverse clients and constituencies.

Competency 3: Advance Human Rights and Social, Economic, and Environmental Justice

Social workers understand that every person regardless of position in society has fundamental human rights such as freedom, safety, privacy, an adequate standard of living, health care, and education. Social workers understand the global interconnections of oppression and human rights violations, and are

knowledgeable about theories of human need and social justice and strategies to promote social and economic justice and human rights. Social workers understand strategies designed to eliminate oppressive structural barriers to ensure that social goods, rights, and responsibilities are distributed equitably and that civil, political, environmental, economic, social, and cultural human rights are protected. Social workers:

- apply their understanding of social, economic, and environmental justice to advocate for human rights at the individual and system levels; and
- engage in practices that advance social, economic, and environmental justice.

Competency 4: Engage In Practice-informed Research and Research-informed Practice

Social workers understand quantitative and qualitative research methods and their respective roles in advancing a science of social work and in evaluating their practice. Social workers know the principles of logic, scientific inquiry, and culturally informed and ethical approaches to building knowledge. Social workers understand that evidence that informs practice derives from multi-disciplinary sources and multiple ways of knowing. They also understand the processes for translating research findings into effective practice. Social workers:

- use practice experience and theory to inform scientific inquiry and research;
- apply critical thinking to engage in analysis of quantitative and qualitative research methods and research findings; and
- use and translate research evidence to inform and improve practice, policy, and service delivery.

Competency 5: Engage in Policy Practice

Social workers understand that human rights and social justice, as well as social welfare and services, are mediated by policy and its implementation at the federal, state, and local levels. Social workers understand the history and current structures of social policies and services, the role of policy in service delivery, and the role of practice in policy development. Social workers understand their role in policy development and implementation within their practice settings at the micro, mezzo, and macro levels and they actively engage in policy practice to effect change within those settings. Social workers recognize and understand the historical, social, cultural, economic, organizational, environmental, and global influences that affect social policy. They are also knowledgeable about policy formulation, analysis, implementation, and evaluation. Social workers:

- identify social policy at the local, state, and federal level that impacts well-being, service delivery, and access to social services;
- assess how social welfare and economic policies impact the delivery of and access to social services;
- apply critical thinking to analyze, formulate, and advocate for policies that advance human rights and social, economic, and environmental justice.

Competency 6: Engage with Individuals, Families, Groups, Organizations, and Communities

Social workers understand that engagement is an ongoing component of the dynamic and interactive process of social work practice with, and on behalf of, diverse individuals, families, groups, organizations, and communities. Social workers value the importance of human relationships. Social workers understand theories of human behavior and the social environment, and critically evaluate and

apply this knowledge to facilitate engagement with clients and constituencies, including individuals, families, groups, organizations, and communities. Social workers understand strategies to engage diverse clients and constituencies to advance practice effectiveness.

Social workers understand how their personal experiences and affective reactions may impact their ability to effectively engage with diverse clients and constituencies. Social workers value principles of relationship-building and inter-professional collaboration to facilitate engagement with clients, constituencies, and other professionals as appropriate. Social workers:

- apply knowledge of human behavior and the social environment, person-in-environment, and other multidisciplinary theoretical frameworks to engage with clients and constituencies; and
- use empathy, reflection, and interpersonal skills to effectively engage diverse clients and constituencies.

Competency 7: Assess Individuals, Families, Groups, Organizations, and Communities

Social workers understand that assessment is an ongoing component of the dynamic and interactive process of social work practice with, and on behalf of, diverse individuals, families, groups, organizations, and communities. Social workers understand theories of human behavior and the social environment, and critically evaluate and apply this knowledge in the assessment of diverse clients and constituencies, including individuals, families, groups, organizations, and communities. Social workers understand methods of assessment with diverse clients and constituencies to advance practice effectiveness. Social workers recognize the implications of the larger practice context in the assessment process and value the importance of inter-professional collaboration in this process. Social workers understand how their personal experiences and affective reactions may affect their assessment and decision-making. Social workers:

- collect and organize data, and apply critical thinking to interpret information from clients and constituencies;
- apply knowledge of human behavior and the social environment, person-in-environment, and other multidisciplinary theoretical frameworks in the analysis of assessment data from clients and constituencies;
- develop mutually agreed-on intervention goals and objectives based on the critical assessment of strengths, needs, and challenges within clients and constituencies; and
- select appropriate intervention strategies based on the assessment, research knowledge, and values and preferences of clients and constituencies.

Competency 8: Intervene with Individuals, Families, Groups, Organizations, and Communities

Social workers understand that intervention is an ongoing component of the dynamic and interactive process of social work practice with, and on behalf of, diverse individuals, families, groups, organizations, and communities. Social workers are knowledgeable about evidence-informed interventions to achieve the goals of clients and constituencies, including individuals, families, groups, organizations, and communities. Social workers understand theories of human behavior and the social environment, and critically evaluate and apply this knowledge to effectively intervene with clients and constituencies. Social workers understand methods of identifying, analyzing and implementing evidence-informed interventions to achieve client and constituency goals. Social workers value the importance of inter-professional teamwork and communication in interventions, recognizing that beneficial outcomes may require interdisciplinary, inter-professional, and inter-organizational collaboration. Social workers:

- critically choose and implement interventions to achieve practice goals and enhance capacities of clients and constituencies;
- apply knowledge of human behavior and the social environment, person-in-environment, and other multidisciplinary theoretical frameworks in interventions with clients and constituencies;
- use inter-professional collaboration as appropriate to achieve beneficial practice outcomes;
- negotiate, mediate, and advocate with and on behalf of diverse clients and constituencies; and
- facilitate effective transitions and endings that advance mutually agreed-on goals.

Competency 9: Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities

Social workers understand that evaluation is an ongoing component of the dynamic and interactive process of social work practice with, and on behalf of, diverse individuals, families, groups, organizations and communities. Social workers recognize the importance of evaluating processes and outcomes to advance practice, policy, and service delivery effectiveness. **Social** workers understand theories of human behavior and the social environment, critically evaluate and apply this knowledge in evaluating outcomes. Social workers understand qualitative and quantitative methods for evaluating outcomes and practice effectiveness. Social workers:

- select and use appropriate methods for evaluation of outcomes;
- apply knowledge of human behavior and the social environment, person-in-environment, and other multidisciplinary theoretical frameworks in the evaluation of outcomes;
- critically analyze, monitor, and evaluate intervention and program processes and outcomes; and
- apply evaluation findings to improve practice effectiveness at the micro, mezzo, and macro levels.

1. Apply critical thinking skills within the context of professional social work practice.
2. Understand the value base of the profession and its ethical standards and principles, and practice accordingly.
3. Practice without discrimination and with respect, knowledge, and skills related to clients' age, class, color, culture, disability, ethnicity, family structure, gender, marital status, national origin, race, religion, sex, and sexual orientation.
4. Understand the forms and mechanisms of oppression and discrimination and apply strategies of advocacy and social change that advance social and economic justice.

5. Understand and interpret the history of the social work profession and its contemporary structures and issues.
6. Apply the knowledge and skills of generalist social work practice with systems of all sizes.
7. Use theoretical frameworks supported by empirical evidence to understand individual development and behavior across the life span and the interactions among individuals and between individuals and families, groups, organizations, and communities.
8. Analyze, formulate, and influence social policies.
9. Evaluate research studies, apply research findings to practice, and evaluate their own practice interventions.
10. Use communication skills differentially across client populations, colleagues, and communities.
11. Use supervision and consultation appropriate to social work practice.
12. Function within the structure of organizations and service delivery systems and seek necessary organizational change.

Doctor of Philosophy in Social Work Program Goals

The mission of the PhD program is to prepare competent scholars to advance knowledge and scholarship, pursue excellence, and provide leadership and service and to promote social and economic justice and cultural competence with diverse populations.

The program builds on the premise that social welfare must be scientifically and theoretically based and continually responsive to changing local and global societal needs.

The primary goal of the program is to prepare scholars to advance knowledge development and dissemination for the profession of social work. The program seeks to provide students with an opportunity to contribute to the advancement of knowledge in the field and the profession in order to provide more effective and efficient services in social welfare and qualify for leadership positions in teaching, research, and administration. Graduates of the program are expected to make a significant contribution to the profession of social work through continued research, scholarship, teaching and service.

Ph.D. Program Objectives

Upon completion of the Ph.D. Program students will display competency in:

1. Theory and theory development.
2. Knowledge and skills in research methods and data analysis.
3. Theory, research, and policy as applied to a specialty practice area.
4. Understanding and commitment to the underlying values, ethics, and social and economic justice perspectives in the scientific inquiry in social work.
5. Theory and research as applied to social work practice, policy and social work education.

Admission Requirements

Please contact the MSW Admissions Office (sswadmissions@uta.edu) to obtain the complete application checklist and information concerning specific application deadlines. Applicants may also visit the MSW Admissions webpage for more information (<http://www.uta.edu/ssw/academics/msw/admissions> (<http://www.uta.edu/ssw/academics/msw/admissions.php>)). Students are admitted to the MSW program for Fall or Spring semester with the exception of students that qualify for advanced standing with their undergraduate social work degree. Advanced Standing students can be admitted for a fall, spring or summer semester. The admissions process is the same for all MSW programs, including the Distance Education Cohorts.

*Please note that the School of Social Work's deadline for application is different from the published deadlines of the Graduate School.

Admission to the Master of Social Work Program

There are two methods for application to the MSW Program: the Quick Admissions Process, and the Traditional Admissions Process.

QUICK ADMISSIONS

This process awards the bachelor-level applicant who has earned a 3.0 or better GPA in the last 60 hours of her/his undergraduate degree program a head start by requiring only a two-step process. In step 1, the applicant submits the online Apply Texas Application (applytexas.org). In step 2, the applicant must submit all official transcripts to the Office of Admissions, Records, and Registration. Once all transcripts have been received and evaluated, students whose GPA is 3.0 or better are generally admitted to the Master of Social Work Program.

Advanced Standing students applying for Quick Admission should follow the same process described above and identify themselves as having earned (or will earn by enrollment) the BSW. The BSW degree is verified by the Office of Admissions, Records, and Registration, and included with other application materials. Advanced Standing status is only granted to individuals who have graduated within the past 6 years from a BSW degree program accredited by CSWE with a 3.0 or better GPA in their last 60 hours. The same evaluation criteria are used for applicants seeking admission to the Advanced Standing MSW program.

TRADITIONAL ADMISSIONS

In the second admission method, applicants deemed ineligible for Quick Admission to the MSW program (based on the 3.0 GPA requirement) will be considered via the Traditional Admission Process for the traditional program only. Traditional Admission includes, but is not limited to the satisfactory presence of the following six qualifications:

1. Possession of a bachelor's degree from a regionally accredited U.S. college or university or its equivalent, with a satisfactory GPA of 2.7 or higher.
2. Submission of three letters of reference indicating professional or academic promise.
3. Submission of narrative essay of three double-spaced pages or less that responds to the following prompt: *Social work practice is often classified as either micro or macro. Explain what is meant by micro practice and macro practice, and why addressing both micro and macro issues is essential to effective social work practice. Use three outside sources to support your statement and include complete citations for each.*
4. Submission of GRE test scores.
5. For applicants whose native language is not English: Submission of satisfactory scores on the International English Language Testing System (IELTS) or the TOEFL examination.*

*Applicants must submit a score of at least 6.5 on the IELTS, or a minimum TOEFL iBT total score of 79 with sectional scores that meet or exceed the following:

- 22 for the writing section
- 21 for the speaking section
- 20 for the reading section
- 16 for the listening section

TRANSFER OF CREDIT

Transfer credits for graduate level social work courses may, at the discretion of the Director of Graduate Programs, be accepted by the School of Social Work from comparable coursework taken and passed with a grade of 'B' or better at another Council on Social Work Education (CSWE) accredited program within the last six years. Transfer credits for graduate level course work in related fields may, at the discretion of the Director of Graduate Programs, be accepted by the School of Social Work if comparable to required coursework for the MSW; such courses must have been taken and passed with a grade of 'B' or better within the last six years. Students will be expected to provide syllabi for review.

FINANCIAL AID

Scholarships are awarded annually and administered by the School of Social Work. For information about scholarships available through the School of Social Work, please visit <https://www.uta.edu/ssw/student-resources/scholarships> (<https://www.uta.edu/ssw/student-resources/scholarships.php>).

A limited number of traineeships are available through the Center for Child Welfare's Title IV-E Program (<https://www.uta.edu/ssw/research/centers/ccw/Title-IV-E-Project/>).

GRADUATE FELLOWSHIPS

Candidates for fellowship awards must have a GPA of 3.0 in their last 60 undergraduate credit hours and in any graduate credit hours, and must be enrolled in a minimum of 6 hours in both long semesters to retain their fellowships.

Degree Requirements

The MSW curriculum provides students with a generalist perspective in the foundation curriculum and allows students to specialize in one of five practice areas through the advanced curriculum. Students must complete required foundation courses prior to taking most advanced courses. Students in the advanced curriculum select a concentration area: Direct Practice or Community and Administrative Practice. Direct Practice students also select a specialty within their concentration: Children and Families, Health, Aging, or Mental Health and Substance Abuse.

The program leading to the degree of Master of Social Work degree requires the completion of 61 semester hours of graduate work including class and field instruction, as well as thesis or integrative seminar (non-thesis option).

In addition to the general graduate admission requirements of the University, each graduate student in the social work program must:

1. maintain at least a B (3.0) overall GPA in all coursework;
2. demonstrate suitability for professional social work practice; and,
3. demonstrate knowledge of and adherence to the Code of Ethics of the National Association of Social Workers and the Code of Conduct published by the Texas State Board of Social Work Examiners.

The Professional Standards Committee will monitor and examine potential violations of ethical violations or lack of professional behavior.

ADVANCED STANDING

An applicant meeting all regular admissions requirements who has graduated from an accredited undergraduate program in social work within the previous six years will be considered for advanced standing status in the graduate program provided the student graduated with a GPA of 3.0 or better in their last 60 hours of coursework. Foundation coursework will be waived for students who are granted advanced standing status.

CREDIT HOUR WAIVERS

An applicant meeting all regular admissions requirements who has completed graduate coursework at an accredited master's program in social work within the previous six years may be able to receive credit hour waivers for comparable courses, provided that the grades in those courses are B or better. Students may receive course waivers for more than 23 credit hours, but only 23 hours may be applied to the 61-hour MSW degree. Waivers will be granted on a case-by-case basis contingent upon evaluation of transcripts, syllabi, and any other required supporting information.

Certificates in Leadership

Students pursuing an MSW in the Direct Practice concentration may elect to add a Certificate in Leadership. There are four Leadership Certificates available: Administrative, Community, Organizational, and Policy Leadership. These 9-hour certificates prepares students with knowledge in the respective area of social work macro practice that will enhance their ability to assume leadership positions in social service agencies.

Dual Degree Programs (<https://www.uta.edu/academics/schools-colleges/social-work/programs/msw/program-options/dual-degree/>)

Students in social work may participate in dual degree programs whereby they can earn a Master of Social Work and another Master's in an area of their choosing including:

1. City and Regional Planning,
2. Public Administration,
3. Urban Affairs,
4. Criminology and Criminal Justice,
5. Sociology,
6. Business Administration,
7. Public Health, or
8. Master of Educational Leadership and Policy Studies with Higher Education Emphasis

By participating in a dual degree program, students can apply some semester hours jointly to meet the requirements of both degrees, thus reducing the total number of hours which would be required to earn both degrees separately. The number of hours which may be jointly applied ranges from 6 to 18 hours, subject to the approval of the Academic Advisors or Graduate Advisors from both programs.

To participate in the dual degree program, students must apply separately to each program and must submit a separate Program of Work for each degree. Those interested in a dual degree program should consult the appropriate Graduate Advisor(s) for further information on course requirements though dual degree overview documents are available on the School of Social Work's Dual Degrees webpage. (<https://www.uta.edu/academics/schools-colleges/social-work/programs/msw/program-options/dual-degree/>)

MSW Programs - Distance Education Programs

UT ARLINGTON FORT WORTH CENTER MSW COHORT PROGRAM

The UT Arlington School of Social Work offers an MSW Degree with a Concentration in Direct Practice that includes a specialization in Children and Families with a Certificate in Administration through our Fort Worth Center location. This program prepares students to work directly with families and children while also acquiring knowledge in administration that will enhance their ability to assume leadership and administrative positions in social service agencies.

Classes will be offered twice each week in the evening (scheduling may be subject to change during the summer semester as well as the intersessions). The program of work for the degree is scheduled to be completed in 2 years. A new cohort of students will be admitted to the MSW program at the UTA Fort Worth Center every fall.

Students applying to this program must meet all regular admissions requirements. The application process is the same as for students applying to the traditional MSW program.

MSW PROGRAM OPTIONS

The MSW program offers many different degree plans to meet the diverse needs of graduate students. Students may elect to enter a cohort degree program, in which they will take courses with the same group of peers each semester. Cohort degree programs are offered fully online, fully face to face, and in a hybrid format. The MSW Online Program offers full-time and part-time online cohorts that start in the Fall and Spring semesters. All classes in the MSW Online Program are online, though students are required to complete field practicums, which is the only face to face requirement.

For students who need more flexibility from semester to semester, a non-cohort degree plan is available, which allows students to select their courses each semester in accordance with their needs and interests, and with the guidance of an MSW Academic Advisor.

UT ARLINGTON / LUBBOCK CHRISTIAN UNIVERSITY COOPERATIVE MSW PROGRAM

The UT Arlington School of Social Work in conjunction with LCU offers an Advanced Standing MSW Degree with a Concentration in Direct Practice that includes a specialization in Children and Families.

This program is designed the needs of students in the Lubbock area. Students applying to this program can expect to complete the required courses both on the LCU campus and online through UT Arlington.

Students applying to this program must meet all regular admissions requirements. An applicant meeting all regular admissions requirements who has graduated from an accredited undergraduate program in social work and meets the Advanced Standing criteria will be eligible for this program.

Admission Requirements

To be considered for admission to the Ph.D. program, an applicant must have:

- A Master's Degree:
 - Master's Degree in Social Work
 - Applicants who do not have a Master's Degree in Social Work are expected to have work or volunteer experience in human services and complete an introductory social work course and diversity course prior to beginning the program.
- Transcripts of all undergraduate and graduate work documenting:
 - Undergraduate GPA of 3.0 minimum, on the last 60 hours as calculated by the Office of Admissions, Records, and Registration
 - Masters GPA of 3.4 minimum as calculated by the Office of Admissions, Records, and Registration.
- A Graduate Record Examination (GRE) score that evidences an ability to do satisfactory graduate work.
- Curriculum Vitae which outlines (1) work and volunteer experiences in human services; (2) participation in professional organizations and conferences; and (3) publications, if applicable.
- Statement of academic goals consistent with the goals of the Social Work PhD Program goals.
- Professional writing sample that provides evidence of the applicant's writing skills and critical thinking skills.
- Three letters of recommendation, preferably from persons holding Ph.D. degrees, addressing applicant's skills in the areas of analytical thinking and writing skills.
- If English is not the applicant's first language, a minimum TOEFL iBT total score of 90 with a writing sectional score of at least 23 must be submitted.
- An interview will be conducted with applicants meeting the basic admission criteria above.

An application for admission, transcripts of previous academic work and Graduate Record Examination scores must be submitted to Graduate Admissions. An additional separate application and supporting materials must be sent to the Graduate Advisor, Ph.D. in Social Work Program.

PhD Degree Requirements

The program leading to the degree Doctor of Philosophy in Social Work covers nine semesters (three years) of full-time study and requires the completion of 48 semester hours of graduate work including coursework, a qualifying examination, a comprehensive specialty examination and a dissertation. Students and their faculty supervisory committee together develop a plan of study geared to the students' interests. Included in this plan are a set of required and elective courses in which students pursue their specialized interests.

1. 18 hours of Core coursework.
2. The core coursework qualifying examination must be satisfactorily completed before progressing in the program.
3. Six hours of Research Practicum.
4. Six hours electives selected from relevant graduate courses offered outside the School of Social Work.
5. Upon completion of 36 hours of required or elective coursework, the specialty comprehensive examination is taken prior to application for candidacy and registration for dissertation.
6. Three hours of dissertation tutorial taken upon successful completion of comprehensive specialty examination.
7. Nine total hours of dissertation must be taken for a student to graduate.

Successful completion of both the core qualifying examination and the comprehensive specialty examination in the area of study to advance the student to candidacy at which time he or she devotes time to the completion of the dissertation. The last step before the degree is awarded is the successful final defense of the dissertation.

Doctoral students must demonstrate knowledge of and adherence to the Code of Ethics of the National Association of Social Workers and the Code of Ethics as currently published by the Texas State Board of Social Worker Examiners.

PhD Part-Time Program

A PhD Social Work part-time program is forthcoming.

Social Work - Undergraduate Programs

Degrees

- Bachelor of Social Work (p. 1326)
- Bachelor of Science Substance Use & Treatment (p. 1329)

Minors and Certificates

- Diversity Studies (p. 1333) (minor/certificate)
- Social Justice and Social Welfare (p. 1332) (minor)
- Substance Use Treatment (p. 1331) (minor)

Bachelor of Social Work

Overview

Undergraduate social work education at UTA is based on a set of premises. Responsible citizenship and professional social work practice recognize and respond to the realities of a complex and diverse society that is in continual need of constructive social change predicated on social justice. To this end, social work students are expected to demonstrate the capacity to critically evaluate their cultural environment and, in so doing, demonstrate analytical skills and understanding both orally and in writing. Students are required to adhere to the Code of Ethics as currently published by the National Association of Social Workers (<https://www.socialworkers.org/About/Ethics/Code-of-Ethics/Code-of-Ethics-English/>), the Texas State Board of Social Worker Examiners Code of Conduct (https://www.dshs.state.tx.us/socialwork/sw_conduct.shtm), and the UTA School of Social Work Professional Standards (in the BSW Program Manual) (<https://www.uta.edu/academics/schools-colleges/social-work/programs/bsw/bsw-manual/>) in their professional practice and in their course work. The faculty of the School of Social Work (<https://www.uta.edu/ssw/faculty-staff/faculty-directory.php>) enhance this process through their commitment to teaching excellence, scholarly activities, research, and community and professional service.

The Bachelor of Social Work degree program of the School of Social Work is fully accredited by the Council on Social Work Education. Its primary educational objective is to prepare students for generalist social work practice. The sequence of courses, designed to include academic social work and field experience requirements in a liberal arts context, enables the student, upon graduation, to work in a variety of social service agencies and settings. Students may take courses at the UTA main campus, the UTA Fort Worth Campus, fully online, or a combination of both.

Transition from BSW-Intended to BSW Major

Transition to the BSW Major requires earning a C or better in the following five courses:

SOCW 3300 (formerly 1331) or a combination of SOCW 1231 and UNIV 1131	3
SOCW 2361 INTRODUCTION TO SOCIAL WORK (formerly SOCW 2311)	3
SOCW 3305 SOCIAL WORK PRACTICE I (formerly SOCW 2313)	3
SOCW 3307 DIVERSE POPULATIONS	3
MATH 1308 or other approved statistics course	3
Total Hours	15

- Attend BSW Orientation
- Cumulative GPA and major GPA of 2.5 or better
- Completion of the BSW Major Declaration Form (<https://www.questionpro.com/a/TakeSurvey/?tt=IOWxHa2K4Pw%3D>) followed by the BSW Major Acceptance Agreement form

The Major Declaration Form includes a commitment to adhere to the Code of Ethics as currently published by the National Association of Social Workers (<https://www.socialworkers.org/About/Ethics/Code-of-Ethics/Code-of-Ethics-English/>), the Texas State Board of Social Worker Examiners Code of Conduct (https://www.dshs.state.tx.us/socialwork/sw_conduct.shtm), and the UTA School of Social Work Professional Standards (in the BSW Program Manual) (<https://www.uta.edu/academics/schools-colleges/social-work/programs/bsw/bsw-manual/>). It is submitted online in consultation with a BSW Academic Advisor after final grades post from the five courses listed above. Forms are reviewed by the Director of Undergraduate Programs. Once transitioned from BSW Intended to BSW Major, students will be required to submit a criminal background statement¹ through a link provided via email.

¹The criminal background statement is necessary as we need the information to place you with a field internship; some do not accept students with a criminal background.

Transfer of Credit

Transfer credits for undergraduate level social work courses may, at the discretion of the Director of Undergraduate Programs, be accepted by the School of Social Work from comparable coursework taken and passed with a grade of 'C' or better at another CSWE accredited program within the last six years. BSW student transcripts are evaluated by the UTA Office of Admissions, and the Director of Undergraduate Programs may approve additional transfer courses for credit in collaboration with the academic advisor. Students will be expected to provide syllabi for review. The total transfer credits awarded should not exceed 50% of the total program credits needed for the degree, and at least 66 credits must be earned at UTA.

No credit is given for life or work experience. Courses that meet the liberal arts requirements of the BSW degree are applied to the degree plan. Other courses are designated as electives. The student receives credit for Introduction to Social Work (regardless of institution) and social work courses from CSWE accredited social work programs. The exceptions are the practicum courses (which must be completed at UTA):

SOCW 4951	SOCIAL WORK FIELD INSTRUCTION AND SEMINAR I (Or SOCW 4955 SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 1)	9
SOCW 4952	SOCIAL WORK FIELD INSTRUCTION AND SEMINAR II (Or SOCW 4956 SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 2)	9

Continuation in the BSW Program

Continuation in the BSW Program and eligibility for entry into Field requires:

- 2.5 average in all social work courses and no grade lower than a C
- 2.5 overall grade point average

Students must complete all SOCW courses within a maximum 6-year period. In order to ensure our graduates are receiving the most updated and relevant information on social issues, programs and best practices, social work courses completed more than 6 years prior to graduation may need to be retaken.

Requirements for a Bachelor of Social Work Degree

Courses Required for Transition to the BSW Major

SOCW 2361	INTRODUCTION TO SOCIAL WORK (formerly SOCW 2311)	3
SOCW 3300	SOCIAL WORK PROFESSIONALISM AND STUDENT SUCCESS ([formerly 1331] or a combination of SOCW 1231 and UNIV 1131)	3
MATH 1308 (or other approved statistics course)		3
SOCW 3305	SOCIAL WORK PRACTICE I	3
SOCW 3307	DIVERSE POPULATIONS	3

General Education Requirements

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
MATH 1301	CONTEMPORARY MATHEMATICS (Or other Math course approved for Math Core)	3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
3 hours Language, Philosophy and Culture		3
6 hours of Science preferably from the following list: BIOL 1333, BIOL 1334, BIOL 1441, BIOL 1442, BIOL 2457, BIOL 2458, CHEM 1345, CHEM 1346, CHEM 1451, GEOL 1330		6
3 hours Creative Arts		3

Professional Courses

SOCW 2302	LIFE SPAN DEVELOPMENT AND HUMAN BEHAVIOR	3
SOCW 3301	THEORIES OF HUMAN BEHAVIOR	3
SOCW 3309	SOCIAL WORK PRACTICE II (formerly SOCW 3304)	3
SOCW 3303	SOCIAL WELFARE POLICY AND SERVICES	3
SOCW 3308	SOCIAL WORK RESEARCH METHODS	3
SOCW 3306	SOCIAL WORK PRACTICE III: MACRO PRACTICE	3
12 hours of Social Work Electives		12
SOCW 4951	SOCIAL WORK FIELD INSTRUCTION AND SEMINAR I (Or SOCW 4955 SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 1)	9
SOCW 4952	SOCIAL WORK FIELD INSTRUCTION AND SEMINAR II (Or SOCW 4956 SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 2)	9

Electives sufficient to complete the 120 hours required for the degree ¹ **24**

Recommendations: Substance Use Treatment Minor, Diversity Certificate or Minor, African American Studies Minor, Mexican American Studies Minor, Disability Studies Minor, Criminology and Criminal Justice Minor, Women and Gender Studies Minor

Total Hours 120

¹ No more than four hours of activity (EXSA/DNCA) can be used toward a degree for either hours or GPA.

Field Work Requirements

The BSW Program requires two consecutive semesters (split placement) or one full semester (block placement) field experience in a single human-service agency. Once necessary pre-requisites are complete and students have a 2.5 or better GPA, students enroll in the field courses (SOCW 4951 Field Instruction and Seminar I, first semester; SOCW 4952 Field Instruction and Seminar II, second semester; or SOCW 4955 AND 4956 to complete

Field Work in one semester [AKA Block]) and complete 240 clock hours per semester in their assigned agency. Field placements are arranged early in the preceding semester by applying through the field office. Students should consult with a BSW advisor to ensure completion of pre-requisites for field.

Bachelor of Science Substance Use & Treatment

Overview

The Bachelor of Science in Substance Use & Treatment (BSSUT) (<https://www.uta.edu/academics/schools-colleges/social-work/programs/bssut/>) uses a multidisciplinary approach to understand the biological, psychological, and social aspects of substance use disorders and related behaviors.

Assessment and treatment methods are based on evidence-informed practices to enable students and future professionals to understand and treat individuals, families, groups, and communities.

The BSSUT degree plan is designed to prepare you for a career in substance use treatment or to lay the foundation for you to pursue a graduate degree in a related field. We have several options for you in completing your degree, including both face to face and online options.

Requirements for a BSSUT Degree

Courses Required for Transition to the BSSUT Major

SOCW 3300	SOCIAL WORK PROFESSIONALISM AND STUDENT SUCCESS (SUT 3300 or a combination of SUT 1231 and UNIV 1131)	3
SOCW 3305	SOCIAL WORK PRACTICE I	3
SOCW 3307	DIVERSE POPULATIONS	3
SUT 3315	INTRODUCTION TO SUBSTANCE USE DISORDERS	3

General Education Requirements

ENGL 1301	RHETORIC AND COMPOSITION I	3
ENGL 1302	RHETORIC AND COMPOSITION II	3
MATH 1301	CONTEMPORARY MATHEMATICS (Or other Math course approved for Math Core)	3
MATH 1308	ELEMENTARY STATISTICAL ANALYSIS (or other statistics course approved by Director of Undergraduate Programs)	3
POLS 2311	GOVERNMENT OF THE UNITED STATES	3
POLS 2312	STATE AND LOCAL GOVERNMENT	3
HIST 1301	HISTORY OF THE UNITED STATES TO 1865	3
HIST 1302	HISTORY OF THE UNITED STATES, 1865 TO PRESENT	3
SOCW 2302	LIFE SPAN DEVELOPMENT AND HUMAN BEHAVIOR	3
PSYC 1315	INTRODUCTION TO PSYCHOLOGY	3
3 hours Language, Philosophy and Culture		3
6 hours of Science preferably from the following list: BIOL 1333, BIOL 1334, BIOL 1441, BIOL 1442, BIOL 2457, BIOL 2458, CHEM 1345, CHEM 1346, CHEM 1451, GEOL 1330		6
3 hours Creative Arts		3

Professional Courses

SOCW 3301	THEORIES OF HUMAN BEHAVIOR	3
PSYC 3318	ABNORMAL PSYCHOLOGY	3
ECON 2337	ECONOMICS OF SOCIAL ISSUES	3
SUT 3318	SCREENING, ASSESSMENT, & ENGAGEMENT	3
PSYC 3303	DRUGS AND BEHAVIOR	3
SUT 3319	TREATMENT PLANNING, COLLABORATION & REFERRAL	3
SUT 3321	SUBSTANCE USE TREATMENT	3
SUT 3322 PROFESSIONAL AND ETHICAL RESPONSIBILITY		3
SOCW 4344	HEALTH INSURANCE AND ACCESS TO CARE	3
SOCW 3308	SOCIAL WORK RESEARCH METHODS	3
SOCW 4951	SOCIAL WORK FIELD INSTRUCTION AND SEMINAR I (SUT 4951 or SUT 4955 SUT FIELD INSTRUCTION AND SEMINAR BLOCK PART 1)	9
SOCW 4952	SOCIAL WORK FIELD INSTRUCTION AND SEMINAR II (SUT 4952 or SUT 4956 SUT FIELD INSTRUCTION AND SEMINAR BLOCK PART 2)	9

Electives sufficient to complete the 120 hours required for the degree ¹ 18

Recommendations: African American Studies Minor, Disability Studies Minor, Diversity Studies Minor or Certificate, Mexican American Studies Minor, Psychology Minor, Public Health Minor, Social Justice and Social Welfare Minor, Sociology Minor, Spanish Minor, Women's and Gender Studies Minor

Total Hours

120

¹ No more than four hours of activity (EXSA/DNCA) can be used toward a degree for either hours or GPA.

Field Work Requirements

The BSSUT Program requires two consecutive semesters (split placement) or one full semester (block placement) of field experience in a single agency focused on substance use disorder treatment. Once necessary pre-requisites are complete and students have a 2.25 or better GPA, students enroll in the field courses (SUT 4951 Field Instruction and Seminar I, first semester; SUT 4952 Field Instruction and Seminar II, second semester; or SUT 4955 AND 4956 to complete Field Work in one semester [AKA Block]) and complete 240 clock hours per semester in their assigned agency. Field placements are arranged early in the preceding semester by applying through the field office. Students should consult with a BSSUT academic advisor to ensure completion of pre-requisites for field.

Substance Use Treatment Minor

Overview

What: The Minor in Substance Use Treatment (SUT) (<https://www.uta.edu/academics/schools-colleges/social-work/programs/minors/substance-use-treatment/>) employs a multidisciplinary approach to understanding the biological, psychological, and social, aspects of substance misuse, gambling, and related behaviors. Assessment and treatment methods are based on evidence-informed practices to enable students and future professionals to understand and treat individuals, families, groups, and communities.

Why: The courses prepare graduates for careers in substance use treatment and related fields.

How: To select this minor, students must have a minimum cumulative GPA of 2.5 and complete the SUT Declaration Form. (<https://www.questionpro.com/a/TakeSurvey/?tt=VDR7%2BjnDTeE%3D>) Students will also be required to complete a pre- and post-assessment of learning outcomes.

PROGRAM OBJECTIVES

The educational objectives of the minor are to prepare students with a Minor in Substance Use Treatment that will enable them to:

- Identify, describe, compare, and evaluate theories and models of substance use, misuse, and addiction (SUT/SOCW 3315).
- Explain development across the lifespan so as to better understand substance use at different stages of development (SOCW 2302).
- Use empathy and other interpersonal skills toward developing a mutually agreed-on focus of work (SOCW 3309).
- Collect, organize, and interpret client data as part of the screening, assessment, and engagement processes toward developing a treatment plan for the client (SUT/SOCW 3318).
- Develop and implement a treatment plan (SUT/SOCW 3319 and SUT/SOCW 3321).

COURSE PLAN FOR THE 18-HOUR MINOR: ^{1, 2}

SUT/SOCW 3315 Introduction to Substance Use Disorders

SOCW 2302 Lifespan Development

SOCW 3309 Interviewing Skills

SUT/SOCW 3318 Screening, Assessment, and Engagement

SUT/SOCW 3319 Treatment Planning, Collaboration, and Referral

SUT/SOCW 3321 Substance Use Treatment

Students are required to earn a C or better in all minor courses to earn the minor.

¹ Students may receive credit for the below courses through completion of any combination of SUT 1350, SUT 2350, or SUT 4350 as approved by the Director of Undergraduate Programs in the School of Social Work.

² If a student minoring in SUT that is not a SOCW major wants to pursue Licensed Chemical Dependency Counselor (LCDCi) eligibility, they must add SUT 4951 Field (Crosslisted with SOCW 4951) as a general elective.

Social Justice and Social Welfare Minor

Overview

What: The Social Justice and Social Welfare minor (<https://www.uta.edu/academics/schools-colleges/social-work/programs/minors/social-justice-and-social-welfare/>) provides students with a broad overview of social justice perspectives on issues relevant to the social welfare system, its relationship to the market economy, and the historical, political, and cultural factors that shape it¹. Through coursework, students learn the analytic and practical skills needed to develop, evaluate, and transform social welfare and justice policies. Students gain competency in the core issues of human needs and social development, relevant to many careers.

The minor also enhances students' preparation for graduate study in social work¹, law, education, health care, public policy analysis, nonprofit management, social service administration, student affairs, conflict resolution, and others.

Why: Students often want to pursue careers toward improving the quality of life of others. Understanding of the social welfare system and social justice issues is essential as a foundation for such careers.

Who: Students in a variety of majors are learning skills toward such a successful career (e.g, business, education, healthcare) but are in need of knowledge of the systems that impact their careers as well as the well-being of those they are training to serve. Please note that social work major students are not eligible to earn the SJSW minor.

How: To select this minor, students must have a minimum cumulative GPA of 2.5 and complete the SJSW Declaration Form. (<https://www.questionpro.com/a/TakeSurvey/?tt=4zb0kokgAXU%3D>)

Students will also be required to complete a pre- and post-assessment of learning outcomes.

COURSE PLAN FOR THE 18-HOUR MINOR:

Required Introductory course:

SOCW 3303 Social Welfare Policy and Services

Required Core courses:

SOCW 3301 Theories of Human Behavior

SOCW 3307 Diverse Populations

3 courses from the following list:

SOCW 3312 Disability & Social Work

SOCW 3314 The Latina Experience

SOCW 3320 U.S. Immigration and the American Dream

SOCW 4314 Intimate Partner Violence

SOCW 4366 Seminar in Gender Issues

SOCW 4335 Aging in American Society

SOCW 4371 Inequities and Incarceration

Students are required to earn a C or better in all SJSW minor courses to earn the minor.

Additionally, students will have a final assessment at the end of their coursework to assess their learning outcomes (this allows for data gathering for Unit Effectiveness Process [UEP] requirements).

¹ The Social Justice and Social Welfare Minor does not provide the specific skills needed for actual social work practice or for social work licensing. Additionally, students who complete the minor and decide to pursue a Master's degree in social work at UTA will not be allowed to count courses taken in the minor toward the Master's.

Diversity Studies

Overview

The School of Social Work offers two options for students interested in studying diversity: the Diversity Studies Minor and the Diversity Studies Certificate (<https://www.uta.edu/academics/schools-colleges/social-work/programs/minors/diversity-studies/>). The **Diversity Studies Minor** is designed to strengthen students' understanding of the interactions of race, ethnicity, gender, sexuality, social and economic inequality, disability, aging and religion in defining identity and social relationships. This interdisciplinary program of study focuses on key concepts related to power, identity, difference, and the historical and structural forces that shape power and difference in social relationships. The goal of the minor is to arm students with knowledge, skills, and perspectives essential to civic participation, career development and promoting a just society. The Diversity Studies minor is relevant to careers involving diverse populations such as business, industry, education, social welfare, mental health, and health.

Students selecting this minor must:

- Complete the Diversity Studies Declaration Form (<https://www.questionpro.com/a/TakeSurvey/?tt=D8flvYWJJv4%3D>) and the pre-coursework assessment;
- Have a cumulative 2.5 GPA;
- Complete 18 hours of coursework as follows with a C or better in each course:
 - A 3-hour designated introductory course¹, and
 - 15 hours of designated coursework chosen from 5 of 7 diversity content areas (1 course per content area):
 - Racial and Ethnic Relations,
 - Gender,
 - Sexuality,
 - Social and Economic Inequality,
 - Disability,
 - Aging, and
 - Religion.
- Students are required to complete a pre- and post- assessment at the start and end of their minor studies to measure their learning outcomes.

The **Diversity Studies Certificate Program (DCP)** is an interdisciplinary certificate that provides undergraduate students the opportunity to gain specialized knowledge, values, and skills in racial and ethnic relations, gender and sexuality, and social and economic inequality, to advance themselves as successful employees and leaders in our global world. The certificate enhances a student's general education, academic major and/or career preparation.

Students selecting the Diversity Certificate must:

- Complete the Diversity Studies Declaration Form (<https://www.questionpro.com/a/TakeSurvey/?tt=D8flvYWJJv4%3D>) and the pre-coursework assessment;
- Have a cumulative 2.5 GPA;
- Complete 12 hours of coursework as follows with a C or better in each course (1 course per area):
 - A 3-hour designated introductory course, and
 - 9 hours of designated coursework in 3 areas
 - Racial and Ethnic relations,
 - Social and Economic Inequality, and
 - Gender and Sexuality.
- In addition, students complete a co-curricular component by attending campus events that highlight diverse identities and cultures.
- Students are required to complete a pre- and post- assessment at the start and end of their certificate studies to measure their learning outcomes.

¹The three hour introductory course may be substituted with DIVR 2350 if approved by the Director of Undergraduate Studies in the School of Social Work.

Honors College

Honors Vision Statement

The Honors College is committed to extending opportunities for achievement in undergraduate education to the best students across the University. The College works toward this goal by promoting a supportive and academically and culturally diverse environment in which students can pursue excellence in research, creative work, community service, and personal and professional development. By creating a center for academic excellence, the Honors College not only fosters the development of the next generation of academic and community leaders, but also advances the University's broader mission of improving the level of education for all students. In keeping with the broader educational mission, the Honors College houses Interdisciplinary Studies, which is dedicated to promoting experiential, problem-based research and pedagogy for all students in the University.

Honors Affiliations

The UT Arlington Honors College is a member of the National Collegiate Honors Council and the regional Great Plains Honors Council.

Standards for Admission

The Honors College is dedicated to creating a student body with broad interests, varied talents, and diverse cultural backgrounds. Admission is competitive.

Entering freshman Honors applicants (those with fewer than 30 college hours) must have either a score of 1270 on the SAT (combined Math and Evidence-Based Reading and Writing) or a score of 27 of the ACT, or have graduated in the top ten percent of their high school class, or have graduated with an unweighted high school GPA of 3.5 on a scale of 4. If none of the above criteria are met, applicants may submit an essay for consideration. All applicants are required to submit a resume. For additional information and application materials, see the Honors College website: <https://www.uta.edu/honors/prospective/apply/>

Continuing UT Arlington and transfer Honors applicants (those with more than 30 college hours) must have an overall undergraduate GPA of 3.35. If none of the above criteria are met, applicants may submit an essay for consideration. All applicants are required to submit a resume. For additional information and application materials, see the Honors College website: <https://www.uta.edu/honors/prospective/apply/>

Requirements for Completing an Honors Degree

Honors degrees are granted in the disciplines of the University's eight undergraduate schools and colleges – Business; Education; Engineering; Liberal Arts; Nursing and Health Innovation; Science; Social Work – as well as programs in CAPP and Interdisciplinary Studies. To graduate with an Honors degree, a student must be a member of the Honors College in good standing, have an overall GPA of 3.2 or higher, and complete the degree requirements in an academic major.

Honors students will be required to earn 18 Honors Points, plus a Capstone Project to receive an Honors Degree. Points will be earned through a combination of Course Points and Experience Points that are to be determined by each college.

Course Points

Students will enroll in Honors-designated courses or contract existing courses. A point value will be assigned to **Courses** based on credit hours. Each college will set their own course requirements.

Honors courses satisfy Honors, departmental, college, and University requirements. The Honors College provides departmental advisors with equivalency/substitution information.

Honors students may earn Honors credit for non-Honors courses taught by full-time faculty, subject to the terms of the Honors College Contract. To receive Honors credit, the student must complete regular course requirements with a grade of A or B, as well as an independent Honors assignment as agreed upon by the instructor and the student.

Experience Points

Students may participate in co-curricular **Experiences** to earn Honors Points. A point value will be assigned to each experience based on duration or rigor of the experience (most will be assigned 1 point). Each college will approve their own list of allowable experiences. Each unique experience may be used only one time.

Honors Capstone Project

In addition to earning the required number of **Honors Points**, students will complete a Capstone Project to receive an Honors Degree. Each college/department/major will determine which of the following "tracks" their students can select. Although not all students will be required to write a thesis, all students will be required to produce a deliverable. **Students will present their Capstone Project at an Honors Symposium in either an oral or poster presentation.**

Research

- Traditional Honors thesis; research conducted with a faculty mentor

International

- Project developed through study abroad or service learning abroad

Professional

- Project developed through completing and internship, co-op, or practicum

Creative

- Creation of original creative work/activity; especially for students in the fine arts

College Specific Capstone Project

- Determined by each college

The flexibility of the Honors requirements makes it essential that students maintain close contact with both their departmental mentor and advisor and the Honors advising staff. Students must meet with an Honors advisor during each of their first three years, but are strongly encouraged to meet with the advising staff on a regular basis.

Probation Policy

Honors students whose cumulative GPA falls below 3.2 will be placed on probation. They must meet as soon as possible with an Honors advisor and are required to restore their GPA back to 3.2 or higher in the following semester.

Privileges for Honors Students

Honors College participation provides a number of tangible and intangible benefits to its students:

- Honors Degree designation on diploma and transcript
- Priority course registration
- Small class size
- Courses taught by award-winning faculty
- Honors scholarship opportunities
- Honors study abroad programs and scholarships
- Honors learning community
- Paid undergraduate research fellowship opportunities
- Special privileges with the University libraries
- Access to Honors listserv, Honors College blog, and the electronic Honors newsletter, *Veneratio*
- Special Honors academic and social events
- Honors Bridge to Graduate School Fellowship opportunities
- Membership in the Honors College Council
- Use of the Carolyn A. Barros Reading room (library and computer laboratory) and free printing

Honors College Programs and Services

Honors Study Abroad

The Honors College Study Abroad Program offers short-term opportunities for students to acquire new knowledge and understanding of the people, events, movements, ideas, and products of cultures other than their own; to link historical events and developments with those of the twenty-first century; and to understand the contributions of other peoples and regions to American institutions and culture. Rigorous instruction and intensive on-site learning in countries as diverse as Ireland, Scotland, Italy, France, the Czech Republic, Greece, England and Costa Rica are hallmarks of the Honors study abroad experience. Scholarships are available from both the Honors College and the Office of International Studies (Note: the Honors College Study Abroad Program typically involves short-term travel and as such cannot be used for the study abroad option for the Honors Capstone Project, although credit from the program may be used to meet the coursework requirement for the Honors degree.)

AP Summer Institute (APSI)

The Honors College at UT Arlington, in conjunction with the College Board, annually presents the UT Arlington AP Summer Institute. Each year more than 1000 new and experienced middle and high school teachers receive invaluable training from College Board-certified instructors to prepare them to teach AP courses. Courses are offered in Art, English, Science, Language, Mathematics and Social Studies.

COURSES

HONR-BU 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-BU 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-BU 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-BU 4311. LEADER AS COMMUNICATOR. 3 Hours.

Helps students excel in written and oral communication skills. Assignments include writing short papers, making oral presentations, and learning to critique one another. This course provides a perspective on leadership in formal organizations with emphasis on communication, exercising influence, decision-making, and conflict management. Prerequisite: Admission to the Goolsby Leadership Academy.

HONR-BU 4312. LEADER ETHICS. 3 Hours.

Addresses rule-based, consequential, and virtue ethics by examining intentions, actions, and consequences of individual behavior. The course emphasizes the development of character and personal integrity. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

HONR-BU 4313. SENIOR EXECUTIVE LEADERSHIP. 3 Hours.

Course consists of a series of lectures by executives who provide insight into their own unique leadership skills and development. Prerequisite: Admission to the Goolsby Leadership Academy.

HONR-BU 4314. GLOBAL MARKET PLACE. 3 Hours.

Designed to assist Goolsby Fellows to be competent in an intercultural world. The heart of the course is aimed at appreciating human diversity and variance. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

HONR-BU 4315. EXECUTIVE INTERNSHIP. 3 Hours.

This internship experience places Goolsby Fellows in field settings with executives from the college's Advisory Council and other executive leaders in specialized areas for students. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

HONR-BU 4394. HONORS SENIOR RESEARCH THESIS/CREATIVE PROJECT. 3 Hours.

A research thesis or creative project and oral presentation are required for the Honors degree. In consultation with the faculty thesis supervisor and the Honors Dean, a program of research and writing will be arranged. Planning for the Honors Thesis/Creative Project should begin early in the student's junior year. For more extensive projects additional credit may be earned. Full details for completing the Honors Research Thesis/Creative Project are provided on the Honors website, <http://www.honors.uta.edu/thesis/>. This course is reserved for departments and programs that do not list dedicated thesis courses in their inventories.

COURSES

HONR-LA 1301. HONORS COMPOSITION I. 3 Hours.

Introduction to academic writing, with an emphasis research, synthesis of sources, and argumentation.

HONR-LA 1302. HONORS COMPOSITION II. 3 Hours.

A course in academic argumentation in which students learn how to conduct and organize research. The course typically focuses on a particular topic, which will vary by section and be interdisciplinary in nature. Successful completion satisfies the second-semester writing requirement. Prerequisite: membership in the Honors College.

HONR-LA 2300. SEMINAR. 3 Hours.

Team-taught interdisciplinary course that introduces knowledge and perspectives from the arts, sciences, and humanities. Designed around a theme of current or historical significance. Writing-intensive. Depending on topic, may meet the literature, fine arts/humanities or social/cultural studies requirement of the core curriculum (consult departmental advisor for details).

HONR-LA 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-LA 2407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

HONR-LA 3300. LIBERAL ARTS HONORS SEMINAR. 3 Hours.

Intensive small class lecture or seminar course addressing basic issues in various liberal arts disciplines. Topics will vary.

HONR-LA 3303. INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR-LA 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-LA 3310. POLITICAL & COMMUNITY LEADERSHIP. 3 Hours.

This course examines theories and concepts of leadership in political and community contexts, and processes by which power and authority are exercised to foster political change in one's community. Emphasis is placed on application to actual leadership situations.

HONR-LA 3404. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-LA 3407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

HONR-LA 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-LA 4407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

COURSES

HONR-NU 2203. HONORS SPECIAL TOPICS. 2 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-NU 3504. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-NU 4203. ADVANCED SPECIAL TOPICS. 2 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-NU 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-NU 4403. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-NU 4503. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

COURSES

HONR-VP 2103. SPECIAL TOPICS. 1 Hour.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-VP 2300. SEMINAR. 3 Hours.

Team-taught interdisciplinary course that introduces knowledge and perspectives from the arts, sciences, and humanities. Designed around a theme of current or historical significance. Writing-intensive. Depending on topic, may meet the literature, fine arts/humanities or social/cultural studies requirement of the core curriculum (consult departmental advisor for details).

HONR-VP 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-VP 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-VP 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

COURSES

HONR 1100. ENRICHMENT SERIES. 1 Hour.

Provides an introduction and orientation to the Honors College. Designed to assist students in acquiring skills for academic survival, individual success, and pursuit of their Honors degree and career possibilities. Format varies; instruction by both faculty and Honors College student peer counselors.

HONR 1304. HONORS INDEPENDENT STUDY. 3 Hours.

Independent study courses are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2104. HONORS INDEPENDENT STUDY. 1 Hour.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2106. HONORS SEMINAR. 1 Hour.

The Honors Seminar will cover topics of general interdisciplinary interest to students from a wide variety of academic disciplines. Active learning will be stressed with all students expected to both moderate and participate in classroom discussions of seminar topics. Instructors and topics offered will vary. The course may be repeated for credit as topics change.

HONR 2111. HONORS COMMUNITY SERVICE LEARNING. 1 Hour.

Intensive course in the history and practice of community service learning (CSL). Readings will include general accounts of active learning, the institutional history of CSL in higher education, and a comparative study of CSL programs across the country. Students will design and implement a CSL project based on their major, and in conjunction with an area non-profit organization. Evaluation will be based on written work on both the readings and the CSL project.

HONR 2203. HONORS SPECIAL TOPICS. 2 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 2204. HONORS INDEPENDENT STUDY. 2 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2300. SEMINAR. 3 Hours.

Team-taught interdisciplinary course that introduces knowledge and perspectives from the arts, sciences, and humanities. Designed around a theme of current or historical significance. Writing-intensive. Depending on topic, may meet the literature, fine arts/humanities or social/cultural studies requirement of the core curriculum (consult departmental advisor for details).

HONR 2304. HONORS INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2403. SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 2404. HONORS INDEPENDENT STUDY. 4 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2435. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

HONR 3103. INDEPENDENT STUDY. 1 Hour.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3104. SPECIAL TOPICS. 1 Hour.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3203. HONORS INDEPENDENT STUDY. 2 Hours.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 3204. SPECIAL TOPICS. 2 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3303. INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 3403. HONORS INDEPENDENT STUDY. 4 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 3404. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3435. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

HONR 3504. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3535. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. may be repeated for credit as topics change.

HONR 4000. HONORS INDEPENDENT RESEARCH. 0 Hours.

Individualized research conducted under the supervision of a faculty member. This is a zero-credit course. May be repeated. Prerequisite: membership in the Honors College, permission of the supervising faculty member, and approval by the Dean of Honors.

HONR 4103. ADVANCED SPECIAL TOPICS. 1 Hour.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR 4104. HONORS INDEPENDENT STUDY. 1 Hour.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4106. HONORS ADVANCED SEMINAR. 1 Hour.

The Honors Advanced Seminar will cover topics of general interdisciplinary interest to students from a wide variety of academic disciplines. Active learning will be stressed with all students expected to research and prepare seminar presentations and moderate class discussions on assigned seminar topics. Instructors and topics offered will vary. The course may be repeated for credit as topics change. Prerequisite: Junior or Senior status or permission of the instructor.

HONR 4144. HONORS SERVICE LEARNING OPPORTUNITIES. 1 Hour.

Credit will be given for supervised service to a community agency. The service must be related to formal coursework and approved by a faculty mentor and a degree plan advisor. Prerequisite: Junior standing or permission of the Honors College Dean. Graded Pass/Fail.

HONR 4203. ADVANCED SPECIAL TOPICS. 2 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR 4204. HONORS INDEPENDENT STUDY. 2 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4244. HONORS SERVICE LEARNING OPPORTUNITIES. 2 Hours.

Credit will be given for supervised service to a community agency. The service must be related to formal coursework and approved by a faculty mentor and a degree plan advisor. Graded Pass/Fail.

HONR 4300. ADVANCED SEMINAR. 3 Hours.

Integrates substantive knowledge in the arts, sciences, and humanities around a theme of current or historical significance. May meet the Social/Cultural Studies requirement of the core curriculum.

HONR 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR 4304. HONORS INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4310. HONORS STUDY ABROAD. 3 Hours.

Interdisciplinary course in an out-of-country location around a theme or topic appropriate to the location. Journal, term papers, and/or examinations may be required. Meets the Social/Cultural Studies requirement of the core curriculum.

HONR 4320. HONORS INTERNSHIP. 3 Hours.

Supervised employment in student's area(s) of interest. Journal and term paper required. Reserved for students whose major department does not offer an Internship course.

HONR 4344. HONORS SERVICE LEARNING OPPORTUNITIES. 3 Hours.

Credit will be given for supervised service to a community agency. The service must be related to formal coursework and approved by a faculty mentor and a degree plan advisor. Graded Pass/Fail.

HONR 4394. HONORS SENIOR RESEARCH THESIS/CREATIVE PROJECT. 3 Hours.

A research thesis or creative project and oral presentation are required for the Honors degree. In consultation with the faculty thesis supervisor and the Honors Dean, a program of research and writing will be arranged. Planning for the Honors Thesis/Creative Project should begin early in the student's junior year. For more extensive projects additional credit may be earned. Full details for completing the Honors Research Thesis/Creative Project are provided on the Honors website, <http://www.honors.uta.edu/thesis/>. This course is reserved for departments and programs that do not list dedicated thesis courses in their inventories.

HONR 4403. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 4404. HONORS INDEPENDENT STUDY. 4 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4435. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

HONR 4503. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 4504. HONORS INDEPENDENT STUDY. 5 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4535. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

COURSES

SVLN 2311. SEMINAR IN SERVICE LEARNING. 3 Hours.

Introduction to the history and practice of community service learning (CSL). Readings will include general accounts of active learning, the institutional history of CSL in higher education, and a comparative study of CSL programs across the country. Students will design and implement a CSL project based on their major, and in conjunction with an area nonprofit organization. Evaluation will be based on written work on both the readings and the CSL project.

Interdisciplinary Studies - Undergraduate Program

Overview

The Interdisciplinary Studies Program (INTS) provides students the opportunity to create a truly customized degree plan while maintaining high academic standards. The Interdisciplinary Studies Program is intended to meet the needs of creative, intellectually curious, and academically motivated students.

Interdisciplinary Studies is organized in six distinct tracks, each designed to encourage broad intellectual inquiry and the synthesis of diverse areas of study. The first five correspond to the five major themes of the UT Arlington Strategic Plan: Bold Solutions, Global Impact. The last is intentionally open to student choice.

- 1) Health and the Human Condition
- 2) Sustainable Urban Communities
- 3) Data-Driven Discovery
- 4) Global Environmental Impact
- 5) Cultural Understanding and Social Transformation
- 6) Open to student choice

Students in the program are expected to work closely with their adviser to develop an innovative program of study that draws on the rich academic resources of the University, including existing minors and certificates. As members of the Honors College, INTS students are also encouraged to pursue opportunities in experiential learning, including undergraduate research, internships, service learning, and study abroad.

Application Procedure

Students interested in an Interdisciplinary Studies major must meet the eligibility requirements set by the Honors College. Prospective students are strongly encouraged to apply to the Honors College as soon as possible, and they should meet early on with an academic adviser in the Interdisciplinary Studies program to begin developing a tentative degree plan. In order to be formally admitted to the program, a student must earn a B or better in INTS 2301 and have a cumulative GPA of at least 3.35. All students admitted to INTS will automatically become members of the Honors College, and as such will enjoy all benefits and be expected to meet all requirements of the College.

Requirements for the Bachelor of Arts and Bachelor of Science Degrees in Interdisciplinary Studies

TOTAL HOURS REQUIRED FOR GRADUATION FOR BA AND BS DEGREES: 120 HOURS

Of these, at least 36 hours must be at the 3000/4000 level, 24 hours of which must be from UT Arlington.

Program Requirements

INTS 2301	ENVISIONING INTERDISCIPLINARITY	3
INTS 4391	INTERDISCIPLINARY STUDIES SENIOR SEMINAR	3
Research Class (Methods): From approved list		3
Theory course from the following: SOCI 3373, SOCI 3372, ENGL 4356, ANTH 3300, SOCW 3301, or INTS 3320		3
Research Class (Methodology): SOCI 3462, CRCJ 3350, POLS 3310, BIOL 4343, CHEM 4343, GEOL 4343, KINE 4352, MATH 4381, or PHYS 4343.		3
Honors Senior Project		3
Total Hours		18

BACHELOR OF ARTS DEGREE IN INTERDISCIPLINARY STUDIES, GENERAL REQUIREMENTS

DEGREE REQUIREMENTS

General Core Requirements 42

Program Requirements 18

Modern and Classical Languages 8

TRACK ONE: Another Department's Minor, or UTA Certificate Program, or Pre-defined

INTS Track, or Custom INTS Track 18

TRACK TWO: Another Department's Minor, or UTA Certificate Program, or Pre-defined

INTS Track, or Custom INTS Track 18

ELECTIVES 19

Total Hours 120

TRACKS

Each Interdisciplinary Studies degree plan has two areas of concentration that, along with the core INTS courses, make up the course of study for the INTS degree. Each area of concentration may be constituted of one of the following options: a Minor, a Certificate program, a pre-defined INTS Track, or a Custom Track. Each Track requires a minimum of 18 hours and must include 9 hours of 3000/4000 level course work. Students must take at least one Methods Class (from approved list) within one of their tracks for at least 3 credit hours.

SENIOR PROJECT OPTIONS

Each major has up to four options for an Honors Senior Project:

- Thesis or creative project
- Semester or more of study abroad
- Community service learning project
- Internship

The Honors College works closely with undergraduate programs across campus to determine which senior projects are best for their majors, and not all options will be permitted by all academic units. Students interested in Honors are therefore encouraged to contact an Honors advisor about rules for the Senior Project in their particular field of study.

All four options require an approved proposal, a substantial written product, and an oral presentation at the Honors Research Symposium every fall and spring semester.

The flexibility of the Honors requirements makes it essential that students maintain close contact with both their departmental mentor and advisor and the Honors advising staff. Students must meet with an Honors advisor during each of their first three years, but are strongly encouraged to meet with the advising staff on a regular basis, preferably once per semester.

BACHELOR OF SCIENCE DEGREE IN INTERDISCIPLINARY STUDIES, GENERAL REQUIREMENTS

DEGREE REQUIREMENTS

General Core Requirements 42

Program Requirements 18

TRACK ONE: Another Department's Minor, or UTA Certificate Program, or Pre-defined

INTS Track, or Custom INTS Track 18

TRACK TWO: Another Department's Minor, or UTA Certificate Program, or Pre-defined

INTS Track, or Custom INTS Track 18

Electives 27

Total Hours 120

For the Bachelor of Science degree, at least 18 hours in the two Tracks must be "science-for-science majors" course work; at least 12 of these must be at the 3000/4000 level.

TRACKS

Each Interdisciplinary Studies degree plan has two areas of concentration that, along with the core INTS courses, make up the course of study for the INTS degree. Each area of concentration may be constituted of one of the following options: a Minor, a Certificate program, a pre-defined INTS Track, or a Custom Track. Each Track requires a minimum of 18 hours and must include 9 hours of 3000/4000 level course work. Students must take at least one Methods Class (from approved list) within one of their tracks for at least 3 credit hours.

SENIOR PROJECT OPTIONS

Each major has up to four options for an Honors Senior Project:

- Thesis or creative project
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COURSES

INTS 1310. INTRODUCTION TO POPULAR CULTURE. 3 Hours.

This course will introduce students to the role of popular culture in American society. It examines culture as a process through which people make symbolic meaning out of the world. Since everyone has access to popular culture, it constructs the way that people think about the world around them. The course will explore the creation, production, dissemination, reception and consumption of popular culture.

INTS 2301. ENVISIONING INTERDISCIPLINARITY. 3 Hours.

This foundational course is designed to introduce students to a variety of academic discourses and modes of knowledge-making, and to present some of the key concepts and aims of interdisciplinary studies. Students must complete the course with a "B" or better to enter or continue in the Interdisciplinary Studies Program.

INTS 2388. SPECIAL TOPICS INTERDISCIPLINARY STUDIES. 3 Hours.

Special topics or problems that lend themselves to an interdisciplinary approach. May be repeated for credit when the topic changes.

INTS 3320. INTERDISCIPLINARY THEORY. 3 Hours.

This course examines the important theories that form the foundation for interdisciplinary studies. These theories are put into a historical context that not only covers the origins of the disciplines, but the theories and ideas that have come to dominate the 21st century outlook on knowledge and the world. Prerequisite: Junior Standing or Permission of the instructor.

INTS 4388. SPECIAL TOPICS INTERDISCIPLINARY STUDIES. 3 Hours.

Special topics or problems that lend themselves to an interdisciplinary approach. May be repeated for credit when the topic changes. Prerequisite: Completion of INTS 2301 with a grade of B or better, or Honors College approval.

INTS 4391. INTERDISCIPLINARY STUDIES SENIOR SEMINAR. 3 Hours.

The purpose of this course is to allow students to engage with each other across disciplines and areas of interest at the end of their academic career. The seminar includes both readings on a topic of general academic interest and guest speakers from across campus to engage topics from an interdisciplinary perspective. This will provide students the opportunity to reflect on their own interdisciplinary degrees at the same time that they see how their peers envisioned interdisciplinarity. Students are encouraged to use the seminar as a foundation for the Honors College Senior Project. Prerequisite: Completion of INTS 2301 with a grade of B or better, or Honors College permission.

INTS 4392. INTERDISCIPLINARY STUDIES SERVICE LEARNING. 3 Hours.

Students work with a UTA faculty mentor to produce a detailed, substantive written project that focuses on a disciplinary problem and documents how the community service learning project helped them in addressing and/or understanding the problem. Students are encouraged to use the service learning project as a foundation for the Honors College Senior Project/INTS Thesis/Project. May be repeated with permission. Prerequisite: Completion of INTS 2301 with a grade of B or better, or Honors College permission.

INTS 4394. INTERDISCIPLINARY STUDIES SENIOR THESIS/PROJECT. 3 Hours.

Students complete sustained original research or creative activity under the guidance of a UTA faculty mentor in their area(s) of concentration. Prerequisite: Completion of INTS 2301 with a grade of B or better.

INTS 4395. INTERDISCIPLINARY STUDIES INTERNSHIP. 3 Hours.

Students work with a UTA faculty mentor to produce a detailed, substantive written project that focuses on a disciplinary problem and documents how the internship helped them in addressing and/or understanding the problem. Students are encouraged to use the internship project as a foundation for the Honors College Senior Project/INTS Thesis/Project. Prerequisites: Completion of INTS 2301 with a grade of B or better, or approval of the Honors College.

INTS 4396. INTERDISCIPLINARY STUDIES STUDY ABROAD. 3 Hours.

Students work with a UTA faculty mentor to produce a detailed, substantive written project that focuses on a disciplinary problem and documents how a study abroad experience helped them in addressing and/or understanding the problem. Students are encouraged to use the study abroad experience as a foundation for the Honors College Senior Project/INTS Thesis/Project. Prerequisite: Completion of INTS 2301 with a grade of B or better, or approval of the Honors College.

Division of Student Success

At UT Arlington, we are committed to helping students succeed academically so that they can earn their bachelor's degrees. If you are committed to your education, we are here to help with a vast array of support resources and programs designed to aid students of all classifications. The Division of Student Success serves as the starting point to help you create the best experience possible at UT Arlington.

From your freshman year, the Division of Student Success will be an active partner in your academic success with advising, tutoring, supplemental instruction, and more. As you progress through your degree program, you will be able to return to Division of Student Success for help with difficult subjects, for advice on tackling new obstacles, and for guidance on careers that align with your academic goals.

While many freshman students come in with a major identified, all first-time freshmen will begin their academic journey at UT Arlington in the Division of Student Success. There, they will receive supportive and proactive advising as well as access to the academic support resources they will need as they transition into the college experience. These resources and services will remain available to all students even after they move into their academic major department for advising.

We also understand that, given life's complexities, twists, and turns, not all students will fit into the molds that the traditional disciplinary majors offer. Our Bachelor of Science in University Studies degree provides an option with a flexible approach that will open doors and help you achieve your career goals.

Think of the Division of Student Success as your one-stop center dedicated to student success. Together, we will help you set your sights high and lay the foundation for your future.

Mission Statement

The Division of Student Success promotes student learning and development by providing coordinated and centralized academic resources and support services that help students define their educational goals and pursue a path toward graduation. In addition, the Division of Student Success serves as a focal point for campus programming that helps first-year students successfully transition to college life and meet the academic challenges set by faculty.

Division of Student Success Programs and Services

While the Division of Student Success focuses on assisting freshman students as they transition to college, our programs and services serve all students who seek academic support during their career at UT Arlington.

GENERAL SERVICES

- The Student Success Help Desk (<https://www.uta.edu/student-success/path-to-graduation/helpdesk/>) is here to help ensure every student's success. Contributing to our campus-wide culture of completion, our goal is to help our students overcome obstacles to timely graduation.
- Academic Success Coaching (<https://www.uta.edu/student-success/course-assistance/success-coaching/>) provides students with key information and strategies to identify, manage, and reach their goals leading to academic, professional, and personal success. Academic success coaches help students with academic skills and college-life management skills and will work individually with students to do an assessment of learning to identify each student's unique needs and create an academic plan.

ACADEMIC SUCCESS CENTER

- UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses.
- Resources include: tutoring by appointment (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fstudentsuccess%2Flearning-center%2Futsi%2Ftutoring%2Findex.php&data=02%7C01%7Cunitec%40uta.edu%7C69a8a88f14548d9530508d6da305e67%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636936298605061562&sdata=FbvKijUotHnRrEEJg%3D&reserved=0>), drop-in tutoring (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fideas%2Fservices%2Findex.php&data=02%7C01%7Cunitec%40uta.edu%7C69a8a88f14548d9530508d6da305e67%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636936298605071574&sdata=Q7HrdUqYKKHAFvL%2FoaLUPuPuD7nNWEa%2F3Fs395FQJ4E%3D&reserved=0>), etutoring (<https://www.uta.edu/student-success/course-assistance/tutoring/e-tutoring/>), supplemental instruction (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fstudentsuccess%2Flearning-center%2Futsi%2Fsupplemental-instruction%2Findex.php&data=02%7C01%7Cunitec%40uta.edu%7C69a8a88f14548d9530508d6da305e67%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636936298605081583&sdata=GPeb8nF710AV77Lw%3D&reserved=0>), peer-led team learning (<https://www.uta.edu/student-success/course-assistance/peer-led-team-learning/>), mentoring (<https://nam05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.uta.edu%2Fideas%2Fservices%2Fmentoring%2Findex.php&data=02%7C01%7Cunitec%40uta.edu%7C69a8a88f14548d9530508d6da305e67%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636936298605081583&sdata=g43ZHBrHf%2BBHqH7PXYGYBCoogJKIdWVEOfDs3xZX7qvA%3D&reserved=0>) (time management, study skills, etc.), TRIO Student Support Services (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fstudentsuccess%2Flearning-center%2Fsss%2Findex.php&data=02%7C01%7Cunitec%40uta.edu>)

%7Cb69a8a88f14548d9530508d6da305e67%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636936298605101595&sdata=U0%2FYNIYDcR%2BxaSoEZsfpLgMExrd0W5avjvbBl%2BsrheY%3D&reserved=0), academic coaching, student success advocates, student success help desk, and student success workshops (<https://nam05.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.uta.edu%2Fstudentsuccess%2Fsuccess-programs%2Fsuccess-series-workshops.php&data=02%7C01%7Cunitec%40uta.edu%7Cb69a8a88f14548d9530508d6da305e67%7C5cdc5b43d7be4caa8173729e3b0a62d9%7C0%7C0%7C636936298605101595&sdata=QFWbMslvSwdwFaF%3D&reserved=0>).

DEGREE PROGRAM

- University Studies (p. 1358) is designed for students who have investigated different majors and now want to utilize the courses already taken to complete a bachelor's degree in a timely manner.

FRESHMAN-FOCUSED PROGRAMS

- University Advising Center (<https://www.uta.edu/student-success/advising/uac/>) advises all incoming freshman students (up to 30 credit hours) as well as undeclared and conditionally admitted transfer students. Academic advisors also guide students in the majors exploration (<http://www.uta.edu/universitycollege/current/academic-planning/uac/Major-Exploration.php>) process.
- Learning Communities (<http://www.uta.edu/universitycollege/prospective/maverick-scholars/figs/>) match students with others who share their academic interests and majors in a freshman seminar and common coursework under the mentorship of faculty and peer academic leaders (PALs). Students who live on campus may choose to join a residential Learning Community, which offers programming in the residence hall.
- Transfer Students (<https://www.uta.edu/studentsuccess/success-programs/programs/>) enroll in UNIV 1101. Under the mentorship of faculty and peer academic leaders (PALs), this course matches students with others who share their academic interests and majors. This transfer seminar focuses on enhancing academic skills and engaging students in experiential learning opportunities that will lead to professional skill building.
- Success U (<https://www.uta.edu/universitycollege/success-programs/programs/success-u/>) provides all freshman students a preview of what college is really like and an opportunity to get prepared for the challenges that lay ahead.

Center for African American Studies

CAAS Mission

To facilitate the discourse on race and contextualize it in the historical, cultural, and community influences that shape the diverse experiences of Blacks in America.

Established August 2012, the only one of its kind in North Texas (and one of three in the state), the Center for African American Studies (CAAS) builds on the University of Texas at Arlington's reputation as one of the most diverse institutions in the nation.

We hope to *enlighten, inspire, and empower* student, faculty, and community stakeholders to create progressive, collaborative solutions that drive social change within the Black community specifically and the broader society generally.

Our Programs

Through teaching, civic engagement, and community-based research focused on diverse contextual conditions of Black Americans, CAAS serves as a vital intellectual and social resource for the community, on and off campus.

Curriculum and Instruction

- Minor in African American Studies
 - *Curriculum* represented across three areas
 - History & Culture
 - Languages, Literature, & the Arts
 - Behavioral and Social Inquiry
- Introduction to African American Studies
- Independent Study Courses
- Internships & Service Learning Courses
- Courses cross-listed in other units

Student Development Initiatives

- Emerging Scholars Program
- Emerging Leaders Initiative
- Interns and Volunteers

Research and Policy Analysis

- Social Justice
- Education
- Health and Human Conditions
- Race, Class, and Crime
- Sustainable Communities

Community Outreach and Engagement

- Civic Programming and Events
- Community Lectures and Forums
- Research Conference

How to Add the African American Studies Minor

If you are interested in obtaining a minor in African American Studies:

1. Complete the **Minor Approval Form** and have it signed by your major department advisor.
2. Once the Minor Approval Form is completed, schedule an appointment with a CAAS advisor and bring the following:
 - completed degree plan (signed by your major department advisor)
 - minor approval form (signed by your major department advisor) and
 - Maverick Academic Progress (MAP)

To make an advising appointment, please call 817-272-9642 or email caas@uta.edu.

AAST Minor

The African American Studies Minor is a comprehensive, interdisciplinary program that prepares students for critical thinking and discourse on race and contextual factors, social consciousness and awareness, and civic engagement. In order to receive a minor in African American Studies, students need to take 18 credit hours from a selection of courses offered across different disciplines. The majority of our courses are cross-listed with courses offered in other departments. Students in African American Studies need to take the following courses:

Required Courses

AAST 2300	INTRODUCTION TO AFRICAN AMERICAN STUDIES	3
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Students must take one of the following courses (after completing one course, other courses can count as electives):

AAST 3338	CONTEMPORARY BLACK EXPERIENCE	3
or AAST 3337	RACIAL & ETHNIC GROUPS IN US	
or AAST 3323	AFRICAN AMERICAN HISTORY SINCE EMANCIPATION	
or AAST 3322	AFRICAN AMERICAN HISTORY TO 1863	
or AAST 3317	DIVERSE POPULATIONS	

Electives (students need to take four of the following electives):

12

AAST 3350	BLACK POLITICAL AND SOCIAL THOUGHT	
or AAST 2303	HISTORY AND APPRECIATION OF HIP HOP AND R&B MUSIC	
or AAST 2337	ECONOMICS OF SOCIAL ISSUES	
or AAST 2371	LANGUAGE IN A MULTICULTURAL USA	
or AAST 3300	TOPICS IN WOMEN'S AND GENDER STUDIES	
or AAST 3301	THEORIES OF HUMAN BEHAVIOR	
or AAST 3310	BLACK FAMILIES	
or AAST 3313	THE COMING OF THE CIVIL WAR, 1820-1860	
or AAST 3314	CIVIL WAR AND RECONSTRUCTION, 1860-1876	
or AAST 3317	DIVERSE POPULATIONS	
or AAST 3319	U.S. IMMIGRATION POLICY AND THE AMERICAN DREAM	
or AAST 3320	BLACK WOMEN IN SOCIETY	
or AAST 3321	THE LATINA EXPERIENCE	
or AAST 3322	AFRICAN AMERICAN HISTORY TO 1863	
or AAST 3323	AFRICAN AMERICAN HISTORY SINCE EMANCIPATION	
or AAST 3329	CONTEMPORARY AFRICAN CULTURES	
or AAST 3330	CULTURAL DIVERSITY AND IDENTITY	
or AAST 3332	COMPARATIVE KINSHIP AND FAMILY SYSTEMS	
or AAST 3336	SOCIAL INEQUALITY	
or AAST 3337	RACIAL & ETHNIC GROUPS IN US	
or AAST 3338	CONTEMPORARY BLACK EXPERIENCE	
or AAST 3339	RACE, SPORT AND MEDIA	
or AAST 3343	THE NEW SOUTH, 1863-PRESENT	
or AAST 3344	SOCIOLOGY OF THE 1960S	
or AAST 3345	AFRICAN-AMERICAN LITERATURE	
or AAST 3347	TOPICS IN MULTICULTURAL AMERICAN LITERATURES	
or AAST 3353	SOCIAL CLIMATE OF CITIES	
or AAST 3373	ARCHAEOLOGY OF EGYPT	
or AAST 3378	HISTORY OF THE CARIBBEAN	
or AAST 3380	RACE, CRIME, AND JUSTICE	
or AAST 3385	AFRICAN HISTORY I	
or AAST 3386	AFRICAN HISTORY II	
or AAST 4317	ETHNIC GROUP POLITICS IN THE UNITED STATES	
or AAST 4318	POLITICS OF AFRICAN AMERICANS	
or AAST 4326	DIVERSITY IN ORGANIZATIONS	
or AAST 4331	RACE, ETHNICITY & FAMILY FORMATION	

or AAST 4333	COMPARATIVE CIVIL RIGHTS HISTORY
or AAST 4341	INEQUALITIES IN PUBLIC EDUCATION
or AAST 4342	TOPICS IN CULTURAL ANTHROPOLOGY
or AAST 4350	SPECIAL TOPICS IN AFRICAN AMERICAN STUDIES
or AAST 4376	AFRICAN DIASPORA I
or AAST 4377	AFRICAN DIASPORA II
or AAST 4378	WEST AFRICA AND THE ATLANTIC DIASPORA
or AAST 4391	CONFERENCE COURSE
or AAST 4399	CAPSTONE AFRICAN AMERICAN STUDIES
or AAST 6391	CONFERENCE COURSE

Total Hours

18

After consulting with their major departments or programs, students will file a degree plan for the AAST minor at the Center for African American Studies. Courses not listed above may qualify as electives with the approval of the director of the Center for African American Studies.

COURSES

AAST 2300. INTRODUCTION TO AFRICAN AMERICAN STUDIES. 3 Hours.

This course introduces students to the African American experience in the United States, including an interdisciplinary analysis of the African American experience in politics, the arts, folklore, religion, economics, sociology, psychology, and community development; and an examination of local history, contemporary issues, and recent events in the African American community. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

AAST 2303. HISTORY AND APPRECIATION OF HIP HOP AND R&B MUSIC. 3 Hours.

Explores the history and evolution of Hip Hop and modern urban music, emphasizing musical style and social context, from rhythm and blues through the present. Offered as AAST 2303 and MUSI 1303; credit will be granted in only one department.

AAST 2337. ECONOMICS OF SOCIAL ISSUES. 3 Hours.

Economic analysis and application of basic economic principles to a variety of social issues and topics. Students will become familiar with the U.S. economy, its structure, and how economics applies to an assortment of public policy topics such as crime, energy, immigration, drug use, prostitution, minimum wage, our aging population, healthcare, gender driven wages, recycling, and the macro economy, to name a few. In addition, current economic issues and events may be incorporated into the course via lecture and/or class discussions. This is a non-technical course which satisfies the core requirement for social and behavioral studies. Will not serve to meet degree requirements for College of Business Administration majors. Offered as ECON 2337 and AAST 2337; credit will be granted in only one department.

AAST 2371. LANGUAGE IN A MULTICULTURAL USA. 3 Hours.

The relationship between language in the U.S. and social power. This course explores how negative attitudes toward some language varieties and languages spoken in the U.S. arise from social factors, rather than features of the languages themselves. In addition to studying language varieties, the course shows how American institutions such as the educational system and the media reinforce these negative attitudes and contribute to discrimination. Offered as AAST 2371 and LING 2371; credit will be granted in only one department.

AAST 3300. TOPICS IN WOMEN'S AND GENDER STUDIES. 3 Hours.

Special topics of interest in the disciplines of Women's and Gender Studies. May be repeated for credit when the topic changes. Offered as WOMS 3300 and AAST 3300; credit will be granted in only one department.

AAST 3301. THEORIES OF HUMAN BEHAVIOR. 3 Hours.

This course explores, within the context of a strengths and empowerment perspective, theories of human behavior. For social work majors, it is strongly recommended that SOCW 2302 be taken before this course. Offered as AAST 3301 and SOCW 3301; credit will be granted in only one department. This course is required for Social Work Field Instruction and Seminar I (SOCW 4951).

AAST 3310. BLACK FAMILIES. 3 Hours.

Course will focus on the historical and cultural development of black families. Topics include slavery, segregation, family structure, and socioeconomic issues. Special attention will be given to people, places, and events that are important for understanding African American family life in the Dallas/Ft Worth area.

AAST 3313. THE COMING OF THE CIVIL WAR, 1820-1860. 3 Hours.

Sectional conflict in the United States from the Missouri Compromise of 1820 to the election of Abraham Lincoln in 1860. Southern separatism, slavery as a political issue, the antislavery movement, the breakup of the national political system, and the failure of sectional compromise. Offered as AAST 3313 and HIST 3313; credit will be granted in only one department.

AAST 3314. CIVIL WAR AND RECONSTRUCTION, 1860-1876. 3 Hours.

The background and causes of secession and the Civil War, the organization of the Confederate States of America, the progress of the war, and the attempts to solve the racial, social, political, and economic problems of the post-war period. Offered as AAST 3314 and HIST 3314; credit will be granted in only one department.

AAST 3317. DIVERSE POPULATIONS. 3 Hours.

Introduction to theoretical, practical, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior. This course is required for admission to the Bachelor of Social Work (BSW) program. Offered as AAST 3317, SOCW 3307 and MAS 3319; credit will be granted in only one department.

AAST 3319. U.S. IMMIGRATION POLICY AND THE AMERICAN DREAM. 3 Hours.

Focus on American identity through the examination of immigration to the United States, past and present, and the evolution of U.S. immigration policy. Topics include U.S. attitudes and policy responses to European, Asian, and Latin American immigration and to the incorporation of the descendants of African slaves and Native Americans. Emphasis on the decline of the melting pot idea and the incorporation of recent immigrants. Offered as MAS 3320, AAST 3319, and SOCW 3320. Credit will be granted only once.

AAST 3320. BLACK WOMEN IN SOCIETY. 3 Hours.

Course provides an overview of historical and current issues facing African American women. Topics include racism, sexism, political involvement, education, religion, family, and comparisons with the experiences of black men.

AAST 3321. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

AAST 3322. AFRICAN AMERICAN HISTORY TO 1863. 3 Hours.

History of blacks in America from their African origins to 1863. Emphasis on early African society, American slavery, and the development of black institutions and culture in the U.S. Offered as AAST 3322 and HIST 3322; credit will be granted in only one department.

AAST 3323. AFRICAN AMERICAN HISTORY SINCE EMANCIPATION. 3 Hours.

Emphasis on the transition from slavery to freedom and the political, social, and economic status of blacks in the late 19th century, 20th century black institutions and culture, and the evolution of the civil rights movements. Offered as AAST 3323 and HIST 3323; credit will be granted in only one department.

AAST 3329. CONTEMPORARY AFRICAN CULTURES. 3 Hours.

A comparative study of African communities with an emphasis on sub-Saharan Africa. Covers regional cultural geography and history as well as ethnography of specific communities. Explores both the challenges facing contemporary African nations as well as emerging solutions. Includes exposure to African art, literature, music, cinema, and food. Offered as AAST 3329 and ANTH 3329; credit will be granted in only one department.

AAST 3330. CULTURAL DIVERSITY AND IDENTITY. 3 Hours.

The ways identity is constructed in contemporary societies in an increasingly complex and multicultural world. Ethnic, racial, gender, and class identities. How and when identity is asserted and assigned, and how it can both draw boundaries and forge ties between peoples. Formerly listed as ANTH 2350. Credit cannot be given for both ANTH 2350 and ANTH 3330. Also listed as MAS 3330; credit cannot be granted for both ANTH 3330 and MAS 3330. Offered as AAST 3330 and ANTH 3330; credit will be granted in only one department.

AAST 3332. COMPARATIVE KINSHIP AND FAMILY SYSTEMS. 3 Hours.

Variation in kinship and family systems from crosscultural and evolutionary perspectives. Structure, function, and dynamics of kinship and family systems as adaptations to diverse ecological, social, and historical circumstances. Implications of this approach for understanding kinship and family in American society also addressed. Formerly listed as ANTH 4338. Credit cannot be given for both ANTH 3338 and ANTH 4338. Also offered as WOMS 3338; credit will be granted only once. Offered as AAST 3332 and ANTH 3338; credit will be granted in only one department.

AAST 3336. SOCIAL INEQUALITY. 3 Hours.

Examines the processes, characteristics, and consequences of social inequality in society. Topics include the social class structure, status groups, and elite power structure as they influence people's life chances. Offered as AAST 3336 and SOCI 3336; credit will be granted in only one department.

AAST 3337. RACIAL & ETHNIC GROUPS IN US. 3 Hours.

Compares the immigration, acculturation, and adjustment processes of various racial/ethnic groups in the U.S. Examines historical and contemporary discrimination in relation to the social conditions of racial/ethnic minority groups in the U. S. Topics include classical and contemporary theory; individualistic, cultural, and structural arguments about social arrangements; and conflict among majority and minority groups. Offered as AAST 3337, MAS 3337, and SOCI 3337; credit will be granted in only one department. Credit will not be granted for both SOCI 3337 and SOCI 4310 or for MAS 3337 and MAS 4310.

AAST 3338. CONTEMPORARY BLACK EXPERIENCE. 3 Hours.

An overview of recent research concerning the African American experience in the post-civil rights era. Topics include explanations for racial differences across spheres of society such as income, education, and occupation; the debate over race versus social class; the persistence of racial discrimination; and emerging disputes within the black community regarding "what it means to be black." Offered as AAST 3338 and SOCI 3338; credit will be granted in only one department.

AAST 3339. RACE, SPORT AND MEDIA. 3 Hours.

The media, including television, film, print, audio, and online outlets, influence how we view the world. This course analyzes overt, subtle and subliminal messages about culture, race, ethnicity, and sport as presented to us through various forms of the media. Through examinations of media portrayals of race, both past and present, students will analyze media artifacts, identify recurring themes, and examine research focused on the societal effects of stereotypical media portrayals. Offered as AAST 3339 and SOCI 3339; credit will be granted in only one department.

AAST 3341. THE OLD SOUTH, 1607-1863. 3 Hours.

Colonial origins of plantation agriculture, slavery, economics, King Cotton, politics and secession. Other topics include slave cultures, religion, slave insurrections, plantation lifestyle, honor, dueling and southern belles. Offered as AAST 3341 and HIST 3342; credit will be granted in only one department.

AAST 3342. SOCIOLOGY OF RELIGION. 3 Hours.

This course provides an overview of the scientific study of religion from a sociological perspective. The focus is on theories, research and trends relevant to religion in the contemporary United States. Topics include, but are not limited to, religious traditions, practices, and beliefs; declining religious participation; and religion and social change. The relationship between religion, politics, race relations, sex and gender will also be examined. Offered as SOCI 3343 and AAST 3342; credit will be granted in only one department.

AAST 3343. THE NEW SOUTH, 1863-PRESENT. 3 Hours.

From military defeat to Sun Belt growth. Topics include Reconstruction, segregation, migration of Southerners to the North and West, depressions, reforms, Civil Rights, Moral Majority, cultural expressions in literature and music. Offered as AAST 3343 and HIST 3343; credit will be granted in only one department.

AAST 3344. SOCIOLOGY OF THE 1960S. 3 Hours.

This course presents a sociological analysis of the sixties, stressing the connection between grassroots mobilization and large structures of power, war, race and gender. The legacy of the sixties is examined through stories told by and about activists of the period. Parallels between the sixties and the present are identified. Movements covered may include civil rights, black power, anti-war and women's rights. Offered as AAST 3344 and SOCI 3345; credit will be granted in only one department.

AAST 3345. AFRICAN-AMERICAN LITERATURE. 3 Hours.

Examines African-American literature in its various traditions, forms, and cultural and historical contexts. Offered as AAST 3345 and ENGL 3345; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

AAST 3347. TOPICS IN MULTICULTURAL AMERICAN LITERATURES. 3 Hours.

Focuses on literature produced within one or more ethnic communities in the U.S. in order to trace a theme or to explore issues such as intersectionality, hybridity/mestizaje, diaspora, or immigrant experiences. Topics may include Afro-Latino poetry, third-world feminist writing, multicultural literature of the Southwest, cultural memory and the Jewish literary tradition, or Asian-American fiction. Offered as ENGL 3347, AAST 3347, and MAS 3347; credit will be granted in only one department, and credit for MAS 3347 will be granted only once. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

AAST 3350. BLACK POLITICAL AND SOCIAL THOUGHT. 3 Hours.

Course examines goals, viewpoints, and strategies of African American political and social movements. Topics include Black Nationalism, Inter-racial Integration, tensions between major historic leaders, reparations, the emergence of "race-neutral" politicians, and changing commitments to liberal and conservative causes.

AAST 3353. SOCIAL CLIMATE OF CITIES. 3 Hours.

A comparative study of urban communities and metropolitan areas in terms of their distinctive social life and culture. Topics touching on power and urban politics, race and ethnic relations, poverty, and leisure and lifestyles will be examined in terms of their contribution to the unique social climate of cities. Offered as AAST 3353 and SOCI 3353; credit will be granted in only one department.

AAST 3373. ARCHAEOLOGY OF EGYPT. 3 Hours.

The culture of ancient Egypt from its earliest occupation until the Arab invasion (7th century A.C.), with emphasis on the first 20 pharaonic dynasties (third and second millennia B.C.). Egyptian social, religious, economic and political development traced through the surviving material culture (architecture, art, industries, artifacts of daily life, funerary remains, etc.) supplemented by historical and literary evidence as pertinent. Egypt's relations with neighboring regions (Crete, Anatolia, Palestine, Nubia and Libya) considered. Offered as AAST 3373 and ANTH 3373; credit will be granted in only one department.

AAST 3378. HISTORY OF THE CARIBBEAN. 3 Hours.

A comparative history of the different societies in the Caribbean (including Cuba, Jamaica, and Haiti) with emphasis on the coming of slavery and the consequences of emancipation. Traces the development of emerging new societies from intermingling of Amerindian, African and European elements. Offered as AAST 3378 and HIST 3378; credit will be granted in only one department.

AAST 3380. RACE, CRIME, AND JUSTICE. 3 Hours.

An examination of race in the context of the criminal justice system. Emphasis is on social construction of crime; and the treatment of racial minorities as victims and offenders by law enforcement, courts, and corrections. Offered as CRCJ 3380 and MAS 3380; credit will be granted only once. Offered as AAST 3380 and CRCJ 3380; credit will be granted in only one department.

AAST 3385. AFRICAN HISTORY I. 3 Hours.

Examines African prehistory, ancient civilizations, religion, gender issues, slavery, and commerce in precolonial Africa. Offered as AAST 3385 and HIST 3385; credit will be granted in only one department.

AAST 3386. AFRICAN HISTORY II. 3 Hours.

Africa from the "Scramble for Africa" through the establishment of the various colonial systems, through the beginnings of African nationalism, to the contemporary period. The African Revolution and the development of the independent African states. Offered as AAST 3386 and HIST 3386; credit will be granted in only one department.

AAST 4317. ETHNIC GROUP POLITICS IN THE UNITED STATES. 3 Hours.

The influence of selected major ethnic groups with special attention given to organizational development, participation in political parties, leadership, ideology, immigration policy, current issues, and relations with the dominant culture and other ethnic groups. Offered as AAST 4317 and POLS 4317; credit will be granted in only one department.

AAST 4318. POLITICS OF AFRICAN AMERICANS. 3 Hours.

The influence of African-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Civil Rights movement, current issues, and relations with other ethnic groups. Offered as AAST 4318 and POLS 4318; credit will be granted in only one department.

AAST 4325. HISTORY OF HIP HOP. 3 Hours.

Focused study of the origins and development of Hip Hop as an artistic genre and political and cultural movement. Topics include deejaying, emceeing, sampling and other musical techniques as well as issues of ethnic and other identities, commercialism, capitalism, cultural appropriation, and authenticity. Offered as HIST 4325 and AAST 4325; credit will be granted only once.

AAST 4326. DIVERSITY IN ORGANIZATIONS. 3 Hours.

This course examines the implications of employee diversity in organizations, an issue of increasing importance. It includes study of the changing demographics of workers, including multiple demographic groups and areas of difference important to organizational treatment and outcomes. This course examines research on treatment, access, and customer discrimination. Legislation related to diversity is also reviewed. This course also provides suggestions for individuals and organizations to increase opportunities and outcomes for workers of all backgrounds. Offered as MANA 4326, AAST 4326 and WOMS 4326; credit will be granted in only one department. Prerequisite: Junior standing.

AAST 4331. RACE, ETHNICITY & FAMILY FORMATION. 3 Hours.

Investigates the ways in which cultural understandings of race and ethnicity have shaped historical and contemporary variations in family structure, familial experiences, and the legal possibilities for family formation. Junior standing (60 hours) or permission of the instructor required to enroll in this course. Offered as AAST 4331 and SOCI 4331; credit will be granted in only one department.

AAST 4333. COMPARATIVE CIVIL RIGHTS HISTORY. 3 Hours.

Explores the U.S. civil rights movement from a comparative perspective, exploring the African American civil rights movement, Chicano movement, women's liberation movement, gay liberation, and disability rights movement. Offered as AAST 4333 and HIST 4333; credit will be granted in only one department.

AAST 4339. TOPICS IN AFRICAN-AMERICAN LITERATURE. 3 Hours.

Concentrates on a topic or theme within the canon of African-American literature, such as a particular genre or era, significant authors, or a philosophical movement. Examples include the Harlem Renaissance, the Civil-Rights/Black-Power era, African-American autobiography, short fiction, and Afrofuturism. Offered as AAST 4339 and ENGL 4339; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

AAST 4341. INEQUALITIES IN PUBLIC EDUCATION. 3 Hours.

This course examines the manner in which race, ethnicity, and class affect the quality of education in the public schools. Topics include the resegregation of schools, class and race based achievement and funding gaps, and the role the schools play in reproducing inequality. This course has a service learning component and requires volunteering in programs designed to reduce inequality in the schools. Offered as AAST 4341 and SOCI 4341; credit will be granted in only one department.

AAST 4342. TOPICS IN CULTURAL ANTHROPOLOGY. 3 Hours.

Selected topics, to include anthropological theory, population and cultural ecology, semiotics, and humanistic anthropology. May be repeated for credit with departmental permission. Also offered as ANTH 4342. Credit will be granted in only one department.

AAST 4350. SPECIAL TOPICS IN AFRICAN AMERICAN STUDIES. 3 Hours.

Special topics related to African American studies. May be repeated for credit when the topic changes.

AAST 4376. AFRICAN DIASPORA I. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in the Atlantic, Mediterranean, and Indian Ocean areas from the earliest times to 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Diaspora. Offered as AAST 4376 and HIST 4376; credit will be granted in only one department.

AAST 4377. AFRICAN DIASPORA II. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in Latin America, the Caribbean, and North America since 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Atlantic Diaspora. Offered as AAST 4377 and HIST 4377; credit will be granted in only one department.

AAST 4378. WEST AFRICA AND THE ATLANTIC DIASPORA. 3 Hours.

This course examines the history of West Africa and how this region was integrated into the Atlantic world through the Atlantic slave trade. The course adopts an interdisciplinary approach that integrates traditional classroom instruction with field-based learning in West Africa. This learning method, combined with cultural immersion, challenges students to develop their academic and cross-cultural knowledge and skills. Offered as AAST 4378 and HIST 4378; credit will be granted in only one department.

AAST 4391. CONFERENCE COURSE. 3 Hours.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for a maximum six credit hours when the subject matter varies. Prerequisite: Departmental permission.

AAST 4399. CAPSTONE AFRICAN AMERICAN STUDIES. 3 Hours.

In consultation with the course instructor, students will design a research project or an internship that will integrate their previous course work into a capstone experience in either the applied or the cultural studies stream of the African American Studies minor. Prerequisite: AAST 2300 and departmental permission.

AAST 6391. CONFERENCE COURSE. 3 Hours.

Directed independent study for a masters-level or doctoral student. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for maximum six credit hours when the subject matter varies. Prerequisite: Permission from CAAS Director.

Mexican American Studies

The Center for Mexican American Studies offers a minor that is available to all students. A Mexican American & Latina/o Studies (MALS) minor consists of 18 total credit hours: one required introductory course, two required courses taught by Mexican American & Latina/o Studies faculty, and three electives selected from the lists below. Either of the two required courses not taken to fulfill the required course segment of the minor may be taken as an elective towards the minor. After consulting with their major departments or programs, students will file a degree plan for the MALS minor at the Center for Mexican American Studies. Courses not listed below may qualify as electives with the approval of the director of the Center for Mexican American Studies.

Minor in Mexican American & Latina/o Studies

In order to receive a minor in Mexican American & Latina/o Studies, students need to take 18 credit hours from a selection of courses offered across different disciplines. The majority of our courses are cross-listed with courses offered in other departments. Students in Mexican American & Latina/o Studies need to take the following courses:

Required Course:

MAS 2300	INTRODUCTION TO MEXICAN AMERICAN STUDIES
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Student must take at least two of the following courses:

MAS 3310	LATINOS IN THE U.S.	
MAS 3314	THE LATINA EXPERIENCE	
MAS 3343	LATINO/A LITERATURE	
MAS 3346	MEXICAN AMERICAN AND CHICANO/A LITERATURE	
MAS 3321	MEXICAN-AMERICAN HISTORY	3
MAS/SPAN 4318	MEXICAN LITERATURE	
MAS 3377	HISTORY OF MEXICO	3

Electives (Students need to take three of the following courses):

MAS 3312	LATIN AMERICAN CULTURE AND CIVILIZATION	
MAS 3316	LATINO HEALTH ISSUES	
MAS/POLS 3317	MEXICAN POLITICS AND U.S.-MEXICO RELATIONS	
MAS 3319/SOCW 3307	DIVERSE POPULATIONS	
MAS 3321	MEXICAN-AMERICAN HISTORY	
MAS/ANTH 3330	CULTURAL DIVERSITY AND IDENTITY	
MAS/SOCI 3337	RACIAL & ETHNIC GROUPS IN US	
MAS/ANTH 3348	LATINO IMMIGRATION TO THE U.S.	
HIST 3352	MEDIEVAL EUROPE I	3
MAS/HIST 3363	TEXAS TO 1850	
MAS 3364	TEXAS SINCE 1845	
MAS 3375	LATIN AMERICAN HISTORY: ORIGINS THROUGH INDEPENDENCE	
MAS 3376	LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT	
MAS 3377	HISTORY OF MEXICO	
MAS/CRCJ 3380	RACE, CRIME, AND JUSTICE	
MAS/SPAN 4313	TOPICS IN HISPANIC CULTURE	
MAS/SPAN 4315	TOPICS IN CONTEMPORARY LATIN-AMERICAN LITERATURE AND CULTURE, MODERNISM TO THE PRESENT	
MAS/SPAN 4317	CHICANO LITERATURE	
POLS 4317	ETHNIC GROUP POLITICS IN THE UNITED STATES	
MAS/POLS 4319	POLITICS OF MEXICAN AMERICANS	
MAS/SPAN/WOMS 4327	WOMEN IN HISPANIC LITERATURE	
MAS 4350	TOPICS IN MEXICAN AMERICAN STUDIES	
SOCI 4365/WOMS 4392	TOPICS IN SOCIOLOGY *	
MAS 3375	LATIN AMERICAN HISTORY: ORIGINS THROUGH INDEPENDENCE	3
MAS 3376	LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT	3
MAS 4391	CONFERENCE COURSE	
MAS 4393	MEXICAN AMERICAN STUDIES INTERNSHIP	

* Permitted when the topic pertains to Hispanic women.

Either of the two required courses not taken to fulfill the required course segment of the minor may be taken as an elective towards the minor. After consulting with their major departments or programs, students will file a degree plan for the MAS minor at the Center for Mexican American Studies. Courses not listed below may qualify as electives with the approval of the director of the Center for Mexican American Studies.

COURSES

MAS 2300. INTRODUCTION TO MEXICAN AMERICAN STUDIES. 3 Hours.

A multidisciplinary introduction to the Mexican American/Latino experience. Emphasis on history, culture, and contemporary socioeconomic and policy issues. Required for completion of the Mexican American Studies minor. This course satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture.

MAS 3301. INTRODUCTION TO LATINA/HISPANIC FEMINISM. 3 Hours.

This interdisciplinary course explores Latina/Hispanic feminism through the intersection of race, class, gender, and sexuality. This course is organized around the following issues: colonization, immigration, globalization, sexism, health, and violence. Through an analysis of cultural production, politics, socio-economics, literary texts, and feminist methodology, the goal of this course is to develop a robust understanding of how Latina/Hispanic feminist methodologies can be used as tools for social change and social justice. Offered as WOMS 3301, MAS 3301, and DIVR 3301. Credit will only be granted in one department.

MAS 3310. LATINOS IN THE U.S.. 3 Hours.

Examines the Latino experience in the U.S. from an interdisciplinary perspective. Discusses the commonalities and cultural differences among various Latino groups, and focuses on important contemporary Latino issues such as education, employment, family and gender, identity, immigration, and politics. May receive credit for either MAS 3310 or ANTH 3310.

MAS 3312. LATIN AMERICAN CULTURE AND CIVILIZATION. 3 Hours.

An interdisciplinary introduction to Latin American society, history and culture. Offered as MAS 3312 and SPAN 3312; credit will be granted for either MAS or SPAN. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

MAS 3314. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

MAS 3316. LATINO HEALTH ISSUES. 3 Hours.

A cross-cultural examination of issues in Latino health and relevant health practices in the United States through the lenses of social sciences. Themes include the Latino Threat Narrative, acculturation histories and health care status of major Latino ethnic enclaves in the U.S. Listed as SOCI 3316, MAS 3316, and ANTH 3316; may receive credit for either SOCI 3316, MAS 3316, or ANTH 3316.

MAS 3317. MEXICAN POLITICS AND U.S.-MEXICO RELATIONS. 3 Hours.

Current economic and political systems of Mexico and relevant issues in U.S.-Mexico relations. Trade, immigration, economic dependency, energy, contraband, and other topics. Offered as MAS 3317 and POLS 3317; credit will be given in only one department.

MAS 3318. BORDERS, CULTURES, AND CARTELS. 3 Hours.

Critically examines life on the Mexico-U.S. border through ethnography, taking into account the impact of the U.S. war on drugs and the influence of cartels on the lives of those living in the southern border region. Topics may include impacts and influences of drugs and narco life on religion, crime, music, and daily life at the nexus of US-Mexico relations. Listed as ANTH 3318 and MAS 3318; may receive credit for either ANTH 3318 or MAS 3318.

MAS 3319. DIVERSE POPULATIONS. 3 Hours.

Introduction to theoretical, practical, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior. This course is required for admission to the Bachelor of Social Work (BSW) program. Offered as AAST 3317, SOCW 3307 and MAS 3319; credit will be granted in only one department.

MAS 3320. U.S. IMMIGRATION POLICY AND THE AMERICAN DREAM. 3 Hours.

Focus on American identity through the examination of immigration to the United States, past and present, and the evolution of U.S. immigration policy. Topics include U.S. attitudes and policy responses to European, Asian, and Latin American immigration and to the incorporation of the descendants of African slaves and Native Americans. Emphasis on the decline of the melting pot idea and the incorporation of recent immigrants. Offered as MAS 3320, AAST 3319, and SOCW 3320. Credit will be granted only once.

MAS 3321. MEXICAN-AMERICAN HISTORY. 3 Hours.

The role of the Mexican American in the cultural and historical development of the United States with special emphasis on the Southwest. Offered as HIST 3321 & MAS 3321; credit will be granted only once.

MAS 3330. CULTURAL DIVERSITY AND IDENTITY. 3 Hours.

The ways identity is constructed in contemporary societies in an increasingly complex and multicultural world. Ethnic, racial, gender, and class identities. How and when identity is asserted and assigned, and how it can both draw boundaries and forge ties between peoples. Formerly listed as ANTH 2350. Credit cannot be given for both ANTH 2350 and ANTH 3330. Also listed as MAS 3330; credit cannot be granted for both ANTH 3330 and MAS 3330. Offered as AAST 3330 and ANTH 3330; credit will be granted in only one department.

MAS 3337. RACIAL & ETHNIC GROUPS IN US. 3 Hours.

Compares the immigration, acculturation, and adjustment processes of various racial/ethnic groups in the U.S. Examines historical and contemporary discrimination in relation to the social conditions of racial/ethnic minority groups in the U. S. Topics include classical and contemporary theory; individualistic, cultural, and structural arguments about social arrangements; and conflict among majority and minority groups. Offered as AAST 3337, MAS 3337, and SOCI 3337; credit will be granted in only one department. Credit will not be granted for both SOCI 3337 and SOCI 4310 or for MAS 3337 and MAS 4310.

MAS 3343. LATINO/A LITERATURE. 3 Hours.

Explores Latino/a literature of the United States from the nineteenth century through the present as conditioned by the intersections of race, class, gender, sexuality, and regional variation. Texts may include novels, poetry, drama, short fiction, and non-fiction by and about peoples in the U.S. with heritage from South America, Central America, the Caribbean, and Mexico. Offered as ENGL 3343 and MAS 3343; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 2350 or must be concurrently enrolled in ENGL 2350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

MAS 3346. MEXICAN AMERICAN AND CHICANO/A LITERATURE. 3 Hours.

Surveys Mexican American literature from 1848 to the present, including literature of the Chicano movement, focusing on important genres, themes, and historical developments. Offered as ENGL 3346 and MAS 3346; credit will be granted in only one department.

MAS 3347. TOPICS IN MULTICULTURAL AMERICAN LITERATURES. 3 Hours.

Focuses on literature produced within one or more ethnic communities in the U.S. in order to trace a theme or to explore issues such as intersectionality, hybridity/mestizaje, diaspora, or immigrant experiences. Topics may include Afro-Latino poetry, third-world feminist writing, multicultural literature of the Southwest, cultural memory and the Jewish literary tradition, or Asian-American fiction. Offered as ENGL 3347, AAST 3347, and MAS 3347; credit will be granted in only one department, and credit for MAS 3347 will be granted only once. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

MAS 3348. LATINO IMMIGRATION TO THE U.S.. 3 Hours.

Examines Latino immigration from the perspective of sociocultural anthropology. Focuses on how anthropologists have studied Mexican and other Latino immigrants, and discusses contemporary issues such as transnational communities, gender and immigration, citizenship, and immigrants' politics. The course seeks to familiarize students with the largest immigrant community in the U.S. through ethnographic case studies.

MAS 3363. TEXAS TO 1850. 3 Hours.

Multicultural heritage of Texas from pre-Colombian period to early statehood. Cultural contact; social, economic, and political change. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach in Texas schools. Offered as HIST 3345 and MAS 3363; credit will be granted in only one department.

MAS 3364. TEXAS SINCE 1845. 3 Hours.

Texas in the Mexican-American and Civil Wars. Political events and ethnic relations since annexation. Rise of cotton, cattle, and oil industries. Literature and music in the 20th century. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach history in Texas secondary schools. Offered as HIST 3346 and MAS 3364; credit will be granted in only one department.

MAS 3375. LATIN AMERICAN HISTORY: ORIGINS THROUGH INDEPENDENCE. 3 Hours.

Latin America during the colonial period of Spanish and Portuguese rule. Pre-European civilizations; Iberian backgrounds; conquest of indigenous peoples; development of colonial institutions, economic patterns, social structures, and race relations; independence from Europe. Offered as MAS 3375 and HIST 3375; credit will be granted in only one department.

MAS 3376. LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT. 3 Hours.

The evolution of six Latin American nations during the 19th and 20th centuries. The social, economic, and political development of three social groups in three regions: the Europeanized southern cone area of Argentina, Chile, and Uruguay; the indigenous culture of the Andean mountains in Peru; the African background of Brazil and Cuba. Offered as MAS 3376 and HIST 3376; credit will be granted in only one department.

MAS 3377. HISTORY OF MEXICO. 3 Hours.

Mexican history from its pre-Colonial indigenous foundation to the current situation. A social and economic analysis of the major events in Mexican history with emphasis on the 19th and 20th centuries. The major theme in this class is the growth of Mexican nationalism and its relation to region, religion, and ethnicity. Offered as HIST 3377 and MAS 3377; credit will only be granted in one department.

MAS 3380. RACE, CRIME, AND JUSTICE. 3 Hours.

An examination of race in the context of the criminal justice system. Emphasis is on social construction of crime; and the treatment of racial minorities as victims and offenders by law enforcement, courts, and corrections. Offered as CRCJ 3380 and MAS 3380; credit will be granted only once. Offered as AAST 3380 and CRCJ 3380; credit will be granted in only one department.

MAS 4313. TOPICS IN HISPANIC CULTURE. 3 Hours.

Among the topics are Spanish or Latin American music, television, radio, film, and literature as culture. May be repeated for credit as topic changes. Prerequisite: SPAN 3315 with a grade of C or better. Offered as MAS 4313 and SPAN 4313; credit will be given for MAS 4313 or SPAN 4313 but not both in a given semester.

MAS 4315. TOPICS IN CONTEMPORARY LATIN-AMERICAN LITERATURE AND CULTURE, MODERNISM TO THE PRESENT. 3 Hours.

Topics may include: Latin-American literature and culture of Modernism, modern Latin-American literature and culture, or any particular movement, genre, work or author from Modernism to the present. May be repeated for credit when content changes. Offered as MAS 4315 and SPAN 4315; credit will be given for MAS 4315 or SPAN 4315 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

MAS 4317. CHICANO LITERATURE. 3 Hours.

Mexican-American literature, with special attention to its social, cultural, and linguistic background. Offered as MAS 4317 and SPAN 4317; credit will be given for MAS 4317 or SPAN 4317 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

MAS 4318. MEXICAN LITERATURE. 3 Hours.

Studies in Mexican fiction, poetry, drama, and literary essay. Offered as MAS 4318 and SPAN 4318; credit will be given for MAS 4318 or SPAN 4318 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

MAS 4319. POLITICS OF MEXICAN AMERICANS. 3 Hours.

The influence of Mexican-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Chicano Movement, current issues, and relations with other ethnic groups. Offered as MAS 4319 and POLS 4319; credit will be given in only one department.

MAS 4327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Considers women as characters in and writers of Hispanic literature. Includes the analysis of themes, language, and how the writings of women often give voice to lesser-known aspects of culture. Also listed as SPAN 4327. Credit cannot be given for both.

MAS 4350. TOPICS IN MEXICAN AMERICAN STUDIES. 3 Hours.

Subjects of interest in Mexican American and Latino studies. May be repeated for credit when topic changes.

MAS 4360. CONFERENCE COURSE. 3 Hours.

Permission of the director of the Center for Mexican American Studies required. Topics for research or study in designated areas assigned in consultation with course instructor.

MAS 4370. CAPSTONE MEXICAN AMERICAN STUDIES. 3 Hours.

In consultation with the course instructor, students will design a research project or an internship that will integrate their previous course work into a capstone experience in either the applied or the cultural studies stream of the Mexican American Studies minor.

MAS 4391. CONFERENCE COURSE. 3 Hours.

Permission of the director of the Center for Mexican American Studies required. Topics for research or study in designated areas assigned in consultation with course instructor.

MAS 4393. MEXICAN AMERICAN STUDIES INTERNSHIP. 3 Hours.

A combination of field-related experience in the service, community, and/or business sectors with an academic component. Prerequisite: At least two MAS courses and permission of the instructor.

University Studies - Undergraduate Program

UNIVERSITY STUDIES - UNDERGRADUATE PROGRAM

The University Studies degree is designed for students who have investigated different majors and now want to utilize the courses taken to complete a bachelor's degree. For students seeking options beyond the traditional university majors, the program features a breadth of study in a range of academic disciplines that prepares you for a variety of career paths. When you earn a University Studies degree, you will graduate with a broad-based education in a primary and secondary content area with courses taken from various departments.

What can University Studies do for you?

- Utilize coursework already taken to help you graduate faster.
- Provide a foundation to begin your career.
- Re-focus your academic goals.
- Provide options for applying your existing hours toward a degree.
- Hone your skills in important areas such as communication, critical thinking, project management, and problem solving.
- Make you a more appealing candidate to potential employers.

Who should be a University Studies student?

- Former students who want to return to UT Arlington and complete their degrees.
- Transfer students who have more than 60 hours and are unsure about what major to pursue or who want to accelerate their graduation but have numerous hours that don't easily apply to a major.
- UT Arlington students unable meet the academic requirements to enter or graduate from another major.
- **Please Note:** The Bachelor of Science in University Studies is not open to students who have already earned an undergraduate bachelor's degree or who wish to pursue a double or dual major. In addition, students completing a University Studies degree are not able to declare minors. Students seeking a second bachelor's degree should select another major area for the continuation of their studies.

What are the program requirements?

- You must have 60 or more credit hours to be admitted to the program.
- No minimum GPA is required for admittance to the program; however, you must have a 2.0 GPA to graduate.
- To complete the degree, you must satisfy 24 hours from a primary content area and 21 hours from a secondary content area for a total of 45 hours. Hours earned before entering the program can be used to satisfy degree requirements after consulting with a University Studies advisor.
- At least 18 hours of the content areas must be 3000/4000 level courses; 12 hours from the primary content area and 6 hours from the secondary content area.
- Of the total 45 hours, no more than 15 hours may have the same course prefix.
- Courses completed as part of the core curriculum may not be used to satisfy the content area requirements.

You may choose your primary and secondary areas from the following:

- AREA I: Art, Media, Humanities
- AREA II: Business, Community Studies, Social Science
- AREA III: Engineering, Health & Wellness, Physical Science

BACHELOR OF SCIENCE IN UNIVERSITY STUDIES

To earn a Bachelor of Science in University Studies, you must complete 120 credit hours and have a 2.0 cumulative grade-point average upon completing the course requirements. Of the 120 total hours, you must complete at least 36 advanced credit hours (3000- and 4000-level courses). You must also meet the residency requirements (http://web.uta.edu/catalog/content/general/degree_program_requirements.aspx) for completing a degree at UT Arlington.

The three curriculum areas for each University Studies Degree are **Major Content, Core Curriculum, and Electives**.

MAJOR CONTENT

- Comprised of 2 content areas - 24 hours for the primary content area and 21 hours for the secondary content area. The primary and secondary content areas will be selected by the student with a University Studies advisor for a total of 45 hours.
 - **Primary Content Area** - at least 12 of the 24 hours required for must be advanced (3000-4000 level) courses.
 - **Secondary Content Area** - at least 6 of the 21 hours required for must be advanced (3000-4000 level) courses.
- For each content area selected, students may only take courses from the approved department prefixes listed below. Some departments have prerequisites and/or restrictions on the courses that can be taken.

Please note: No more than 15 hours can come from the same department prefix within the 45 hours of the Major Content.

Content Area Choices

AREA I: Art, Media, Humanities

ARCH, ART, BCMN, CHIN, CLAS, COMM, COMS, CTEC, DNCE, ENGL, FREN, GERM, GREK, HIST, HUMA, INTD, JOUR, LATN, LING, MODL, MUSI, PHIL, PORT, PREL, RUSS, SPAN, THEA

AREA II: Business, Community Studies, Social Science

ACCT, ANTH, BCOM, BEEP, BLAW, BSTAT ECON, CRCJ, CRCJ, ECED, EDML, EDUC, FINA, GEOG, INSU INSY, LIST, MANA, MARK, OPMA, POLS, PSYC, REAE, SOCI, SOCW, SOCW, URPA, URPA

AREA III: Engineering, Health & Wellness, Physical Science

BE, BIOL, CE, CHEM, CSE, EE, ENGR, GEOL, HEED, IE, KINE, MAE, MATH, MSE, NE, NURS, PHYS, SCIE,

CORE CURRICULUM

The UT Arlington Core Curriculum is comprised of the following component areas:

- Communication
- Mathematics
- Life and Physical Sciences
- Language, Philosophy and Culture
- Creative Arts
- American History
- Government/Political Science
- Social and Behavioral Sciences
- Foundation Area Option

Click here (<http://catalog.uta.edu/degree requirements/generalcorerequirements/>) for the requirements and approved courses

Core Objectives

- **Critical Thinking Skills** - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Communication Skills** - to include effective development, interpretation and expression of ideas through written, oral and visual communication
- **Empirical and Quantitative Skills** - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- **Teamwork** - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
- **Personal Responsibility** - to include the ability to connect choices, actions and consequences to ethical decision-making
- **Social Responsibility**: to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

ELECTIVES

Students must complete a sufficient number of electives to fulfill the 120 hours required for the degree as well as 36 hours of advanced (3000-4000 level) coursework required. No more than 4 hours of EXSA or DNCA courses can be counted toward the electives. In addition, no more than 15 hours of coursework transferred in as WECM may be used toward electives in the University Studies degree.

BACHELOR OF SCIENCE IN UNIVERSITY STUDIES - TECHNICAL PATHWAYS PROGRAM

This degree enables working professionals to complete the BS in University Studies. Admission is limited to students transferring credit from approved programs at select community college and technical institute partners. A list of approved programs may be found here (<https://www.uta.edu/student-success/university-studies/unis-pathways/>).

Degree requirements are identical to the general BS in University Studies degree, but approved technical credits may be used to satisfy requirements. Approved core curriculum courses may also be applied. Please consult the list of approved technical pathways for more information.

COURSES

UNIV 1000. FIRST YEAR EXPERIENCE. 0 Hours.

A course that orients students to life on UTA's campus and emphasizes engagement beyond the classroom. Students in this course will experience the UTA community by attending campus events and making connections beyond their studies, including interaction with career services, the library and financial literacy services. Students will also be able to identify campus resources to support their wellness from multiple aspects of their lives, both the social and the physical. Each UNIV 1000 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs will work with students on finding their place on campus, learning academic success skills, and developing a degree map.

UNIV 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

UNIV 1302. COLLEGE LEARNING. 3 Hours.

An introduction to the learning strategies and behaviors necessary for academic success in academic programs and in personal and career development. Focus is on self-assessment, self-regulation, and employing cognitive and psychological theories and strategies for self-change. Students complete a self-change project based on theories and models of behavior modification. Gateway Advantage students are required to enroll in this course during their first semester.

UNIV 3335. PEER ACADEMIC LEADER TRAINING. 3 Hours.

Students are trained on the expectations and responsibilities of becoming a Peer Academic Leader (PAL). These students will work as group leaders for UNIV 1131 after successful completion of the course. Students will learn group instruction procedures and requisite guidance material to explain academic regulations and student services, analyze study skills, initiate appropriate study habits, and make appropriate referrals when necessary. Focus on classroom management, learning theory, and lesson plan development. Elective credit; does not count as part of the professional education certification requirements. Prerequisite: Permission of the instructor.

Special Programs & Centers

Center for Distance Education

Distance education students at The University of Texas at Arlington include those who cannot attend a class because of work or family schedules. An estimated 3.5 million Texans did not finish college as a young adult and many find it impossible to make time in their busy lives to complete their educations in traditional classroom settings. Online courses and programs are great for the at-home mom or dad, executives and professionals wanting to advance their careers, soldiers overseas, nurses, teachers, a high school seniors seeking dual credit. During the spring 2011 semester, nearly 6,000 UT Arlington students maintained an Internet-only schedule. Many other students are pursuing their degrees by completing a combination of classroom and online courses. The convenience and availability of on-line courses makes taking at least one-online course per semester an attractive option for more 22,000 of our enrolled students.

Over 700 different Web-based courses, from core courses to degree and certificate programs, are available and are taught by more than 300 of UT Arlington's finest teaching faculty. For complete information about the Center for Distance Education, visit: www.uta.edu/distance (<http://www.uta.edu/distance/>).

Oak Ridge Associated Universities and the Oak Ridge Institute for Science and Education

Oak Ridge Associated Universities (ORAU) is a consortium of colleges and universities, a contractor for the U.S. Department of Energy (DOE), and a strategic partner with Oak Ridge National Laboratories. Located in Oak Ridge, Tennessee, ORAU works with member institutions to help students and faculty gain access to federal research facilities throughout the country; to keep its members informed about fellowship, scholarship, and research opportunities; and to organize research alliances among member institutions.

Undergraduates, graduates, postgraduates, as well as faculty enjoy access to a multitude of opportunities for study and research through the Oak Ridge Institute for Science and Education (ORISE) – a program managed by ORAU for the DOE. Students may participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of under-represented minority students pursuing degrees in science- and engineering-related disciplines. For more information about ORAU and its programs, visit: www.ornl.gov (<http://www.ornl.gov/>).

University of Texas at Arlington Fort Worth

Located in the historic Santa Fe Freight Building, University of Texas at Arlington Fort Worth provides Fort Worth and Tarrant County residents with affordable, state-of-the-art higher education opportunities in a convenient, modern educational facility located in the heart of Fort Worth. UTA Fort Worth is committed to:

- Meeting the life-long continuing needs of working professionals.
- Offering graduate degree programs.
- Providing both for credit and continuing education opportunities.
- The flexibility and vision to capitalize on global opportunities that address economic development needs.

UTA Fort Worth offers programs specifically designed for demanding schedules by offering intersession and accelerated courses and innovative content delivery formats. Many UTA Fort Worth students maintain a full-time job or manage homes and families while pursuing their education.

Degree programs offered at UTA Fort Worth include:

- Social Work (Undergraduate and Graduate)
- Rn-BSN (Undergraduate)
- Executive MBA
- Cohort MBA
- Systems Engineering (Graduate)
- Criminology & Criminal Justice (Graduate)
- Healthcare Administration (Graduate)

As part of The University of Texas at Arlington and the University of Texas System, students of UTA Fort Worth enjoy all the benefits of a state school including affordable tuition rates. For more information, visit: www.uta.edu/fortworth (<http://www.uta.edu/fortworth/>).

The University of Texas at Arlington Research Institute

The UT Arlington Research Institute (UTARI) is a research and development unit of The University of Texas at Arlington specializing in applying cutting-edge technologies to real-world engineering problems. The mission of UTARI is to bridge the gap between academic research and product development

in the areas of advanced manufacturing, biomedical technologies, and robotics. UTARI's Advanced Manufacturing Division research efforts are focused on the areas of automated 3D micro-assembly and packaging technologies; the Robotics Division focuses on a number of robotic applications, including assistive, social and personal, educational, military, and agricultural robotic applications; and the Biomedical Technologies Division focuses on developing clinically relevant devices and systems that can be utilized by health care providers as well as patients to enhance diagnostics, treatment, rehabilitation, and assisted living.

Between internships, competition teams and volunteer opportunities, students have a multitude of ways to get involved at UTARI. Students are able to work with experienced research scientists, using state-of-the-art technology to develop the products of tomorrow. UTARI also assists in building teams to participate in several national and international competitions in the areas of water, ground and aerial vehicles.

UTARI is committed to providing high school and college students with a wide range of opportunities for in-depth exposure to the latest academic research and product development in the areas of Advanced Manufacturing, Biomedical Technologies, and Robotics.

Interns and volunteers work in cooperation with researchers and faculty on projects from inception to completion. Students in the UTARI Internship/Volunteer Program are challenged not only to learn about cutting-edge technologies, but are encouraged to be part of the technology development process itself.

UTARI takes up the challenge to uncover technologies that can change the world, through collaborative efforts conducted between UTA faculty and students, and by building new partners from government, industry and other universities. To learn more about UTARI's commitment to lead the next wave of discovery, visit: www.uta.edu/utari (<http://www.uta.edu/utari/>).

Universities Center of Dallas

The Universities Center at Dallas (UCD) in Downtown offers degrees for residents and working professionals in one convenient location from several of the best universities in DFW, including UT Arlington. Students may complete a bachelor, master's, or doctorate degree during evening and weekend hours. The UCD was the first Multi-Institution Teaching Center (MITC) for higher education in Texas and was established by the Texas Higher Education Coordinating Board to provide access to public higher education at the upper division and graduate levels to citizens who live, work and find it convenient to take their education in downtown Dallas. Currently, UT Arlington offers the master's of Health Care Administration program at the UCD. For more information, visit: www.ucddowntown.org (<http://www.ucddowntown.org/>).

Other Offices

These pages list various centers, offices, and services of direct relevance to study at The University of Texas at Arlington. The listings are not all-inclusive. A comprehensive list of UT Arlington offices is available on the University's A to Z Index (<https://www.uta.edu/contact-us/>) page.

Athletics (p. 1364)

Division of Student Affairs (p. 1365)

University Libraries (p. 1370)

Veterans Upward Bound (p. 1371)

Athletics

Intercollegiate Athletics

C.R. Gilstrap Athletic Center - Box 19079 - 817-272-2261 - www.uta.edu/athletics (<http://www.uta.edu/athletics/>)

All men's and women's intercollegiate teams representing UT Arlington are members of the Southland Conference. Other conference members are University of Central Arkansas, Lamar University, McNeese State University, Nicholls State University, University of Louisiana-Monroe, Northwestern State University, Sam Houston State University, Southeastern Louisiana University, Stephen F. Austin State University, Texas A&M University-Corpus Christi, The University of Texas at San Antonio and Texas State University. All UT Arlington athletic teams compete in the highest division (Division I) of the National Collegiate Athletic Association.

- **Men's Athletics:** Men's intercollegiate teams are fielded in baseball, basketball, cross country, golf, tennis, and indoor and outdoor track and field. Individuals interested in participating in the UT Arlington athletic programs should contact the Athletic Office in the Gilstrap Center, 1309 W. Mitchell St., 817-272-2261.
- **Women's Athletics:** Women's intercollegiate teams are fielded in basketball, cross country, softball, tennis, indoor and outdoor track and field, and volleyball. Individuals wanting to participate should contact the Athletic Office in the Gilstrap Center, 1309 W. Mitchell St., 817-272-2261.

UT Arlington students with valid ID cards are admitted without charge to all regular season home athletic contests. All home men's and women's track and field meets are held at Maverick Stadium. Men's and women's home basketball games and women's home volleyball games are played in Texas Hall. Baseball games are played at Clay Gould Ballpark and softball games are played at Allan Saxe Field. Men's and women's tennis matches are played at the Tennis Center.

Division of Student Affairs

Apartment and Residence Life

Arlington Hall Breezeway • Box 19370 • 817-272-2926 • www.uta.edu/housing (<http://www.uta.edu/housing/>)

Living on campus is a great way to get connected, meet friends, and be involved. To that end, University Housing offers single and double occupancy options available in residence halls or apartments. In addition, Learning Communities and Freshman Interest Groups are available to enhance the connection between student's academic and social pursuits. All our communities are designed to meet the needs of today's students and provide an environment that supports academic growth and community respect by offering opportunities for leadership, involvement, and connections for residents that live on campus.

The University is entitled to conduct criminal background checks on students applying for on-campus housing. Students will be notified if they are denied housing due to information gathered from a criminal background check per Texas Government Code, Section 411.094.

Apply for University Housing at www.uta.edu/housing.

Campus Recreation

500 W. Nedderman Drive • 817-272-3277 • www.uta.edu/campusrec (<http://www.uta.edu/campusrec/>)

The Department of Campus Recreation provides a diverse span of recreational and leisure opportunities for students, faculty and staff through several components including Informal Recreation, Intramural Sports, Adaptive Recreation, Fitness & Wellness, Sport Clubs, Aquatics and Spirit Groups. The Campus Recreation facilities include the MAC, Fields Complex, and The Green at College Park.

The MAC—Maverick Activities Center is a state-of-the-art, \$34.5 million recreation facility where students, faculty, staff, and alumni can meet, relax, workout, and continue to be engaged in UT Arlington's campus life. Some of the amenities include a 20,000 square foot weight and fitness room (90+ pieces of cardio equipment, 4 circuit training units & a free weight area), 5 indoor basketball courts, 8 volleyball courts, a climbing wall, game room, computer lab, Market at the MAC, indoor soccer field and more.

SPIRIT GROUPS

500 W. Nedderman Drive • 817-272-3277 • www.uta.edu/spirit (<http://www.uta.edu/spirit/>)

UTA Spirit Groups consist of the cheerleading squad, dance team, mascot, and the Maverick Wranglers. Together, the groups provide support for UTA athletic teams and lead the University community in spirit. These athletes represent UT Arlington at the collegiate national championships and host camps and clinics throughout the summer.

The Lockheed Career Development Center

216 University Administration Building, 701 S. Nedderman Drive • Box 19695 • 817-272-2932 • www.uta.edu/careers (<http://www.uta.edu/careers/>)

The Career Development Center empowers students and alumni for professional success by helping them discover and plan for possible career paths, connecting them with employers and professional opportunities, preparing them to present themselves well to compete for the opportunities they seek, and helping them develop the skills that will allow them to succeed in their professional goals now and in the future.

The Career Development Center maintains the online job database, HIREAMAV, powered by Handshake, which is for those seeking full-time, part-time, and internship opportunities, and over 150 employers attend the bi-annual Job Fair hosted by the Career Development Center each fall and spring.

The Center for Students in Recovery

B170 Lower Level, University Center • Box 19355 • 817-272-2354 • www.uta.edu/csr (<http://www.uta.edu/csr/>)

The Center for Students in Recovery (CSR) provides a safe, healthy, and welcoming environment for students to cultivate life skills and celebrate recovery successes. Members enjoy access to scholarships, educational and volunteer opportunities, and a strong network of supportive peers. The recovery coaching and peer-based recovery mentorship help students manage challenging situations with agility and grace. To join CSR, a student must be admitted to The University of Texas at Arlington and committed to living clean and sober.

Counseling and Psychological Services

Counseling and Psychological Services: 303 Ransom Hall • Box 19156 • 817-272-3671 • www.uta.edu/caps (<http://www.uta.edu/caps/>)

Counseling and Psychiatric Services: 605 S. West Street • Box 19329 • 817-272-2771 or 817-272-0429 • www.uta.edu/caps (<http://www.uta.edu/caps/>)

Counseling and Psychological Services (CAPS) is a department of Health Services. Services are available to help students increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives. Individual, couples and group counseling and psychotherapy are provided by an interdisciplinary team of licensed mental health providers including psychologists, counselors, social workers, and

psychological associates. Psychological assessments are conducted for ADHD and learning disorders. Psychiatrists and psychiatric nurse practitioners provide diagnostic assessment and ongoing treatment of psychiatric conditions including medication management and brief psychotherapy. An integral part of the CAPS mission is to provide outreach to the campus community in the form of workshops and training sessions. CAPS staff is also available to provide consultation to concerned students, faculty and staff.

Services are available to campus based students. CAPS has resources online that are available to all students including those enrolled in distance education/online programs. Online resources include an online mental health screening, links to external suicide prevention websites and links to external self-help information.

Fraternity and Sorority Life

B160 Lower Level, University Center • Box 19348 • 817-272-9234 • www.uta.edu/fsl

Fraternity and Sorority Life at UT Arlington prepares young men and women to be contributing members of society. Fraternity and sorority members have a variety of opportunities on and off campus geared toward the enhancement of their educational experience and contributions toward their personal growth. Most importantly, fraternities and sororities focus on the development of four pillars; Brotherhood/Sisterhood, Philanthropy/Community Service, Scholarship and Leadership. The fraternity and sorority community is comprised of four governing bodies representing over 30 fraternities and sororities and two affiliated honorary organizations, Order of Omega and Gamma Sigma Alpha.

Health Services

605 South West Street • Box 19329 • 817-272-2771 • www.uta.edu/healthservices (<http://www.uta.edu/healthservices/>)

Health Services is an ambulatory health care facility fully accredited by the Accreditation Association for Ambulatory Health Care. Health Services' mission is to support academic success by providing excellent health care and promoting wellness. It provides currently enrolled UTA students with quality, accessible, comprehensive, and cost-effective primary health care.

In addition to a general medicine clinic, Health Services provides a pharmacy, laboratory, radiology department, counseling and psychological services, women's health clinic, immunization clinic, and a health promotion and substance abuse prevention office.

Medical Emergencies

For true medical emergencies on campus, or when the seriousness of an individual's condition is uncertain, call the University Police at 817-272-3003. The police will dispatch officers to the site, and call an ambulance, if needed. Officers are trained in CPR and first aid, and can stabilize the individual until an ambulance arrives. This procedure should be followed even when Health Services is open. If individuals experiencing a medical emergency are off-campus, call 911.

The Follett Leadership Center

B160 Lower Level, University Center • Box 19340 • 817-272-9220 • www.uta.edu/leadership

The Leadership Center strives to develop innovative and collaborative leaders who actively apply their leadership knowledge and skills to improve their local and global communities. The Leadership Center is home to the Alternative Breaks Program, UTA Volunteers, the Leadership Honors Program, FLOC (Freshmen Leaders on Campus) and the Maverick Mentors, Peer Mentoring program. Some other programs and events include the fall leadership retreat, Certified Leader Institutes, academic courses and Leadership Studies Minor.

LGBTQA (Lesbian, Gay, Bisexual, Transgender, Queer, Ally) Program

B150 Lower Level, University Center • Box 19353 • 817-272-2099 • www.uta.edu/lgbtqa (<http://www.uta.edu/lgbtqa/>)

The LGBTQA program is an initiative hosted by the Division of Student Affairs which is a part of the Multicultural Affairs (<http://www.uta.edu/multicultural/>) office. The program provides quality events and support services dedicated to cultivating a positive campus environment for LGBTQA students, allies, and others with gender identity questions and concerns.

The Movin' Mavs and Lady Mavs Wheelchair Basketball Teams

801 W. Greek Row • 817-272-3410 • www.uta.edu/movinmavs (<http://www.uta.edu/movinmavs/>)

UTA's Movin' Mavs wheelchair basketball team has won eight national championships. The team has a rich history of leading the nation in intercollegiate wheelchair basketball, exemplified by offering full athletic scholarships to team players, by players consistently being named to the First-Team All-America squads, and by participation in the Paralympics. Visit the website to keep up with the Movin' Mavs. The Lady Movin' Mavs began in 2013 with five players and has become one of the most dominant teams in the NWBA Intercollegiate Division with a first place finish in the 2016 and 2018 national championship. Several of the Lady Movin' Mavs have been selected for USA National Team Tryouts, College Division Post-Season honors and All Academic Selections.

Multicultural Affairs

B150 Lower Level, University Center • Box 19353 • 817-272-2099 • www.uta.edu/multicultural (<http://www.uta.edu/multicultural/>)

Multicultural Affairs offers a variety of programs that celebrate the rich diversity found at UT Arlington. Programs also help to educate the campus about current social justice issues. The staff provides activities that recognize diversity on multiple levels, including — but not limited to — race and ethnicity, gender, sexual orientation, disability, and religion/spirituality. Students can get involved with the Multicultural Mavericks (Hispanic Heritage, Asian Heritage, and Black History Months), the Women in Leadership Program and Women's History Month, the Leaders Educating About Diversity and the Maversity social justice workshop series, the Ubuntu Social Justice Conference, the Men & Masculinities Series, Diversity Week, and/or the LGBTQA program.

New Maverick Orientation

B160 Lower Level, University Center • Box 19348 • 817-272-9234 • www.uta.edu/orientation (<http://www.uta.edu/orientation/>)

The University of Texas at Arlington is dedicated to the retention and overall success of our students, by promoting academic excellence and fostering lifelong learning. New Maverick Orientation offers a variety of programs, both on campus and online, for new freshmen, transfer students, veterans, international students, and graduate students. At orientation, new students gain valuable information about the services, resources, activities, and organizations that will enhance their success at UTA. Additionally, the connections students make at orientation can develop into meaningful relationships and networks.

Off-Campus Mavericks

500 W. Nedderman Drive, Suite 100AA • Box 19360 • 817-272-3213 • www.uta.edu/offcampus (<http://www.uta.edu/offcampus/>)

Off-Campus Mavericks provides services and programming to support commuter students at UTA. Commuter students are invited to visit the Off-Campus Maverick Center in the Maverick Activities Center (MAC) every Monday for a free cup of coffee, or to participate in our Commuter Appreciation Days and the Commuter Engagement Incentive Program. The goal of Off-Campus Mavericks is to help commuter students enjoy an enriching college experience, which features active participation in campus life in addition to academic success.

The Office for Students with Disabilities

102 University Hall • Box 19510 • 817-272-3364 • www.uta.edu/disability (<http://www.uta.edu/disability/>)

The Office for Students with Disabilities (OSD) assists students with disabilities to participate in the full spectrum of college life. OSD serves students using exemplary practices in assistive technology, disability counseling, and academic accommodations such as testing accommodations, sign language interpreters, volunteer note-takers, e-text, and auxiliary aids.

The Parent & Family Center

B150 Lower Level, University Center • Box 19363 • 817-272-2128 • www.uta.edu/parents (<http://www.uta.edu/parents/>)

Parents play a very valuable role in keeping the lines of communication open between students and various key offices on campus. The center helps families and students understand institutional processes so they can concentrate on academic, social, and overall success. The Parent & Family Center is available Monday through Friday during business hours to answer any questions parents or family members may have.

Relationship Violence and Sexual Assault Prevention Program

B170 Lower Level, University Center • Box 19355 • 817-272-2354 • www.uta.edu/rvsp (<http://www.uta.edu/rvsp/>)

The Relationship Violence and Sexual Assault Prevention (RVSP) program promotes education and awareness of intimate partner violence, sexual assault, harassment, and stalking on campus. An advocate is available to provide advocacy, support, and referral services to students impacted by sexual and/or relationship violence. Anonymous forms to report an incident are available online. Additionally, the RVSP program hosts a number of training opportunities for faculty, staff, and students on response and advocacy. Educational outreach programs highlighting the impact of violence include but are not limited to the: Clothesline Project, Silent Witness Project, and the Red Flag Campaign. These programs are available to any student group or organization, as are various programs on: healthy relationships, how to intervene and support your peers, and information on community resources. Volunteer positions and internships are available for students wanting to take a stand to end violence. A victim of sexual and/or relationship violence that has occurred on campus should notify the UTA Police Department immediately at 817-272-3003. The RVSP Coordinator may assist in: discussing available options, resource connection, safety planning, reporting the incident to the Police Department, and can be contacted Monday-Friday, 8 a.m.-5 p.m., at 817-272-3506.

Student Organizations

Lower Level, University Center • Box 19348 • 817-272-2963 • www.uta.edu/studentorganizations (<https://www.uta.edu/studentorganizations/>)

Student Organizations serves as a focal point of out-of-classroom involvement and engagement at UTA. Participation in co-curricular activities helps students gain valuable skills and experiences that complement academic work, enhances leadership, and enriches the collegiate experience.

There are over 300 registered student organizations operating on campus. Groups are formed and governed by their members around a variety of common causes including academic/professional, sport/recreational, honorary, cultural, spiritual, and a variety of special interests. Don't see exactly what you're looking for? Make your way down to our offices and learn how you can form your own. Visit mavorgs.uta.edu for more information on campus organizations. Student Organizations is also where student organizations obtain approval to reserve space on campus, post flyers and publicity on campus and register their events. Organizations can receive consultation and advice on campus policy and operational matters.

Student Conduct

B170 Lower Level, University Center • Box 19355 • 817-272-2354 • www.uta.edu/conduct (<http://www.uta.edu/conduct/>)

The Office of Student Conduct is responsible for the implementation of the Student Conduct & Discipline Handbook of Operating Procedures and the Regents' Rules and Regulations at the University of Texas at Arlington. The University of Texas at Arlington Handbook of Operating Procedures (HOP) contains official policies and procedures for the governance of UT Arlington. The Honor Code upholds UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. Please see the University Requirements & Policies tab within the University Catalog for information on Student Conduct and Academic Integrity.

We strive to uphold and support standards of personal honesty and integrity for all students consistent with the goals of a community of scholars and students seeking knowledge and responsibility. Consistent with this goal, the office is engaged in the task of educating the community regarding standards for student behavior and procedures used in the resolution of student disciplinary allegations. Students at the University of Texas at Arlington are encouraged to engage their campus in a positive way. By staying educated on policy and procedure, students can ensure a healthy and productive education at the University of Texas at Arlington. The Office of Student Conduct sponsors several large scale programs across campus, smaller residence life focused programming efforts and training for students, staff and faculty throughout the year.

Student Governance

B150, Lower Level, E. H. Hereford University Center • Box 19350 • 817-272-0556 • www.uta.edu/studentgovernance (<http://www.uta.edu/studentgovernance/>)

Student Governance is dedicated to providing a medium for students to voice their concerns and opinions and hosts of UTA. By serving as the voice of the student body, Student Government and the Graduate Student Senate provide student representation on various university committees and have the opportunity to represent the student perspective on a variety of campus issues.

The UTA Ambassadors serve as the official student hosts of UT Arlington, under the direction of Mr. and Ms. UTA. The group maintains and promotes new and old campus traditions; increases awareness of UT Arlington's services, programs, and activities to students and the surrounding community; and establishes and strengthens pride and passion for UT Arlington on and off-campus. The UTA Ambassadors are involved in the planning of the Maverick Speakers Series, the Maverick of the Month recognition program, the UTA Spirit Horse initiative, and Spirit Week.

Student Government is UTA's elected representative body for undergraduate and graduate students. Members work to implement change on campus, solicit concerns, and propose resolutions to solve problems. The group serves as the major link between students and the administration. In addition, the organization sponsors voter registration drives, supports the on-campus early voting polling site, and hosts various programs to solicit student feedback on a variety of campus issues.

The Graduate Student Senate (GSS) understands the needs and concerns of graduate students here at UTA. The Graduate Student Senate passes resolutions to improve graduate student life on campus, hosts guest speakers to discuss current issues, creates ad-hoc committees to research potential changes in University policy that may impact graduate students, and assists with Graduate Forums, the ACES research symposium, and the Graduate School Showcase.

Student Publications

Lower Level, E.H. Hereford University Center • Box 19038 • 817-272-3661 • www.uta.edu/studentpubs (<http://www.uta.edu/studentpubs/>) and www.theshorthorn.com (<http://www.theshorthorn.com/>)

The Student Publications department employs more than 100 student journalists, advertising sales representatives, marketing assistants, web developers, and office assistants in jobs that help them prepare for their careers. The department publishes *The Shorthorn*, the Maverick Connection phone directory and the Maverick Housing Guide. It also houses a full-service creative services agency. The department's mission is to provide a spectrum of hands-on communication training to students while providing a valuable news service to the UTA community and an open forum for free expression.

The Shorthorn is UTA's oldest and most honored source of news and information. Students created the award-winning student newspaper in 1919. Today, *The Shorthorn* delivers news as it happens through its website and social media channels. It also provides a daily summary of pertinent headlines emailed to you with links that will work on any mobile device or computer. The print edition is published every Wednesday. *The Shorthorn* website also contains interactive features, videos, and photo galleries of student events and activities, and lets you submit your own photos to the newspaper. *Shorthorn* discussions also allow you to express your opinions on campus issues in an open forum.

Student Activities

B160 Lower Level, University Center · Box 19348 · 817-272-2963 · www.uta.edu/universityevents (<http://www.uta.edu/universityevents/>)

University Events collaborates with departments and organizations to produce large-scale campus events that engage students, staff, and faculty, while strengthening students' ties to the university and community. University Events is involved in the planning of Maverick Stampede (Welcome Week), the MavsMeet AfterParty, Homecoming, the Spring Concert, and BlockParty. University Events is also home to the UTA Ambassadors and The Big Event.

The university's student programming board, EXCEL Campus Activities, plans and implements social, recreational, cultural and educational events. From large to small, throughout the year there are a variety of events and traditions that make the university an enriching place to make the most of your time. These diverse programs become an essential part of the culture on campus because they are student led and university supported. These events and activities are open to all students; you can even get involved by becoming a member of EXCEL.

The Big Event is an organization of service-minded students whose purpose is to plan and implement a day of community service and outreach involving UTA students, faculty, staff and community members in an effort to engage, educate, and mobilize volunteers throughout the community. Numerous community-based and non-profit organizations/agencies benefit from the volunteer efforts, as well as local residents. Enthusiastic volunteers participate in various service project sites such as painting, landscaping, youth development workshops, and facility cleanup all on one BIG day.

Veteran Programs

www.uta.edu/vac (<http://www.uta.edu/vac/>)

Veterans and their families are valued and vital components of the UTA community. The University serves more than 3,000 student veterans and dependents of military veterans working to earn college degrees. We are constantly looking for ways to ease their transition to college, and we provide a full range of services to help them adapt and succeed in their academic pursuits. From Veterans Education Counselors working with the Veterans Commission, to career development, to financial aid, we've got veterans covered. For more information, visit uta.edu/vac (<https://www.uta.edu/vac/>). Veteran's Assistance Center is the hub for coordinating all veteran service departments at UTA, serving as a liaison and advocate for military connected students. Available to answer questions, and assist in obstacle navigation, the Executive Director is knowledgeable about UTA student support services and can connect military connected students with the appropriate departments best suited to assist with their individual needs.

University Libraries

The University of Texas at Arlington Libraries is a model 21st century urban academic library dedicated to elevating the research and scholarship of our diverse communities. The Library offers robust virtual and in-person services, collections, and programming via its Central Library, Architecture and Fine Arts Library, Science and Engineering Library, and Library Collection Depository, as well as its website and social media channels. Collections include current books, journals, and electronic resources, as well as unique historical manuscripts, maps, and photographs.

Central Library is open 24 hours and contains numerous study spaces for quiet or collaborative study. Meet a research coach or tutor in the Academic Plaza, create something new in the FabLab, or get tech help from our in-house OIT helpdesk. Our Special Collections on the 6th floor holds more than 1,500 archives and manuscript collections, primarily in Texas history, cartography, and the U.S.-Mexico War of 1846-48. When you need a break, visit the Market or Einstein Bros. Bagels for a snack.

Follow us on Facebook (<http://facebook.com/utalibraries/>), Twitter (<http://twitter.com/utalibraries/>), Instagram (<http://instagram.com/utalibraries/>), and YouTube (<https://www.youtube.com/channel/UCVGeKT4ynuNN-jUOMM1300A/>)!

Veterans Upward Bound

UT Arlington Veterans Upward Bound is a free program for qualified veterans, designed to motivate and assist veterans in the development of academic and other requisite skills necessary for acceptance and success in a program of post-secondary education. The program provides assessment and enhancement of basic skills through counseling, mentoring, tutoring and academic instruction in the core subject areas of mathematics through pre-calculus, laboratory science, foreign language, composition and literature. The primary goal of the program is to increase the rate at which participants enroll in and complete post-secondary education programs.

In our Learning Center, participants receive individualized tutoring from an instructor who has identified each participant's own strengths and needs. Participants advance at their own pace, are able to refresh any forgotten skills, and will be motivated toward academic success in higher education. Our veterans education counselors provide answers to questions regarding college enrollment processes and serve as a liaison between participants and representatives in the academic unit they wish to attend.

Resources and services available include:

- Basic skills development to help veterans successfully complete a high school equivalency program and gain admission to college education programs.
- Short-term remedial or refresher classes for high school graduates that have put off pursuing a college education.
- Assistance with applications to the college or university of choice.
- Assistance with applying for financial aid.
- Academic advice and assistance.
- Career Counseling.
- Personalized Counseling.
- Assistance in getting veterans services from other available resources.
- Exposure to cultural events, academic programs, and other educational activities.

For additional information on these and other resources and services, please visit: Veterans Upward Bound (<http://www.uta.edu/veteransub/>).

Faculty Listing

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L (p.) - M (p.) - N (p.) - O (p.) - P (p.) - Q (p.) - R (p.) - S (p.) - T (p.) - U (p.) - V (p.) -
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Accounting (ACCT)

COURSES

ACCT 2301. PRINCIPLES OF ACCOUNTING I. 3 Hours. (TCCN = ACCT 2301)

The accounting process and its informational output. Financial accounting concepts, basic procedures, and the resulting reports. Recognition and creation of accounting information as bases for decisions. An accounting lab is required. The grade for this course requires the completion of both the lecture component and the accounting lab. Prerequisite: 30 credit hours or permission of the department.

ACCT 2302. PRINCIPLES OF ACCOUNTING II. 3 Hours. (TCCN = ACCT 2302)

A study of managerial accounting concepts and techniques. Topics include cost behavior, budgeting, responsibility accounting, and product costing. An accounting lab is required. The grade for this course requires the completion of both the lecture component and the accounting lab. Prerequisite: ACCT 2301 with a grade of C or higher.

ACCT 2303. ACCOUNTING AND COMPLIANCE OF NON-PROFIT ORGANIZATIONS. 3 Hours.

The primary objective of this course is to help students understand accounting theories and compliance issues that relate to non-profit and philanthropic organizations. The course introduces students to general accounting theories, budgeting, internal control, fraud, and compliance issues of non-profit organizations. Restriction: Students enrolled in this course cannot be accounting majors. Prerequisite: Students enrolled in this course cannot be accounting majors, 30 credit hours.

ACCT 3133. PROFESSIONALISM IN ACCOUNTING. 1 Hour.

Topics to engender a stronger sense of professionalism: business and social etiquette, self-assessment, professional deportment, networking, effective communication skills, and dressing professionally. Topics primarily presented by accomplished professionals from public accounting, industry, and government. Prerequisites: Accounting major and ACCT 3311, can be taken concurrently.

ACCT 3303. INTRODUCTION TO ACCOUNTING INFORMATION SYSTEMS. 3 Hours.

The structure of contemporary accounting systems with emphasis on controls, auditing, reporting, and efficient operation. Prerequisite: ACCT 2302 and INSY 2303 with grades of C or higher.

ACCT 3309. ACCOUNTING FOR MANAGERS. 3 Hours.

Planning, controlling, decision making, and performance evaluation. Uses a variety of teaching techniques (e.g., problems, cases, and projects) and is open only to non-accounting majors. Credit will not be given for both this course and ACCT 4302. Prerequisite: ACCT 2302 with a grade of C or higher.

ACCT 3311. FINANCIAL ACCOUNTING I. 3 Hours.

The environment of accounting, development of standards, basic theory, financial statements, worksheets, annuities and present value, receivables, inventories, liabilities, plant assets, depreciation and depletion, and intangible assets. Prerequisite: ACCT 2301 with a grade of C or higher and successful completion of basic accounting skills exam. (See the departmental website for details about the exam.).

ACCT 3312. FINANCIAL ACCOUNTING II. 3 Hours.

Stockholders' equity, earnings per share, investments in bonds and stocks, equity method, revenue recognition, accounting changes, error analysis, income taxes, leases, and cash flows. Prerequisite: ACCT 3311 with a grade of C or higher.

ACCT 3315. PRINCIPLES OF FEDERAL INCOME TAX. 3 Hours.

A study of general federal income tax principles such as income, deductions, losses, and property transactions. The principles of individual taxation will be covered as well as an overview of tax considerations for entities such as corporations and partnerships. Prerequisite: Accounting major with junior standing and ACCT 3311 with a grade of C or higher.

ACCT 4191. STUDIES IN ACCOUNTING. 1 Hour.

Advanced studies, on an individual basis, in the various fields of accounting. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

ACCT 4291. STUDIES IN ACCOUNTING. 2 Hours.

Advanced studies, on an individual basis, in the various fields of accounting. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

ACCT 4302. COST ANALYSIS AND DECISION MAKING. 3 Hours.

This course will cover advanced cost analysis concepts including Cost-Volume-Profit analysis, cost-benefit analysis, product and service costing, pricing and budgeting. Class discussions will integrate concepts and applications of cost analysis with corporate practice through use of analytical problem solving, real world examples and case analyses. Prerequisite: Accounting major with 60 credit hours and ACCT 3303 with a grade of C or higher.

ACCT 4304. MANAGEMENT PLANNING AND CONTROL. 3 Hours.

This course covers intermediate and advanced concepts in decentralization and management control, including budgetary control, performance measurement and incentive structures, and transfer pricing. Class discussions will integrate concepts and applications of control with corporate practice through use of analytical problem solving, real world examples and case analyses. Prerequisite: Accounting major with junior standing and ACCT 4302 with a grade of C or higher.

ACCT 4318. AUDITING. 3 Hours.

Principles, concepts, and techniques which are appropriate to the acquisition, evaluation, and documentation of audit evidence. Internal control concepts, financial compliance, and operational auditing. Prerequisite: Accounting major with junior standing and ACCT 3303 and ACCT 3312 with grades of C or higher.

ACCT 4325. GOVERNMENTAL ACCOUNTING. 3 Hours.

Budgeting, accounting, and financial reporting for local governmental units, hospitals, voluntary health and welfare organizations, and other nonprofit entities. Prerequisite: Accounting major with junior standing and ACCT 3312 with a grade of C or higher.

ACCT 4331. SEMINAR IN ACCOUNTING. 3 Hours.

Readings and discussions of special topics in accounting. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

ACCT 4332. INTERNAL AUDITING I. 3 Hours.

A comprehensive study of internal auditing standards, ethics, concepts, audit techniques, and reporting practices. Prerequisite: Accounting major with junior standing and ACCT 3303 with a grade of C or higher or consent of the instructor.

ACCT 4333. INTERNAL AUDITING II. 3 Hours.

An advance study of operational, organizational, and quality control audits. Topics will include operational audit methodology, audits of administrative and support services, audits of line functions, and audits of special areas. Prerequisite: Accounting major with junior standing and ACCT 4332 with a grade of C or higher and a 3.0 GPA.

ACCT 4391. STUDIES IN ACCOUNTING. 3 Hours.

Advanced studies, on an individual basis, in the various fields of accounting. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

ACCT 4393. ACCOUNTING INTERNSHIP. 3 Hours.

Practical training in accounting. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. Prerequisite: Accounting major with junior standing and consent of department internship advisor.

ACCT 5133. PROFESSIONALISM IN ACCOUNTING. 1 Hour.

Topics to engender a stronger sense of professionalism: business and social etiquette, self-assessment, professional deportment, networking, effective communication skills, and dressing professionally. Topics primarily presented by accomplished professionals from public accounting, industry, and government. Prerequisite: ACCT 5311 with a grade of C or higher or acceptance in the PPIA .

ACCT 5199. GRADUATE ACCOUNTING INTERNSHIP. 1 Hour.

Practical training in accounting. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum twelve accounting semester hours beyond principles completed or with approval of the internship coordinator.

ACCT 5299. GRADUATE ACCOUNTING INTERNSHIP. 2 Hours.

Practical training in accounting. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum twelve accounting semester hours beyond principles completed or with approval of the internship coordinator.

ACCT 5301. ACCOUNTING ANALYSIS I. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of financial accounting.

ACCT 5302. ACCOUNTING ANALYSIS II. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of managerial accounting. Prerequisite: ACCT 5301 with a grade of C or higher.

ACCT 5307. MEASUREMENT AND ANALYSIS FOR BUSINESS DECISION-MAKING. 3 Hours.

This course provides students with a comprehensive overview of financial reporting, analysis and measurement issues in the context of business decision making. Student will gain an understanding of financial statements and their underlying measurements. They will then use this understanding to conduct analyses using financial ratios. Students will then explore the role of cost measurements, allocations, etc. in determining the performance measures of parts of the organization and their inter-relationship with both choosing and evaluating strategies in various business contexts. They will cover issues such as matching strategies to performance measures, choosing and evaluating key performance indicators and balanced scorecards, etc. Prerequisite: Must be a major in the MS in Engineering Management or MS in Business Analytics. Consent of Accounting Department required.

ACCT 5311. FINANCIAL ACCOUNTING I. 3 Hours.

Examination of financial accounting process, problems encountered in preparation of financial statements, and concepts and principles used to resolve these problems. Prerequisite: ACCT 5301 with a grade of C or higher.

ACCT 5312. FINANCIAL ACCOUNTING II. 3 Hours.

Study of additional problems encountered in preparation of financial statements. Prerequisite: ACCT 5311 with a grade of C or higher.

ACCT 5313. SOFTWARE TOOLS. 3 Hours.

An in-depth study of software that would likely be used by accountants and other business people. May include spreadsheet, database, and accounting software, tax software, and other types of tools such as XBRL and XML. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5314. PRINCIPLES OF FEDERAL INCOME TAX. 3 Hours.

A study of general federal income tax principles such as income, deductions, losses and property transactions. The principles of individual taxation will be covered as well as an overview of tax considerations for entities such as corporations and partnerships. Prerequisite: ACCT 5301 with a grade of C or higher.

ACCT 5315. ACCOUNTING SYSTEMS ANALYSIS. 3 Hours.

Analysis and design of business information processes. Includes coverage of control concepts, audit trails, and the uses of information technology. Emphasis on the role of accounting in collecting, storing, and communicating information for management planning and control. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5316. AUDITING CONCEPTS AND PRACTICES. 3 Hours.

Concentrates on practice of professional accounting and auditing. Emphasizes decision making in a variety of unstructured situations where decisions demand a grasp of purpose, method, and judgment for their resolution. May not be taken for credit by students who have received credit for a course in auditing. Prerequisite: ACCT 5312 and ACCT 5315 with grades of C or higher.

ACCT 5317. COST ANALYSIS AND DECISION MAKING. 3 Hours.

The course will cover advanced cost analysis concepts including Cost-Volume-Profit analysis, cost-benefit analysis, product and service costing, pricing and budgeting. Class discussions will integrate concepts and applications of cost analysis with corporate practice through use of analytical problem solving, real world examples and case analyses. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5318. STUDIES IN AUDITING. 3 Hours.

A critical analysis of advanced topics in both auditing theory and professional practice. Emphasis on: development of auditing theory, generally accepted auditing standards, professional responsibilities, auditing EDP, SEC practice and reporting, cases in audit decision making, and analyses of emerging issues and contemporary problems in auditing. Prerequisite: ACCT 5316 with a grade of C or higher.

ACCT 5319. FINANCIAL ACCOUNTING III. 3 Hours.

Accounting for business combinations, preparation of consolidated financial statements, multinational operations, partnerships, and estates and trusts. Prerequisite: ACCT 5312 with a grade of C or higher.

ACCT 5320. GOVERNMENTAL AND NONPROFIT ACCOUNTING. 3 Hours.

Budgeting, accounting and financial reporting, managerial control, and auditing considerations of governmental and nonprofit entities. Prerequisite: ACCT 5312 with a grade of C or higher.

ACCT 5321. RESEARCH IN ACCOUNTING ISSUES. 3 Hours.

Designed to improve student's ability to research complex areas in accounting and to sharpen understanding and application of accounting concepts and principles. Case studies and problems considered and analyzed. Prerequisite: Excel certification and ACCT 5312 with a grade of C or better.

ACCT 5322. ACCOUNTING FOR MANAGEMENT PLANNING AND CONTROL. 3 Hours.

This course covers intermediate and advanced concepts in decentralization and management control, including budgetary control, performance measurement and incentive structures, and transfer pricing. Class discussions will integrate concepts and applications of control with corporate practice through use of analytical problem solving, real world examples and case analyses. May not be taken for credit by students who previously received credit for ACCT 4302 (before Fall 2020) or ACCT 4304 (after Fall 2020) or equivalent. Prerequisite: ACCT 5317 with grade of C or higher.

ACCT 5324. FINANCIAL STATEMENT ANALYSIS. 3 Hours.

A study of the basic financial statements and their use by managers, investors, and creditors. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5327. CONTEMPORARY ISSUES IN ACCOUNTING THEORY. 3 Hours.

Designed to familiarize students with significant problems currently facing the accounting profession, to examine in depth various solutions proposed by accounting scholars and others, and to strengthen student understanding of today's critical issues in accounting theory. Prerequisite: ACCT 5312 with a grade of C or higher.

ACCT 5329. CONTEMPORARY ISSUES IN ACCOUNTING INFORMATION SYSTEMS. 3 Hours.

An exploration of current topics critical to accounting information systems. The course is designed to enhance student understanding of emerging issues and technologies related to reporting, internal controls, system security and effectiveness. Topics may change semester to semester. Prerequisite: ACCT 5315 with a grade of C or higher.

ACCT 5330. INTERNATIONAL ACCOUNTING AND FINANCIAL REPORTING. 3 Hours.

Financial accounting and reporting principles and practices in various countries, the role of accounting in economic development, as well as the accounting considerations in international business operations -- e.g. foreign currency translation, auditing, accounting systems, taxation, and sensitive payments. Prerequisite: ACCT 5302 with a grade of C or higher.

ACCT 5332. OPERATIONAL AUDITING. 3 Hours.

A study of operational audit methodology for management audits. Audits of administrative and support functions, and other special areas such as fraud audits. Prerequisite: Graduate standing and six hours of accounting with grades of C or higher.

ACCT 5335. DESIGN OF ACCOUNTING SYSTEMS. 3 Hours.

A detailed study of the data entry, storage (file design), internal control, and reporting requirements of accounting systems, followed by the development of a significant accounting subsystem using a software development tool. Prerequisite: ACCT 5315 with a grade of C or higher.

ACCT 5339. TAX PLANNING AND RESEARCH. 3 Hours.

A study of the use of various techniques and procedures available in evaluating issues arising under federal income tax law. Emphasizes research into individual and business tax problems and planning alternatives. Prerequisite: ACCT 5314 with a grade of C or higher.

ACCT 5340. STUDY OF FEDERAL INCOME TAX FOR ENTITIES OTHER THAN INDIVIDUALS. 3 Hours.

Comprehensive analysis of the federal income tax consequences applicable to entities other than individuals. Analysis of the relevant tax principles of corporations, partnerships, trusts and estates will be undertaken. Cannot be taken for credit within the 36-hour program requirements for Master of Science in Taxation program. Prerequisite: ACCT 5314 with a grade of C or higher.

ACCT 5341. TAXATION OF PASSTHROUGH ENTITIES. 3 Hours.

Analysis of the federal income tax rules governing passthrough entities. Credit will not be received for both ACCT 5340 and ACCT 5341. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5342. TAX PROBLEMS OF CORPORATIONS AND SHAREHOLDERS. 3 Hours.

Analysis of the federal income tax rules governing corporations and shareholders. Subjects include corporate formations, corporate capital structure, administrative requirements affecting corporations, the corporate alternative minimum tax, special tax provisions (such as the personal holding company and accumulated earnings taxes and the collapsible corporation rules), nonliquidating distributions, stock dividends, redemptions and partial liquidations, liquidating distributions, corporate reorganizations, and Subchapter S corporations. Credit will not be received for both ACCT 5340 and ACCT 5342. Prerequisite: Excel certification and ACCT 5339 with grade of C or higher.

ACCT 5343. TAX PROBLEMS OF TRANSACTIONS IN REAL ESTATE. 3 Hours.

Problems and elections relating to the acquisition, holding, and disposition of real property. Subjects include means of acquisition and disposition, capital gains and losses, deferred payment sales, organization of syndicates, sale and leaseback, dissolutions, and general tax-saving methods. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5345. STATE AND LOCAL TAXATION. 3 Hours.

Introduction to the principles and practices of state and local taxation. Topics considered in the course include the application of both inter- and intra-state taxation, allocation and apportionment principles and issues in relation to the predominant forms of state taxes, such as franchise, sales, use, income, ad valorem, and property tax. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5346. TAX PRACTICE AND PROCEDURE. 3 Hours.

This course overviews the procedural aspects of dealing with the Internal Revenue Service. The focus is from the private practitioner's perspective in assisting clients in navigating the Service's administrative requirements. Topics include administrative organization of the Service, tax audits, the use of Service administrative summonses, statutes of limitation, penalties, interest charges, civil and criminal procedures and appeals. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5347. FEDERAL TAXATION OF GIFTS AND ESTATES. 3 Hours.

A comprehensive survey of the principles and procedures involved in determining the federal estate tax and the supplementary federal gift tax including taxability and valuation of property and the determination of deductions and credits. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5352. INFORMATION SYSTEMS AUDIT AND CONTROL. 3 Hours.

A study of modern approaches to the audit and control of business information systems. Prerequisite: ACCT 5315 and ACCT 5316 with grades of C or higher.

ACCT 5353. STATISTICAL TECHNIQUES USED IN ACCOUNTING. 3 Hours.

A study of statistical techniques used in accounting. Topics include alternative sample selection methods, attribute methods, mean-per-unit estimation, ratio and difference estimation, monetary unit sampling, and regression analysis. Prerequisite: STAT 5301 with a grade of C or higher.

ACCT 5366. FRAUD EXAMINATION. 3 Hours.

Analysis of fraud examiner and auditor responsibilities and current methodologies with respect to financial fraud investigation, detection, and prevention. Management's responsibilities for fraud deterrence and implementation of effective prevention measures. Identification, analysis, and examination of financial fraud using actual case studies. Prerequisite: ACCT 5316 with a grade of C or higher.

ACCT 5372. FEDERAL TAXATION OF INTERNATIONAL TRANSACTIONS. 3 Hours.

This course provides an overview of the U.S. system for taxing international transactions. Topics include U.S. jurisdictional and source-of-income rules; the foreign tax credit; anti-deferral provisions; taxation of U.S. activities of foreign persons, and issues common to both outbound and inbound activities including intercompany transfer pricing rules. Prerequisite: ACCT 5339 with grade of C or higher.

ACCT 5380. ETHICS IN ACCOUNTING. 3 Hours.

This course is intended to introduce students to ethical reasoning, integrity, objectivity, independence, professionalism and other core values. The course incorporates the essentials of professional responsibilities, including elements of trust and communications with clients and other professionals. Both ethical principles and rules are considered. This course is intended to satisfy conditions of the Texas State Board of Public Accountancy that require candidates for the CPA Exam to have completed an approved ethics course. Prerequisite: ACCT 5312 or equivalent.

ACCT 5382. INDEPENDENT STUDIES IN ACCOUNTING. 3 Hours.

Extensive analysis of an accounting topic. Prerequisite: Consent of faculty member and department chair.

ACCT 5392. SELECTED TOPICS IN ACCOUNTING. 3 Hours.

In-depth study of selected topics in accounting. May be repeated when topics vary. Prerequisite: consent of instructor.

ACCT 5398. THESIS. 3 Hours.

Thesis. Graded F, R. Prerequisite: permission of Accounting Graduate Advisor.

ACCT 5399. GRADUATE ACCOUNTING INTERNSHIP. 3 Hours.

Practical training in accounting. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum twelve accounting semester hours beyond principles completed or with approval of the internship coordinator.

ACCT 5698. THESIS. 6 Hours.

Thesis. Graded F, R. Prerequisite: permission of Accounting Graduate Advisor.

ACCT 6101. ACCOUNTING RESEARCH COLLOQUIUM. 1 Hour.

A forum in which visiting scholars and U.T. Arlington faculty members present and discuss results of their contemporary research. Doctoral students participate by meeting with visiting scholars, reading the research papers, providing written critiques, and discussing the papers. Doctoral students are required to enroll and attend the colloquia presentations each fall and spring semester until the students pass all their comprehensive examinations. May be repeated for credit. Prerequisite: consent of College PhD advisor.

ACCT 6309. SEMINAR IN ACCOUNTING RESEARCH I. 3 Hours.

Analysis of the theoretical and empirical literature in accounting. Prerequisite: consent of College PhD advisor.

ACCT 6310. SEMINAR IN ACCOUNTING RESEARCH II. 3 Hours.

Analysis of Theoretical and Empirical Research in Accounting.

ACCT 6311. SEMINAR IN ACCOUNTING RESEARCH III. 3 Hours.

Continuation of analysis of the theoretical and empirical literature in accounting. Prerequisite: ACCT 6310 with a grade of C or higher and consent of the College Ph.D. advisor.

ACCT 6312. SEMINAR IN ACCOUNTING RESEARCH IV. 3 Hours.

Continuation of analysis of the theoretical and empirical literature in accounting. Prerequisite: ACCT 6310 with a grade of C or higher and consent of the College Ph.D. advisor.

ACCT 6313. SEMINAR IN ACCOUNTING RESEARCH V. 3 Hours.

Seminar will cover advanced accounting research topics.

ACCT 6390. SPECIAL TOPICS IN ACCOUNTING RESEARCH. 3 Hours.

Doctoral level coverage of advanced topics in accounting. Topics may vary. Prerequisite: Approval by faculty member and doctoral program advisor.

Advertising (ADVT)

COURSES

ADVT 2337. INTRODUCTION TO ADVERTISING. 3 Hours. (TCCN = COMM 2327)

The role of advertising in society. Basic concepts include marketing message creation, budget determination, agency-client relationships, and social responsibility of advertisers.

ADVT 3304. STRATEGIC COMMUNICATION I. 3 Hours.

Introductory strategy course focusing on creative communication in advertising and marketing communication planning. The evolution and development of the strategic creative process is evaluated relative to campaign objectives and research, especially as it impacts Integrated Marketing Communication and branding programs. Students successfully completing Strategic Communication I advance to Strategic Communication II. Prerequisite: COMM 2311, ADVT 2337, and MATH 1308, all with a grade of C or better.

ADVT 3305. ADVERTISING MEDIA. 3 Hours.

Decision-making in selection and use of advertising media. Evaluation of media alternatives in terms of marketing communication objectives and strategy, audience analysis, media-market research, cost, and editorial/program content. Media plans are developed consistent with Integrated Marketing Communication and branding programs. Prerequisite: COMM 2311, ADVT 2337, and MATH 1308, all with a grade of C or better.

ADVT 3306. STRATEGIC COMMUNICATION II. 3 Hours.

Advanced strategy course building on the foundation from Strategic Communication I; assumes a basic understanding of strategy and research. Advanced critiques of existing campaigns coupled with the development of strategic communication for various media, including print, broadcast, direct mail, and Internet. Persuasive presentation of strategies and executions to others as in an agency setting; includes copywriting, basic art direction, and multimedia usage. Prerequisite: ADVT 3304 with a grade of C (2.0/4.0 scale) or better, and COMM 3303.

ADVT 3308. DIGITAL ADVERTISING DESIGN. 3 Hours.

Course covers the practice of results-oriented creative advertising and design, including both visual and copy concepts through digital execution with an emphasis on strategic development. The course also focuses on advanced applications of digital software to design and communicate targeted messages utilizing communication theory and practice. Prerequisite: COMM 3303 with a grade of C (2.0/4.0 scale) or better.

ADVT 4300. DIGITAL INTEGRATED MARKETING COMMUNICATION (IMC) MANAGEMENT. 3 Hours.

Theory and management of digital integrated marketing communication. The course focuses on using digital analytics to plan and execute successful integrated strategies that reach appropriate audiences with targeted messages. Key topics include digital advertising, social media, digital media, email marketing, and search engine optimization (SEO). Prerequisite: A grade of C (2.0/4.0 scale) or better in the following courses: ADVT 3304, PREL 3320, and COMM 3315.

ADVT 4301. ADVERTISING AND IMC CAMPAIGNS. 3 Hours.

Advanced study in the application of advertising and marketing communication theories. Advertising campaigns are developed consistent with Integrated Marketing Communication and branding programs. Student agency teams develop speculative advertising and IMC plans for organizations, products and/or brands. Prerequisite: A grade of C (2.0/4.0 scale) or better in the following courses: ADVT 3305, ADVT 3306, and ADVT 4300.

ADVT 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

ADVT 4393. SPECIAL TOPICS. 3 Hours.

Special studies in advertising. Topic varies from semester to semester. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

ADVT 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research in advertising while working with business and industry. Individual conference to be arranged. Graded Pass/Fail. Prerequisite: 60 or more hours earned and permission of the department.

Aerospace Engineering (AE)

COURSES

AE 5101. GRADUATE SEMINAR. 1 Hour.

The purpose is to acquaint graduate students with ongoing research at UTA, and outside in academia and industry. Seminars are given by graduate students of the department based on their ongoing research. Seminars are also given by external speakers from academia, industry and government.

AE 5191. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 1 Hour.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5197. RESEARCH IN AEROSPACE ENGINEERING. 1 Hour.

Research in masters programs.

AE 5291. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 2 Hours.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5297. RESEARCH IN AEROSPACE ENGINEERING. 2 Hours.

Research in masters programs.

AE 5300. PREPARATORY COURSE FOR AEROSPACE ENGINEERING. 3 Hours.

The course may be offered with multiple sections, wherein each section is paired with a corresponding UG course being offered that semester. The purpose of this course is to strengthen academic preparation of students who were found inadequately prepared for a graduate degree in Aerospace Engineering. Students can concurrently enroll in multiple sections and may need to enroll in this course multiple times until their academic preparation is deemed complete. In order to pass this class, the student has to earn at least a B grade in aggregate based on all the assignments and exams. The student will earn an R grade if the class aggregate is a C/D and will need to repeat the course until the student passes the class. The student will Fail the class if the aggregate is an F. The course may be repeated as often as required.

AE 5301. ADVANCED TOPICS IN AEROSPACE ENGINEERING. 3 Hours.

To provide formal instruction in special topics pertinent to Aerospace Engineering from semester to semester depending on the availability of faculty. May be repeated for credit as provided topics change.

AE 5302. ADVANCED FLIGHT MECHANICS. 3 Hours.

Rigid body motion. Kinematics and dynamics of aerospace vehicles. Linear and nonlinear control of aircraft and spacecraft. Advanced aircraft and spacecraft modeling and control issues. Prerequisite: MAE 3405 and MAE 4310.

AE 5303. CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS. 3 Hours.

Equip the student with familiarity of significant tools of the control engineer. Topics covered include controllers and their effect on system performance and stability, block diagram algebra, stability and analysis, system performance definition, root locus, frequency techniques, and state variable methods. Digital simulation tools for design and simulation of control systems. Demonstration of controller design and performance in the laboratory. Also offered as ME 5303.

AE 5304. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

This graduate level course will cover the calculation of stresses and strains in a body that experiences elastic, plastic and/or viscoelastic deformation. This course will also highlight nanoelasticity to show the size-dependent structure-property relations of nanomaterials and piezoelectricity to demonstrate the voltage-displacement relations of piezoelectric materials. Offered as AE 5304 and ME 5304. Credit will be granted only once. Prerequisite: MAE 2312 or equivalent.

AE 5305. DYNAMIC SYSTEMS MODELING. 3 Hours.

To equip the student with the capability of determining the necessary equations for distributed and lumped parameter modeling of mixed physical system types including mechanical, fluid, electrical, and thermal components. Models are formulated for computer simulation and analysis for systems with deterministic and stochastic inputs. Topics of random vibration and system identification are included. Offered as AE 5305 and ME 5305. Credit will be granted only once.

AE 5310. FINITE ELEMENT METHODS. 3 Hours.

Finite element method in the study of the static response of complex structures and of continua applications to field problems; analytical methods emphasized and digital computer application undertaken. Offered as AE 5310 and ME 5310. Credit will be granted only once.

AE 5311. STRUCTURAL DYNAMICS. 3 Hours.

Natural frequencies; forced response of complex structural systems studied through the use of the finite element method; computational aspects of these problems discussed, and digital computer applications undertaken. Offered as AE 5311 and ME 5311. Credit will be granted only once.

AE 5312. CONTINUUM MECHANICS. 3 Hours.

Study of the underlying physical and mathematical principles relating to the behavior of continuous media; interrelationships between fluid and solid mechanics. Offered as AE 5312 and ME 5312. Credit will be granted only once.

AE 5313. FLUID DYNAMICS. 3 Hours.

Basic conservation laws, flow kinematics, special forms of the governing equations, two-dimensional potential flows, surface waves and some exact solutions of viscous incompressible flows. Offered as AE 5313 and ME 5313. Credit will be granted only once.

AE 5314. FRACTURE MECHANICS IN STRUCTURAL DESIGN. 3 Hours.

Linear elastic fracture mechanics, general yielding fracture mechanics, damage tolerance and durability design, fail safe and safe life design criteria, analysis of fatigue crack growth, residual strength analysis. Offered as AE 5314 and ME 5314. Credit will be granted only once.

AE 5315. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Fundamental relationships between the mechanical and hygrothermal behavior and the composition of multiphase media; failure criteria. Offered as AE 5315 and ME 5315. Credit will be granted only once.

AE 5320. DESIGN OPTIMIZATION. 3 Hours.

The purpose of this course is to present modern concepts of optimal design of structures. Basic ideas from optimization theory are developed with simple design examples. Analytical and numerical methods are developed and their applications discussed. Use of numerical simulation methods in the design process is described. Concepts of structural design sensitivity analysis and approximation methods will be discussed. The emphasis is made on the application of modern optimization techniques linked to the numerical methods of structural analysis, particularly, the finite element method.

Prerequisite: AE 5310 or ME 5310.

AE 5322. AEROELASTICITY. 3 Hours.

A fundamental course addressing phenomena related to the time-independent interactions between structural flexibility and aerodynamic loads as relevant to flying vehicles. Emphasis is placed upon the development and use of simple analytical and/or interactive computational models that capture the essential aspects of the static aeroelastic phenomena investigated and provide insight into the response, including i) aeroelastic divergence; ii) aeroelastic change in control effectiveness; iii) aeroelastic distribution of lift; and iv) aeroelastic change in longitudinal static stability.

AE 5323. ENGINEERING RESEARCH METHODS. 3 Hours.

This hands-on course will teach the tools that are essential for conducting graduate research, with an aim to prepare the students for project-based graduate research. The course will be focused on the integration of engineering concepts to complete course projects that imitate mini research projects.

Prerequisite: Undergraduate education in engineering or science.

AE 5325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Offered as AE 5325 and ME 5325. Credit will be granted only once.

AE 5326. AIR-BREATHING PROPULSION. 3 Hours.

Development of thrust and efficiency equations, thermodynamic cycle analysis, cycle design methods of aerospace propulsion systems, component performance analysis methods, component matching and dynamic interactions, and vehicle/propulsion-system integration.

AE 5327. COMPUTATIONAL AERODYNAMICS I. 3 Hours.

Solution of engineering problems by finite-difference methods, emphasis on aerodynamic problems characterized by single linear and non-linear equations, introduction to and application of major algorithms used in solving aerodynamics problems by computational methods.

AE 5328. COMPUTATIONAL AERODYNAMICS II. 3 Hours.

Review of the fundamental equations of aerodynamics, development of methods for solving Euler, boundary-layer, Navier-Stokes, and parabolized Navier-Stokes equations, application to practical aerodynamic analysis and design problems.

AE 5329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for additive manufacturing are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacturing.

Offered as AE 5329 and ME 5329. Credit will be granted only once. Prerequisite: Graduate standing.

AE 5331. ANALYTIC METHODS IN ENGINEERING. 3 Hours.

Introduction to advanced analytic methods in engineering. Methods include multivariable calculus and field theory, Fourier series, Fourier and Laplace Transforms. Offered as AE 5331 and ME 5331. Credit will be granted only once. Prerequisite: Undergraduate degree in engineering, physics, or mathematics.

AE 5332. ENGINEERING ANALYSIS. 3 Hours.

Introduction to partial differential equations and complex variable theory with application to modeling of physical systems. Offered as AE 5332 and ME 5332. Credit will be granted only once.

AE 5333. THERMAL PHENOMENA IN MICROSYSTEMS. 3 Hours.

Introduction to experimental methods for microscale thermal transport, including experimental measurement techniques, design of experiments, data acquisition and analysis tools. Significant emphasis on carrying out mini-projects on related topics. Course learning outcomes are directly relevant for engineering jobs in semiconductors, energy conversion and other related industries. Offered as AE 5333 and ME 5333. Credit will be granted only once.

AE 5335. OPTIMAL CONTROL OF DYNAMIC SYS. 3 Hours.

Linear and nonlinear optimization methods; optimal control; continuous time Ricatti equation; bang-bang control; singular arcs; differential inclusions; collocation techniques; design of optimal dynamic system trajectories. Offered as AE 5335 and ME 5335. Credit will be granted only once.

AE 5336. OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS. 3 Hours.

Kalman filter design and implementation. Optimal filtering for discrete-time and continuous-time dynamical systems with noise. Wiener filtering. State-space determination. Offered as EE 6327, AE 5336 and ME 5336. Credit will be granted only once. Prerequisite: Prior introductory systems or identification course is desirable.

AE 5337. INTRODUCTION TO ROBOTICS. 3 Hours.

An overview of industrial robots and their application to traditional and emerging applications. Coordinate systems and homogeneous transformations, kinematics of manipulators; motion characteristics and trajectories; dynamics and control of manipulators; actuation and design issues. Programming of industrial robotic manipulators in the laboratory. Offered as AE 5337 and ME 5337. Credit will be granted only once.

AE 5338. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Offered as AE 5338 and ME 5338. Credit will be granted only once.

AE 5339. STRUCTURAL ASPECTS OF DESIGN. 3 Hours.

Emphasis on determination of stresses and prediction of failure in machine and structural components; stress-strain relations in elastic and plastic regions; static failure and failure criteria; contact stress; notched sensitivity; strain-fatigue life relationship; characteristics of cracks in structural components. Offered as AE 5339 and ME 5339. Credit will be granted only once.

AE 5341. CONTROL SYSTEM COMPONENTS. 3 Hours.

The components and hardware used in electronic, hydraulic, and pneumatic control systems; techniques of amplification, computation, compensation, actuation, and sensing; modeling of multiport systems as well as servo systems analysis. Pulse modulated systems. Offered as AE 5341 and ME 5341. Credit will be granted only once. Prerequisite: Undergraduate introductory control course in Mechanical Engineering or equivalent or ME 5303 or equivalent.

AE 5342. GAS DYNAMICS. 3 Hours.

Review of fundamental compressible flow theory, method of characteristics for perfect gases, the Rankine-Hugoniot conditions, linearized flow theory. Offered as AE 5342 and ME 5342. Credit will be granted only once.

AE 5345. NUMERICAL HEAT TRANSFER AND FLUID FLOW. 3 Hours.

Introduction to numerical solutions for problems in heat transfer and fluid flow by the finite-volume method. The focus will be on numerical aspects pertaining to incompressible fluids. It provides the background training towards the use of commercial software. Offered as AE 5345 and ME 5345. Credit will be granted only once.

AE 5347. ROCKET PROPULSION. 3 Hours.

Thrust and efficiency relations, trajectory analysis, introduction to design and performance analysis of chemical (liquid and solid), electrical and nuclear rocket systems, combined cycle propulsion systems, and pulse detonation rockets.

AE 5348. HYPERSONIC PROPULSION. 3 Hours.

Design and performance analysis of propulsion systems for sustained flight at hypersonic speeds, airframe/propulsion system integration, supersonic combustion, finite-rate chemistry effects, radiative cooling.

AE 5350. CLASSICAL AERODYNAMICS. 3 Hours.

To present a classical treatment of incompressible and compressible aerodynamics. Kinematics of fluid flow. Potential flow theory applied to non-lifting and lifting wings and bodies. Subsonic and supersonic wings and bodies. Familiarity with advanced engineering mathematics is recommended.

AE 5360. MULTIDISCIPLINARY INVERSE DESIGN AND OPTIMIZATION. 3 Hours.

For a new design of any realistic device to be competitive, it must satisfy a number of often conflicting requirements, objectives, and constraints. This course offers a variety of basic concepts and methodologies for inverse design and optimization with practical applications in fluid mechanics, heat transfer, elasticity, and electromagnetism. Offered as AE 5360 and ME 5360. Credit will be granted only once.

AE 5362. GUIDANCE, NAVIGATION, AND CONTROL OF AEROSPACE VEHICLES. 3 Hours.

Basics of flight dynamics and control. Autopilot structures for aerospace vehicles (aircraft, missiles, launch vehicles). Equilibrium glide trajectories for atmospheric flight. Discussion of the various guidance algorithms used in aircraft/missiles/launch vehicles. Basics of Kalman filtering, sensor and data fusion. Selection and trade-off between various navigation components such as the IMU, GPS and other navigation components. Integration of the guidance, navigation and control components in aerospace vehicles.

AE 5363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects. Offered as AE 5363 and ME 5363. Credit will be granted only once.

AE 5364. INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT. 3 Hours.

Practical aerodynamics of rotors and other components of rotorcraft. Introduction to performance, handling qualities, and general flight mechanics related to rotorcraft design, test, and certification requirements. Emphasis is on real rotorcraft mission capabilities as defined by the customer. Offered as AE 5364 and ME 5364. Credit will be granted only once.

AE 5365. INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION. 3 Hours.

Dynamic and aerodynamic modeling of rotorcraft elements using vector mechanics, linear algebra, calculus and numerical methods. Special emphasis on rotors, aerodynamic interference, proper axis system representation, model assembly methods and trimming. Offered as AE 5365 and ME 5365. Credit will be granted only once.

AE 5367. HIGH-SPEED AIRCRAFT AND SPACE ACCESS VEHICLE DESIGN. 3 Hours.

An introductory course on high-speed aircraft and space access vehicle design. The course concentrates on reusable flight vehicles. Topics covered are historical case studies, design disciplines, design space visualization and proof of design convergence. Prerequisite: consent of the instructor.

AE 5368. FLIGHT VEHICLE SYNTHESIS AND SYSTEMS ENGINEERING. 3 Hours.

An introductory course on multi-disciplinary design decision-making applied to flight vehicle design. The course introduces decision-making techniques leading to efficient aerospace product design. The following main topics are covered: a) management domain, b) operational domain, c) engineering domain. Prerequisite: MAE 4350, MAE 4351 or equivalent.

AE 5372. PARAMETRIC SIZING OF HIGH-SPEED AIRCRAFT. 3 Hours.

An introductory course on high-speed aircraft design. Aimed to develop insight into basic concepts underlining the analysis and design of supersonic and hypersonic aircraft. Topics covered are historical case studies, design disciplines, and design methodologies. Prerequisite: MAE 4350, MAE 4351 or equivalent.

AE 5374. NONLINEAR SYSTEMS ANALYSIS AND CONTROLS. 3 Hours.

Nonlinear systems; phase plane analysis; Poincare-Bendixon theorems; nonlinear system stability; limit cycles and oscillations; center manifold theorem, Lyapunov methods in control; variable structure control; feedback linearization; backstepping techniques. Offered as AE 5374 and ME 5374. Credit will be granted only once.

AE 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Offered as AE 5378 and ME 5378. Credit will be granted only once.

AE 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Offered as AE 5379 and ME 5379. Credit will be granted only once. Prerequisite: B or better in MAE 4378 or AE 5378 or ME 5378 and admission to the UVS certificate program.

AE 5380. DESIGN OF DIGITAL CONTROL SYSTEMS. 3 Hours.

Difference equations, Z- and w-transforms, discrete TF (Transfer Function). Discrete equivalence (DE) to continuous TF. Aliasing & Nyquist sampling theorem. Design by DE, root locus in z-plane & Youla parameterization. Discrete state-space model, minimality after sampling, pole placement, Moore-Kimura method, linear quadratic regulator, asymptotic observer. Computer simulation and/or lab implementation. Offered as EE 5324, AE 5380 and ME 5380. Credit will be granted only once. Prerequisite: MAE 4310 or equivalent.

AE 5381. BOUNDARY LAYERS. 3 Hours.

An introductory course on boundary layers. The coverage emphasizes the physical understanding and the mathematical foundations of boundary layers, including applications. Topics covered include laminar and turbulent incompressible and compressible layers, and an introduction to boundary layer transition. Offered as AE 5381 and ME 5381. Credit will be granted only once.

AE 5382. ADVANCED ASTRONAUTICS. 3 Hours.

Topics include orbital mechanics, orbital maneuvering, relative motion, orbit determination and estimation, three body problem, perturbations and numerical techniques.

AE 5383. HYPERSONIC FLOW. 3 Hours.

A study of the basic principles of hypersonic flows. Inviscid and viscous hypersonic flows. The course focuses on the effects of high temperature on the gas properties and associated effects on canonical gasdynamics processes. Applications in aerodynamic heating and atmospheric entry. Application of numerical methods.

AE 5385. HIGH TEMPERATURE GASDYNAMICS. 3 Hours.

Surveys kinetic theory, statistical mechanics, and chemical reaction rate theory. Application to the prediction of thermodynamic properties of gasses and the analysis of problems in high-temperature gasdynamics.

AE 5386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses.

AE 5391. ADVANCED STUDIES IN AEROSPACE ENGINEERING. 3 Hours.

Individual research or design project performed for fulfilling the requirements of the Master of Engineering degree option. Prior approval of the AE Graduate Advisor is required for enrollment. A written and/or oral report is required.

AE 5397. RESEARCH IN AEROSPACE ENGINEERING. 3 Hours.

Research in masters programs.

AE 5398. THESIS. 3 Hours.

Thesis.

AE 5400. PREPARATORY COURSE FOR AEROSPACE ENGINEERING. 4 Hours.

The course may be offered with multiple sections, wherein each section is paired with a corresponding UG course being offered that semester. The purpose of this course is to strengthen academic preparation of students who were found inadequately prepared for a graduate degree in Aerospace Engineering. Students can concurrently enroll in multiple sections and may need to enroll in this course multiple times until their academic preparation is deemed complete. In order to pass this class, the students has to earn at least a B grade in aggregate based all the assignments and exams. The student will earn an R grade if the class aggregate is a C/D and will need to repeat the course until the student passes the class. The student will Fail the class if the aggregate is an F. The course may be repeated as often as required.

AE 5698. THESIS. 6 Hours.

Thesis.

AE 6196. AEROSPACE ENGINEERING INTERNSHIP. 1 Hour.

For students participating in internship programs. Requires prior approval of Graduate Advisor.

AE 6197. RESEARCH IN AEROSPACE ENGINEERING. 1 Hour.

Research in doctoral programs.

AE 6297. RESEARCH IN AEROSPACE ENGINEERING. 2 Hours.

Research in doctoral programs.

AE 6299. DISSERTATION. 2 Hours.

Dissertation Prerequisite: Admission to candidacy for the Doctoral of Philosophy degree.

AE 6310. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Also offered as ME 6310.

AE 6311. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Offered as AE 6311 and ME 6311. Credit will be granted only once. Prerequisite: ME 5311, AE 5311 or equivalent.

AE 6315. ADVANCED COMPOSITES. 3 Hours.

Review of current state-of-the-art applications of composites: composite structural analysis; structural properties, damage characterization and failure mechanism; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints. Offered as AE 6315, ME 6315 and MSE 5349. Credit will be granted only once. Prerequisite: ME 5315, AE 5315 or MSE 5348 or equivalent.

AE 6337. ADVANCED ROBOTICS. 3 Hours.

Advanced robotic design concepts considering structural statics, dynamics and control strategies for both rigid and flexible manipulators will be studied using optimization techniques and analytical approaches and introduction to micro- and mobile robotic devices. Study of emerging applications of robotics will be explored. Digital simulation of robotic devices and programming and demonstration of robotic devices in the laboratory. Prerequisites: AE 5337 or ME 5337 or equivalent.

AE 6397. RESEARCH IN AEROSPACE ENGINEERING. 3 Hours.

Research in doctoral programs.

AE 6399. DISSERTATION. 3 Hours.

Dissertation Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

AE 6697. RESEARCH IN AEROSPACE ENGINEERING. 6 Hours.

Research in doctoral programs.

AE 6699. DISSERTATION. 6 Hours.

Dissertation. Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

AE 6999. DISSERTATION. 9 Hours.

Dissertation. Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

AE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Aerospace Studies (AS)

COURSES

AS 1121. FOUNDATION OF THE UNITED STATES AIR FORCE. 1 Hour.

(AS 1121 in the fall and AS 1122 in the spring) AS 100 is a survey course designed to introduce students to the U.S. Air Force and Air Force ROTC. Featured topics include: mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force officer opportunities, and an introduction into communication skills. Leadership Laboratory (AS 1001) complements this course by providing cadets with followership experiences.

AS 1122. FOUNDATION OF THE UNITED STATES AIR FORCE. 1 Hour.

(AS 1121 in the fall and AS 1122 in the spring) AS 100 is a survey course designed to introduce students to the U.S. Air Force and Air Force ROTC. Featured topics include: mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force officer opportunities, and an introduction into communication skills. Leadership Laboratory (AS 1001) complements this course by providing cadets with followership experiences.

AS 1181. LEADERSHIP LABORATORY. 1 Hour.

(LLAB) (Every semester). The AS 100 and AS 200 LLabs include a study of Air Force customs and courtesies, drill and ceremonies, and military commands. The LLAB also includes studying the environment of an Air Force officer and learning about areas of opportunity available to commissioned officers. The AS 300 and AS 400 LLAB consist of activities classified as leadership and management experiences. They involve the planning and controlling of military activities of the cadet corps; and the preparation and presentation of briefings and other oral and written communications. LLAB also include interviews, guidance, and information that will increase the understanding, motivation, and performance of other cadets.

AS 2121. THE EVOLUTION OF USAF AIR AND SPACE POWER. 1 Hour.

(AS 2121 in the fall and AS 2122 in the spring) AS 200 is a survey course designed to examine general aspects of air and space power through a historical perspective. Utilizing this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of the Persian Gulf War. Historical examples are provided to extrapolate the development of Air Force capabilities (competencies), and missions (functions) to demonstrate the evolution of what has become today's USAF air and space power. Furthermore, the course examines several fundamental truths associated with war in the third dimension: e.g. Principles of War and Tenets of Air and Space Power. As a whole, this course provides the student with a knowledge level understanding for the general element and employment of air and space power, from an institutional, doctrinal, and historical perspective. In addition, the students will continue to discuss the importance of the Air Force Core Values with the use of operational examples and historical Air Force leaders and will continue to develop their communication skills. In addition, Leadership Laboratory (AS 1001) is mandatory for Air Force ROTC cadets (not special students), and it complements this course by providing cadets with followership experiences. Professional Officer Courses (POC).

AS 2122. THE EVOLUTION OF USAF AIR AND SPACE POWER. 1 Hour.

(AS 2121 in the fall and AS 2122 in the spring) AS 200 is a survey course designed to examine general aspects of air and space power through a historical perspective. Utilizing this perspective, the course covers a time period from the first balloons and dirigibles to the space-age global positioning systems of the Persian Gulf War. Historical examples are provided to extrapolate the development of Air Force capabilities (competencies), and missions (functions) to demonstrate the evolution of what has become today's USAF air and space power. Furthermore, the course examines several fundamental truths associated with war in the third dimension: e.g. Principles of War and Tenets of Air and Space Power. As a whole, this course provides the student with a knowledge level understanding for the general element and employment of air and space power, from an institutional, doctrinal, and historical perspective. In addition, the students will continue to discuss the importance of the Air Force Core Values with the use of operational examples and historical Air Force leaders and will continue to develop their communication skills. In addition, Leadership Laboratory (AS 1001) is mandatory for Air Force ROTC cadets (not special students), and it complements this course by providing cadets with followership experiences. Professional Officer Courses (POC).

AS 3301. LEADERSHIP STUDIES. 3 Hours.

(AS 3301 in the fall and AS 3311 in the spring). AS 300 is a study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required for an Air Force junior officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. A mandatory Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles of this course.

AS 3311. LEADERSHIP STUDIES. 3 Hours.

(AS 3301 in the fall and AS 3311 in the spring). AS 300 is a study of leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required for an Air Force junior officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. A mandatory Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences in officer-type activities, giving students the opportunity to apply leadership and management principles of this course.

AS 4301. NATIONAL SECURITY AFFAIRS/PREPARATION FOR ACTIVE DUTY. 3 Hours.

(AS 4301 in the fall and 4311 in the spring). AS 400 examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Within this structure, continued emphasis is given to refining communication skills. An additional Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences, giving students the opportunity to apply the leadership and management principles of this course.

AS 4311. NATIONAL SECURITY AFFAIRS/PREPARATION FOR ACTIVE DUTY. 3 Hours.

(AS 4301 in the fall and AS 4311 in the spring). AS 400 examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest focus on the military as a profession, officership, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Within this structure, continued emphasis is given to refining communication skills. An additional Leadership Laboratory (AS 1001) complements this course by providing advanced leadership experiences, giving students the opportunity to apply the leadership and management principles of this course.

Affiliated Studies Abroad (ASA)

COURSES

ASA 1191. AFFILIATED STUDY ABROAD. 1 Hour.

ASA 1291. AFFILIATED STUDY ABROAD. 2 Hours.

ASA 1391. AFFILIATED STUDIES ABROAD. 3 Hours.

ASA 1491. AFFILIATED STUDIES ABROAD. 4 Hours.

ASA 1591. AFFILIATED STUDIES ABROAD. 5 Hours.

ASA 2191. AFFILIATED STUDY ABROAD. 1 Hour.

ASA 2291. AFFILIATED STUDY ABROAD. 2 Hours.

ASA 2391. AFFILIATED STUDIES ABROAD. 3 Hours.

ASA 2491. AFFILIATED STUDIES ABROAD. 4 Hours.

ASA 2591. AFFILIATED STUDIES ABROAD. 5 Hours.

ASA 3191. AFFILIATED STUDY ABROAD. 1 Hour.

ASA 3291. AFFILIATED STUDIES ABROAD. 2 Hours.

ASA 3391. AFFILIATED STUDIES ABROAD. 3 Hours.

ASA 3491. AFFILIATED STUDIES ABROAD. 4 Hours.

ASA 3591. AFFILIATED STUDIES ABROAD. 5 Hours.

ASA 4191. AFFILIATED STUDY ABROAD. 1 Hour.

ASA 4291. AFFILIATED STUDIES ABROAD. 2 Hours.

ASA 4391. AFFILIATED STUDIES ABROAD. 3 Hours.

ASA 4491. AFFILIATED STUDIES ABROAD. 4 Hours.

ASA 4591. AFFILIATED STUDIES ABROAD. 5 Hours.

ASA 4691. AFFILIATED STUDY ABROAD. 6 Hours.

ASA 5291. AFFILIATED STUDIES ABROAD. 2 Hours.

ASA 5391. AFFILIATED STUDIES ABROAD. 3 Hours.

ASA 5491. AFFILIATED STUDIES ABROAD. 4 Hours.

ASA 5591. AFFILIATED STUDIES ABROAD. 5 Hours.

ASA 5691. AFFILIATED STUDIES ABROAD. 6 Hours.

African-American Studies (AAS)

COURSES

AAS 2300. INTRODUCTION TO AFRICAN AMERICAN STUDIES. 3 Hours.

This course introduces students to the African American experience in the United States, including an interdisciplinary analysis of the African American experience in politics, the arts, folklore, religion, economics, sociology, psychology, and community development; and an examination of local history, contemporary issues, and recent events in the African American community. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

AAS 2303. HISTORY AND APPRECIATION OF HIP HOP AND R&B MUSIC. 3 Hours.

Explores the history and evolution of Hip Hop and modern urban music, emphasizing musical style and social context, from rhythm and blues through the present. Offered as AAS 2303 and MUSI 1303; credit will be granted in only one department.

AAS 2337. ECONOMICS OF SOCIAL ISSUES. 3 Hours.

Economic analysis and application of basic economic principles to a variety of social issues and topics. Students will become familiar with the U.S. economy, its structure, and how economics applies to an assortment of public policy topics such as crime, energy, immigration, drug use, prostitution, minimum wage, our aging population, healthcare, gender driven wages, recycling, and the macro economy, to name a few. In addition, current economic issues and events may be incorporated into the course via lecture and/or class discussions. This is a non-technical course which satisfies the core requirement for social and behavioral studies. Will not serve to meet degree requirements for College of Business Administration majors. Offered as ECON 2337 and AAS 2337; credit will be granted in only one department.

AAS 2371. LANGUAGE IN A MULTICULTURAL USA. 3 Hours.

The relationship between language in the U.S. and social power. This course explores how negative attitudes toward some language varieties and languages spoken in the U.S. arise from social factors, rather than features of the languages themselves. In addition to studying language varieties, the course shows how American institutions such as the educational system and the media reinforce these negative attitudes and contribute to discrimination. Offered as AAS 2371 and LING 2371; credit will be granted in only one department.

AAS 3300. TOPICS IN WOMEN'S AND GENDER STUDIES. 3 Hours.

Special topics of interest in the disciplines of Women's and Gender Studies. May be repeated for credit when the topic changes. Offered as WOMS 3300 and AAS 3300; credit will be granted in only one department.

AAS 3301. THEORIES OF HUMAN BEHAVIOR. 3 Hours.

This course explores, within the context of a strengths and empowerment perspective, theories of human behavior. For social work majors, it is strongly recommended that SOCW 2302 be taken before this course. Offered as AAS 3301 and SOCW 3301; credit will be granted in only one department. This course is required for Social Work Field Instruction and Seminar I (SOCW 4951).

AAS 3310. BLACK FAMILIES. 3 Hours.

Course will focus on the historical and cultural development of black families. Topics include slavery, segregation, family structure, and socioeconomic issues. Special attention will be given to people, places, and events that are important for understanding African American family life in the Dallas/Ft Worth area.

AAS 3313. THE COMING OF THE CIVIL WAR, 1820-1860. 3 Hours.

Sectional conflict in the United States from the Missouri Compromise of 1820 to the election of Abraham Lincoln in 1860. Southern separatism, slavery as a political issue, the antislavery movement, the breakup of the national political system, and the failure of sectional compromise. Offered as AAS 3313 and HIST 3313; credit will be granted in only one department.

AAS 3314. CIVIL WAR AND RECONSTRUCTION, 1860-1876. 3 Hours.

The background and causes of secession and the Civil War, the organization of the Confederate States of America, the progress of the war, and the attempts to solve the racial, social, political, and economic problems of the post-war period. Offered as AAS 3314 and HIST 3314; credit will be granted in only one department.

AAS 3317. DIVERSE POPULATIONS. 3 Hours.

Introduction to theoretical, practical, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior. This course is required for admission to the Bachelor of Social Work (BSW) program. Offered as AAS 3317, SOCW 3307 and MAS 3319; credit will be granted in only one department.

AAS 3319. U.S. IMMIGRATION POLICY AND THE AMERICAN DREAM. 3 Hours.

Focus on American identity through the examination of immigration to the United States, past and present, and the evolution of U.S. immigration policy. Topics include U.S. attitudes and policy responses to European, Asian, and Latin American immigration and to the incorporation of the descendants of African slaves and Native Americans. Emphasis on the decline of the melting pot idea and the incorporation of recent immigrants. Offered as MAS 3320, AAS 3319, and SOCW 3320. Credit will be granted only once.

AAS 3320. BLACK WOMEN IN SOCIETY. 3 Hours.

Course provides an overview of historical and current issues facing African American women. Topics include racism, sexism, political involvement, education, religion, family, and comparisons with the experiences of black men.

AAST 3321. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

AAST 3322. AFRICAN AMERICAN HISTORY TO 1863. 3 Hours.

History of blacks in America from their African origins to 1863. Emphasis on early African society, American slavery, and the development of black institutions and culture in the U.S. Offered as AAST 3322 and HIST 3322; credit will be granted in only one department.

AAST 3323. AFRICAN AMERICAN HISTORY SINCE EMANCIPATION. 3 Hours.

Emphasis on the transition from slavery to freedom and the political, social, and economic status of blacks in the late 19th century, 20th century black institutions and culture, and the evolution of the civil rights movements. Offered as AAST 3323 and HIST 3323; credit will be granted in only one department.

AAST 3329. CONTEMPORARY AFRICAN CULTURES. 3 Hours.

A comparative study of African communities with an emphasis on sub-Saharan Africa. Covers regional cultural geography and history as well as ethnography of specific communities. Explores both the challenges facing contemporary African nations as well as emerging solutions. Includes exposure to African art, literature, music, cinema, and food. Offered as AAST 3329 and ANTH 3329; credit will be granted in only one department.

AAST 3330. CULTURAL DIVERSITY AND IDENTITY. 3 Hours.

The ways identity is constructed in contemporary societies in an increasingly complex and multicultural world. Ethnic, racial, gender, and class identities. How and when identity is asserted and assigned, and how it can both draw boundaries and forge ties between peoples. Formerly listed as ANTH 2350. Credit cannot be given for both ANTH 2350 and ANTH 3330. Also listed as MAS 3330; credit cannot be granted for both ANTH 3330 and MAS 3330. Offered as AAST 3330 and ANTH 3330; credit will be granted in only one department.

AAST 3332. COMPARATIVE KINSHIP AND FAMILY SYSTEMS. 3 Hours.

Variation in kinship and family systems from crosscultural and evolutionary perspectives. Structure, function, and dynamics of kinship and family systems as adaptations to diverse ecological, social, and historical circumstances. Implications of this approach for understanding kinship and family in American society also addressed. Formerly listed as ANTH 4338. Credit cannot be given for both ANTH 3338 and ANTH 4338. Also offered as WOMS 3338; credit will be granted only once. Offered as AAST 3332 and ANTH 3338; credit will be granted in only one department.

AAST 3336. SOCIAL INEQUALITY. 3 Hours.

Examines the processes, characteristics, and consequences of social inequality in society. Topics include the social class structure, status groups, and elite power structure as they influence people's life chances. Offered as AAST 3336 and SOCI 3336; credit will be granted in only one department.

AAST 3337. RACIAL & ETHNIC GROUPS IN US. 3 Hours.

Compares the immigration, acculturation, and adjustment processes of various racial/ethnic groups in the U.S. Examines historical and contemporary discrimination in relation to the social conditions of racial/ethnic minority groups in the U. S. Topics include classical and contemporary theory; individualistic, cultural, and structural arguments about social arrangements; and conflict among majority and minority groups. Offered as AAST 3337, MAS 3337, and SOCI 3337; credit will be granted in only one department. Credit will not be granted for both SOCI 3337 and SOCI 4310 or for MAS 3337 and MAS 4310.

AAST 3338. CONTEMPORARY BLACK EXPERIENCE. 3 Hours.

An overview of recent research concerning the African American experience in the post-civil rights era. Topics include explanations for racial differences across spheres of society such as income, education, and occupation; the debate over race versus social class; the persistence of racial discrimination; and emerging disputes within the black community regarding "what it means to be black." Offered as AAST 3338 and SOCI 3338; credit will be granted in only one department.

AAST 3339. RACE, SPORT AND MEDIA. 3 Hours.

The media, including television, film, print, audio, and online outlets, influence how we view the world. This course analyzes overt, subtle and subliminal messages about culture, race, ethnicity, and sport as presented to us through various forms of the media. Through examinations of media portrayals of race, both past and present, students will analyze media artifacts, identify recurring themes, and examine research focused on the societal effects of stereotypical media portrayals. Offered as AAST 3339 and SOCI 3339; credit will be granted in only one department.

AAST 3341. THE OLD SOUTH, 1607-1863. 3 Hours.

Colonial origins of plantation agriculture, slavery, economics, King Cotton, politics and secession. Other topics include slave cultures, religion, slave insurrections, plantation lifestyle, honor, dueling and southern belles. Offered as AAST 3341 and HIST 3342; credit will be granted in only one department.

AAST 3342. SOCIOLOGY OF RELIGION. 3 Hours.

This course provides an overview of the scientific study of religion from a sociological perspective. The focus is on theories, research and trends relevant to religion in the contemporary United States. Topics include, but are not limited to, religious traditions, practices, and beliefs; declining religious participation; and religion and social change. The relationship between religion, politics, race relations, sex and gender will also be examined. Offered as SOCI 3343 and AAST 3342; credit will be granted in only one department.

AAST 3343. THE NEW SOUTH, 1863-PRESENT. 3 Hours.

From military defeat to Sun Belt growth. Topics include Reconstruction, segregation, migration of Southerners to the North and West, depressions, reforms, Civil Rights, Moral Majority, cultural expressions in literature and music. Offered as AAST 3343 and HIST 3343; credit will be granted in only one department.

AAS 3344. SOCIOLOGY OF THE 1960S. 3 Hours.

This course presents a sociological analysis of the sixties, stressing the connection between grassroots mobilization and large structures of power, war, race and gender. The legacy of the sixties is examined through stories told by and about activists of the period. Parallels between the sixties and the present are identified. Movements covered may include civil rights, black power, anti-war and women's rights. Offered as AAS 3344 and SOCI 3345; credit will be granted in only one department.

AAS 3345. AFRICAN-AMERICAN LITERATURE. 3 Hours.

Examines African-American literature in its various traditions, forms, and cultural and historical contexts. Offered as AAS 3345 and ENGL 3345; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

AAS 3347. TOPICS IN MULTICULTURAL AMERICAN LITERATURES. 3 Hours.

Focuses on literature produced within one or more ethnic communities in the U.S. in order to trace a theme or to explore issues such as intersectionality, hybridity/mestizaje, diaspora, or immigrant experiences. Topics may include Afro-Latino poetry, third-world feminist writing, multicultural literature of the Southwest, cultural memory and the Jewish literary tradition, or Asian-American fiction. Offered as ENGL 3347, AAS 3347, and MAS 3347; credit will be granted in only one department, and credit for MAS 3347 will be granted only once. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

AAS 3350. BLACK POLITICAL AND SOCIAL THOUGHT. 3 Hours.

Course examines goals, viewpoints, and strategies of African American political and social movements. Topics include Black Nationalism, Inter-racial Integration, tensions between major historic leaders, reparations, the emergence of "race-neutral" politicians, and changing commitments to liberal and conservative causes.

AAS 3353. SOCIAL CLIMATE OF CITIES. 3 Hours.

A comparative study of urban communities and metropolitan areas in terms of their distinctive social life and culture. Topics touching on power and urban politics, race and ethnic relations, poverty, and leisure and lifestyles will be examined in terms of their contribution to the unique social climate of cities. Offered as AAS 3353 and SOCI 3353; credit will be granted in only one department.

AAS 3373. ARCHAEOLOGY OF EGYPT. 3 Hours.

The culture of ancient Egypt from its earliest occupation until the Arab invasion (7th century A.C.), with emphasis on the first 20 pharaonic dynasties (third and second millennia B.C.). Egyptian social, religious, economic and political development traced through the surviving material culture (architecture, art, industries, artifacts of daily life, funerary remains, etc.) supplemented by historical and literary evidence as pertinent. Egypt's relations with neighboring regions (Crete, Anatolia, Palestine, Nubia and Libya) considered. Offered as AAS 3373 and ANTH 3373; credit will be granted in only one department.

AAS 3378. HISTORY OF THE CARIBBEAN. 3 Hours.

A comparative history of the different societies in the Caribbean (including Cuba, Jamaica, and Haiti) with emphasis on the coming of slavery and the consequences of emancipation. Traces the development of emerging new societies from intermingling of Amerindian, African and European elements. Offered as AAS 3378 and HIST 3378; credit will be granted in only one department.

AAS 3380. RACE, CRIME, AND JUSTICE. 3 Hours.

An examination of race in the context of the criminal justice system. Emphasis is on social construction of crime; and the treatment of racial minorities as victims and offenders by law enforcement, courts, and corrections. Offered as CRCJ 3380 and MAS 3380; credit will be granted only once. Offered as AAS 3380 and CRCJ 3380; credit will be granted in only one department.

AAS 3385. AFRICAN HISTORY I. 3 Hours.

Examines African prehistory, ancient civilizations, religion, gender issues, slavery, and commerce in precolonial Africa. Offered as AAS 3385 and HIST 3385; credit will be granted in only one department.

AAS 3386. AFRICAN HISTORY II. 3 Hours.

Africa from the "Scramble for Africa" through the establishment of the various colonial systems, through the beginnings of African nationalism, to the contemporary period. The African Revolution and the development of the independent African states. Offered as AAS 3386 and HIST 3386; credit will be granted in only one department.

AAS 4317. ETHNIC GROUP POLITICS IN THE UNITED STATES. 3 Hours.

The influence of selected major ethnic groups with special attention given to organizational development, participation in political parties, leadership, ideology, immigration policy, current issues, and relations with the dominant culture and other ethnic groups. Offered as AAS 4317 and POLS 4317; credit will be granted in only one department.

AAS 4318. POLITICS OF AFRICAN AMERICANS. 3 Hours.

The influence of African-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Civil Rights movement, current issues, and relations with other ethnic groups. Offered as AAS 4318 and POLS 4318; credit will be granted in only one department.

AAST 4325. HISTORY OF HIP HOP. 3 Hours.

Focused study of the origins and development of Hip Hop as an artistic genre and political and cultural movement. Topics include deejaying, emceeing, sampling and other musical techniques as well as issues of ethnic and other identities, commercialism, capitalism, cultural appropriation, and authenticity. Offered as HIST 4325 and AAST 4325; credit will be granted only once.

AAST 4326. DIVERSITY IN ORGANIZATIONS. 3 Hours.

This course examines the implications of employee diversity in organizations, an issue of increasing importance. It includes study of the changing demographics of workers, including multiple demographic groups and areas of difference important to organizational treatment and outcomes. This course examines research on treatment, access, and customer discrimination. Legislation related to diversity is also reviewed. This course also provides suggestions for individuals and organizations to increase opportunities and outcomes for workers of all backgrounds. Offered as MANA 4326, AAST 4326 and WOMS 4326; credit will be granted in only one department. Prerequisite: Junior standing.

AAST 4331. RACE, ETHNICITY & FAMILY FORMATION. 3 Hours.

Investigates the ways in which cultural understandings of race and ethnicity have shaped historical and contemporary variations in family structure, familial experiences, and the legal possibilities for family formation. Junior standing (60 hours) or permission of the instructor required to enroll in this course. Offered as AAST 4331 and SOCI 4331; credit will be granted in only one department.

AAST 4333. COMPARATIVE CIVIL RIGHTS HISTORY. 3 Hours.

Explores the U.S. civil rights movement from a comparative perspective, exploring the African American civil rights movement, Chicano movement, women's liberation movement, gay liberation, and disability rights movement. Offered as AAST 4333 and HIST 4333; credit will be granted in only one department.

AAST 4339. TOPICS IN AFRICAN-AMERICAN LITERATURE. 3 Hours.

Concentrates on a topic or theme within the canon of African-American literature, such as a particular genre or era, significant authors, or a philosophical movement. Examples include the Harlem Renaissance, the Civil-Rights/Black-Power era, African-American autobiography, short fiction, and Afrofuturism. Offered as AAST 4339 and ENGL 4339; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

AAST 4341. INEQUALITIES IN PUBLIC EDUCATION. 3 Hours.

This course examines the manner in which race, ethnicity, and class affect the quality of education in the public schools. Topics include the resegregation of schools, class and race based achievement and funding gaps, and the role the schools play in reproducing inequality. This course has a service learning component and requires volunteering in programs designed to reduce inequality in the schools. Offered as AAST 4341 and SOCI 4341; credit will be granted in only one department.

AAST 4342. TOPICS IN CULTURAL ANTHROPOLOGY. 3 Hours.

Selected topics, to include anthropological theory, population and cultural ecology, semiotics, and humanistic anthropology. May be repeated for credit with departmental permission. Also offered as ANTH 4342. Credit will be granted in only one department.

AAST 4350. SPECIAL TOPICS IN AFRICAN AMERICAN STUDIES. 3 Hours.

Special topics related to African American studies. May be repeated for credit when the topic changes.

AAST 4376. AFRICAN DIASPORA I. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in the Atlantic, Mediterranean, and Indian Ocean areas from the earliest times to 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Diaspora. Offered as AAST 4376 and HIST 4376; credit will be granted in only one department.

AAST 4377. AFRICAN DIASPORA II. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in Latin America, the Caribbean, and North America since 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Atlantic Diaspora. Offered as AAST 4377 and HIST 4377; credit will be granted in only one department.

AAST 4378. WEST AFRICA AND THE ATLANTIC DIASPORA. 3 Hours.

This course examines the history of West Africa and how this region was integrated into the Atlantic world through the Atlantic slave trade. The course adopts an interdisciplinary approach that integrates traditional classroom instruction with field-based learning in West Africa. This learning method, combined with cultural immersion, challenges students to develop their academic and cross-cultural knowledge and skills. Offered as AAST 4378 and HIST 4378; credit will be granted in only one department.

AAST 4391. CONFERENCE COURSE. 3 Hours.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for a maximum six credit hours when the subject matter varies. Prerequisite: Departmental permission.

AAST 4399. CAPSTONE AFRICAN AMERICAN STUDIES. 3 Hours.

In consultation with the course instructor, students will design a research project or an internship that will integrate their previous course work into a capstone experience in either the applied or the cultural studies stream of the African American Studies minor. Prerequisite: AAST 2300 and departmental permission.

AAST 6391. CONFERENCE COURSE. 3 Hours.

Directed independent study for a masters-level or doctoral student. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for maximum six credit hours when the subject matter varies. Prerequisite: Permission from CAAS Director.

American Sign Language (ASL)

COURSES

ASL 1441. BEGINNING AMERICAN SIGN LANGUAGE I. 4 hours.

Introduction to the basic production (expressive skills) and comprehension (receptive skills) of American Sign Language (ASL). Includes the manual alphabet and numbers, develops conversational ability, introduces Deaf culture, and exposes students to ASL grammar.

ASL 1442. BEGINNING AMERICAN SIGN LANGUAGE II. 4 hours.

Builds on production (expressive skills) and comprehension (receptive skills) of American Sign Language (ASL) developed in ASL 1441. Includes the manual alphabet and numbers, conversational skills, in-depth discussion of Deaf culture, and continuous exposure to ASL grammar. Prerequisite: ASL 1441, or the equivalent, with a grade of C or better.

ASL 2313. INTERMEDIATE AMERICAN SIGN LANGUAGE I. 3 hours.

Expands on expressive and receptive skills of American Sign Language (ASL) developed in ASL 1442, adding more complex grammatical features, vocabulary, and communicative activities, as well as continued discussion of Deaf culture. Prerequisite: ASL 1442, or the equivalent, with a grade of C or better.

ASL 2314. INTERMEDIATE AMERICAN SIGN LANGUAGE II. 3 hours.

Expands on the expressive and receptive skills, grammar, and vocabulary of American Sign Language (ASL) developed in ASL 2313, including more complex communicative activities and discussion of the use of culturally significant topics relating to the Deaf Community. Prerequisite: ASL 2313, or the equivalent, with a grade of C or better.

Anthropology (ANTH)

COURSES

ANTH 1200. PERSONAL AND PROFESSIONAL SUCCESS IN THE SOCIAL SCIENCES. 2 Hours.

A first year experience course for new students and new transfer students interested in a career in the social sciences. Provides the necessary foundation for success in a college environment while balancing personal and/or work obligations. Orients students to life on campus, demonstrates how to leverage campus resources to achieve career and academic goals, and emphasizes engagement outside the classroom through collaborative and co-curricular opportunities. Fulfills the University requirement for either UNIV 1101 or UNIV 1131. Offered as SOCI 1200 and ANTH 1200; credit will be granted only once.

ANTH 1306. INTRODUCTION TO ANTHROPOLOGY. 3 Hours. (TCCN = ANTH 2346)

This course, primarily intended for nonmajors and as a first course for students considering majoring in anthropology, provides an overview of the subdisciplines of anthropology: ethnology (cultural anthropology), archaeology, physical (biological) anthropology, and linguistic anthropology.

ANTH 1310. GREAT DISCOVERIES IN ARCHAEOLOGY. 3 Hours.

A survey of some of the most spectacular and otherwise significant archaeological discoveries worldwide over the past three centuries. Consideration of particular archaeological sites as case studies to illustrate cultural development from the Stone Age to Medieval times.

ANTH 2307. BIOLOGICAL ANTHROPOLOGY. 3 Hours. (TCCN = ANTH 2301)

Human variation and human evolution. Genetics, living and fossil nonhuman primates, the human skeleton, the fossil record of human evolution, modern human variation and biological adaptation.

ANTH 2322. GLOBAL CULTURES. 3 Hours. (TCCN = ANTH 2351)

Methods and theories of sociocultural anthropology. Examines systems of social organization and cultural meaning in contemporary human societies. Topics include fieldwork, cross-cultural analysis, applied anthropology, and global perspectives on political, economic, and social institutions.

ANTH 2339. INTRODUCTION TO ARCHAEOLOGY. 3 Hours. (TCCN = ANTH 2302)

Archaeology is the study of the human past through physical evidence and material remains. This evidence ranges from entire landscapes to small objects. Students learn how archaeological sites are discovered, investigated, and interpreted, and how this knowledge contributes to our understanding of human society.

ANTH 2349. HONORS PRINCIPLES OF ARCHAEOLOGY. 3 Hours.

Methods and theories of prehistoric archaeology. Techniques and approaches employed in recovering, dating and interpreting prehistoric cultural materials. Writing-intensive course including group and individual projects and oral presentations. Prerequisite: Membership in the Honors College or permission of instructor.

ANTH 2357. ANTHROPOLOGY IN ACTION. 3 Hours.

Anthropological examination of a particular culture, region or cultural industry. Topics include identity, heritage, commoditization, historical and cultural representation, and authenticity. May be offered on campus or as a field course or study abroad course.

ANTH 2358. ARCHAEOLOGICAL CULTURES. 3 Hours.

Survey of a particular archaeological culture, region, or period. Can be offered on campus or as a field course or study abroad course.

ANTH 2359. MYTHS AND MYSTERIES IN ARCHAEOLOGY. 3 Hours.

This course will critically examine pseudoscience, cult archaeology and creationism from a scientific perspective. Through the close examination of case studies we will dispel archaeological myths and mysteries which are often depicted as fantastic or cult archaeology. This course will demonstrate that a strong adherence to scientific investigation can uncover facts about prehistory that are as interesting as the myths.

ANTH 3300. DEBATES IN CULTURAL ANTHROPOLOGY. 3 Hours.

Explores core concepts, critiques of past applications, and current challenges of theory and practice in cultural anthropology.

ANTH 3301. ARCHAEOLOGICAL METHOD AND THEORY. 3 Hours.

Explores core concepts, critiques of past applications, and current challenges of theory and practice in archaeology. Topics include history of archaeological thought, processual and actualistic approaches, ethnoarchaeology, evolutionary archaeology, stewardship of the archaeological past, and post-processual critiques. Prerequisite: ANTH 2339 or permission of instructor.

ANTH 3307. EVOLUTIONARY MEDICINE. 3 Hours.

The application of evolutionary theory to the practice of medicine from an anthropological perspective. Topics include diet/paleodiets, sleep habits, infectious diseases, the developmental origins of health and disease, mental health, women's health and reproduction, and aging/senescence, among others. Offered as BIOL 3307 and ANTH 3307; credit will only be granted in one department.

ANTH 3308. FORENSIC ANTHROPOLOGY. 3 Hours.

Explores the role of skeletal biology and physical anthropology in criminal investigation. Topics include determination of victim identity and context of death. Case studies will be used to demonstrate application of the methods studied.

ANTH 3310. LATINOS IN THE U.S.. 3 Hours.

Examines the Latino experience in the U.S. from an interdisciplinary perspective. Discusses the commonalities and cultural differences among various Latino groups, and focuses on important contemporary Latino issues such as education, employment, family and gender, identity, immigration, and politics. May receive credit for either MAS 3310 or ANTH 3310.

ANTH 3311. HUMAN ADAPTATION AND THE CONCEPT OF RACE. 3 Hours.

The study of modern human biological variation in the context of the history of the concept of race. Detailed historical review explores changing perspectives on variation within our species. Course examines physiological adaptations to environmental stress among a variety of human populations and implications of recent genetic research. Offered as BIOL 3313 and ANTH 3311; credit will only be granted in one department.

ANTH 3313. PRIMATE EVOLUTION AND BEHAVIOR. 3 Hours.

An overview of the Primate Order covering primate origins, evolution, ecology, adaptation, and behavior. Examination of the environmental context within which primates live, how the form of their bodies reflects their activities, and how they relate behaviorally to their environments and to one another. Offered as BIOL 3314 and ANTH 3313; credit will only be granted in one department.

ANTH 3316. LATINO HEALTH ISSUES. 3 Hours.

A cross-cultural examination of issues in Latino health and relevant health practices in the United States through the lenses of social sciences. Themes include the Latino Threat Narrative, acculturation histories and health care status of major Latino ethnic enclaves in the U.S. Listed as SOCI 3316, MAS 3316, and ANTH 3316; may receive credit for either SOCI 3316, MAS 3316, or ANTH 3316.

ANTH 3318. BORDERS, CULTURES, AND CARTELS. 3 Hours.

Critically examines life on the Mexico-U.S. border through ethnography, taking into account the impact of the U.S. war on drugs and the influence of cartels on the lives of those living in the southern border region. Topics may include impacts and influences of drugs and narco life on religion, crime, music, and daily life at the nexus of US-Mexico relations. Listed as ANTH 3318 and MAS 3318; may receive credit for either ANTH 3318 or MAS 3318.

ANTH 3325. ETHNOGRAPHY OF SOUTH AMERICA. 3 Hours.

The indigenous groups of South America, with emphasis on the Aymara and Quechua of the Andes. Topics include culture change, environmental destruction, and preservation of cultural heritage.

ANTH 3328. CIVILIZATIONS OF SOUTH AMERICA. 3 Hours.

Complex agrarian civilizations in South America, concentrating on political, social, and cultural developments of the Chavin, Nazca, Moche, Tiahuanaco, Wari-Tiahuanaco, Inca, and Conquest periods. Formerly listed as ANTH 4328. Credit cannot be given for both ANTH 3328 and ANTH 4328.

ANTH 3329. CONTEMPORARY AFRICAN CULTURES. 3 Hours.

A comparative study of African communities with an emphasis on sub-Saharan Africa. Covers regional cultural geography and history as well as ethnography of specific communities. Explores both the challenges facing contemporary African nations as well as emerging solutions. Includes exposure to African art, literature, music, cinema, and food. Offered as AAST 3329 and ANTH 3329; credit will be granted in only one department.

ANTH 3330. CULTURAL DIVERSITY AND IDENTITY. 3 Hours.

The ways identity is constructed in contemporary societies in an increasingly complex and multicultural world. Ethnic, racial, gender, and class identities. How and when identity is asserted and assigned, and how it can both draw boundaries and forge ties between peoples. Formerly listed as ANTH 2350. Credit cannot be given for both ANTH 2350 and ANTH 3330. Also listed as MAS 3330; credit cannot be granted for both ANTH 3330 and MAS 3330. Offered as AAST 3330 and ANTH 3330; credit will be granted in only one department.

ANTH 3331. CULTURE AND PERSONALITY. 3 Hours.

The interplay of culture and personality in various Western and non-Western societies. The relationship of specific practices to the development of personality and the psychological effects of colonization, modernization, and economic development of traditional societies.

ANTH 3332. FOOD AND CULTURE. 3 Hours.

Considers food systems from biological, ecological, and political-economic perspectives. May include food history, cuisines, food preferences, and other areas of anthropological scholarship on food and culture. May cover food and economic development, hunger and overnutrition, food and religion, and the globalization of foods and food systems.

ANTH 3333. NORTH AMERICAN INDIANS. 3 Hours.

North American Indian cultures and their development both before and after European contact.

ANTH 3334. ANTHROPOLOGY OF SOUTH ASIA. 3 Hours.

With a focus on the Indian subcontinent, this course introduces students to the culture, history and politics of South Asia. Drawing upon anthropological studies and a range of materials, including Bollywood films, music, tourist brochures, advertisements, Gandhi's writings, and South Asian literature, students will gain an increased understanding of the region's past and present.

ANTH 3335. GANDHI: CULTURE AND POLITICS IN A GLOBAL WORLD. 3 Hours.

Introduction to the life and times of Mahatma Gandhi in order to explore the cultural politics of religion, food, animal welfare, sexuality, social movements, and globalization processes. Students gain understanding of Gandhi's enduring significance in the contemporary world.

ANTH 3336. ANTHROPOLOGY OF RELIGION. 3 Hours.

A crosscultural study of magic and religion. Theories of the origin and function of magic and religion in pre-industrial societies.

ANTH 3338. COMPARATIVE KINSHIP AND FAMILY SYSTEMS. 3 Hours.

Variation in kinship and family systems from crosscultural and evolutionary perspectives. Structure, function, and dynamics of kinship and family systems as adaptations to diverse ecological, social, and historical circumstances. Implications of this approach for understanding kinship and family in American society also addressed. Formerly listed as ANTH 4338. Credit cannot be given for both ANTH 3338 and ANTH 4338. Also offered as WOMS 3338; credit will be granted only once. Offered as AAST 3332 and ANTH 3338; credit will be granted in only one department.

ANTH 3339. URBAN ANTHROPOLOGY. 3 Hours.

Examines main issues, theoretical approaches and ethnographic methods used by anthropologists working in cities. Also discusses relevant contemporary topics such as growth of global cities, gentrification, poverty and inequality, and the economic, social and cultural integration of international immigrants in U.S. cities.

ANTH 3341. RESEARCH METHODS IN CULTURAL ANTHROPOLOGY. 3 Hours.

Observational techniques, participant-observation, hypothesis testing, research design, use of the computer in research, analysis, and report writing, and oral presentations of research reports. Satisfies oral communication and computer use competence requirements. Prerequisite ANTH 1306 or ANTH 2322 or permission of instructor.

ANTH 3343. APPLIED ANTHROPOLOGY. 3 Hours.

Explores the use of anthropological knowledge and skills to address practical problems in today's global society, and examines how these are used in government, non-profit, and private sector industries. Addresses issues of health, education, environment, human rights, economic development, and others.

ANTH 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD. 3 Hours.

Introduces students to key concepts in Visual Anthropology. This course highlights the contribution of anthropological methods in theorizing the visual in everyday life for the construction of nationalist, gender, ethnic, and class identities. Readings are drawn from diverse geographical regions. Visual material discussed in class may include ethnographic films, art, graphic novels, comics, illustrated magazines, virtual exhibitions and soap operas. Assignments include a writing and research component, and team-based exercises. Offered as ANTH 3345 and COMM 3345; credit will be granted only in one department.

ANTH 3346. ANTHROPOLOGY OF TOURISM. 3 Hours.

Examines the cultural practices of travel and the impact of tourism on both host and guest communities. Various forms of tourism are addressed including, but not limited to, ethnic, historical, regional, health and medical, and ecotourism. Themes of the "tourist gaze" authenticity, identity, consumption, ritual, borders, and pilgrimage will be explored.

ANTH 3348. ANTHROPOLOGY OF MIGRATION. 3 Hours.

This course focuses on the expanding field of migration studies in social and cultural anthropology. It traces the history of migration studies in anthropology, discusses the major theoretical contributions of anthropologists to the interdisciplinary field of migration, and addresses key contemporary topics in migration studies including globalization, transnational communities, gender, identity, and citizenship. The course heavily relies on ethnographic case studies of different immigrant populations in the U.S. written by anthropologists in the recent past.

ANTH 3349. ANTHROPOLOGY OF GLOBALIZATION. 3 Hours.

The forces of economic globalization now reach every corner of the world to the point that few societies have been untouched by their impact. This course examines the forces that drive globalization and their repercussions upon local communities around the world. It examines how economic globalization affects the lives of real people in developing and industrialized countries as well as in small-scale societies traditionally studied by anthropologists.

ANTH 3350. NORTH AMERICAN ARCHAEOLOGY. 3 Hours.

Prehistoric cultural adaptations in North America from human arrival to European contact. Topics treated include the question of when and where the first Native Americans arrived; the beginnings of village and farming life; and the development of Puebloan and "Mound-building" cultures.

ANTH 3351. ARCHAEOLOGY OF THE AMERICAN SOUTHWEST. 3 Hours.

This course investigates the peoples and places of the prehistoric North American Southwest. The focus is on the period of increasing settlement, diversity, movement, and change from 500 to 1500 C.E. Focuses on the archaeological record, ethnographies and comparative research to understand the past and present peoples of the Southwest.

ANTH 3352. ARCHAEOLOGY OF AFRICA. 3 Hours.

Course follows the African archaeological record from earliest evidence for human behavior through beginnings of state society. Topics may include stone tool technologies, forager strategies, agricultural systems, early iron technology, and trade and social networks. This is a lecture course, with an emphasis on student research. No prerequisites required, but ANTH 2339 is recommended preparation.

ANTH 3353. STONE AGE HUNTERS AND FARMERS. 3 Hours.

Human adaptations and cultural evolution in the Old World from the earliest African sites over two million years ago to the domestication of plants and animals about ten thousand years ago. Formerly ANTH 2353; credit cannot be granted for both ANTH 2353 and ANTH 3353.

ANTH 3354. ANTHROPOLOGY OF HUNTING. 3 Hours.

Covers a broad range of topics exploring hunting through time, from the prehistoric to the present. Topics include cross-cultural issues of meat and diet, hunter-gatherer subsistence behavior, overkill and animal extinction, and sport hunting. Course is relevant to environmental studies and sustainability studies.

ANTH 3355. THE RISE OF CIVILIZATION. 3 Hours.

The development of complex cultures from village farming societies in various regions of the Old and New Worlds. The civilizations of Mesopotamia, Egypt, and Mesoamerica, among others, will be treated, along with general questions concerning the rise, development, and collapse of early civilizations. Formerly ANTH 2355; credit will not be granted for both ANTH 2355 and ANTH 3355.

ANTH 3356. MESOAMERICAN ARCHAEOLOGY. 3 Hours.

Covers cultural developments in Mesoamerica through the rise of complex societies and the Spanish conquest. Topics include the emergence of Olmecs, Zapotecs, Maya, Toltecs, and the Aztecs, and explore the factors that contributed to their appearance and decline. New discoveries within the field of Mesoamerican archaeology will be examined.

ANTH 3357. COLLAPSE AND SUSTAINABILITY OF SOCIETIES. 3 Hours.

This course investigates the collapse of past societies. Understanding why and how archaeologically-known societies collapsed may provide insights to help us understand contemporary social and environmental sustainability problems.

ANTH 3358. UNDERWATER ARCHAEOLOGY. 3 Hours.

Explores the field of underwater archaeology and research methods. Topics include shipwrecks, submerged terrestrial sites, the use of scuba diving, robots, and sonar in excavation and survey, and the history and development of the discipline.

ANTH 3359. STONE TOOLS. 3 Hours.

Covers the evolution of stone tools from the first modified stone objects to the use of stone tools in complex societies such as the ancient Maya and Egyptians. Introduces students to lithic analysis and manufacture, emphasizing hands-on learning.

ANTH 3360. ARCHAEOLOGY IN PRACTICE. 3 Hours.

Covers the practical aspects of archaeology with a focus on hands-on activities and experiential learning. Students learn archaeological skills and understand the life and research of archaeologists. Topics may include research design, survey, and the laws protecting archaeological sites.

ANTH 3366. SEX, GENDER, AND CULTURE. 3 Hours.

The ways gender and sexuality are culturally constructed. Readings include ethnographies, life histories, and fiction. Debates within anthropology and within specific cultures over maleness and femaleness. Offered as ANTH 3366 and WOMS 3366; credit will be granted only once.

ANTH 3369. MEDICAL ANTHROPOLOGY. 3 Hours.

Medical systems studied cross-culturally to understand how environmental, biological, social, and cultural factors affect disease and health. The cultural dynamics of traditional practitioners and rituals within the health care system. Methods of articulating modern medicine with traditional medicine are discussed.

ANTH 3370. ARCHAEOLOGY OF THE PREHISTORIC AEGEAN. 3 Hours.

Origin, evolution and decline of the first high civilizations in Europe, namely the Minoans on the island of Crete and the Mycenaeans in Greece. Stone Age background and Early Bronze Age seafaring in the Cycladic Islands; Late Bronze Age society, economy, and religion; art and architecture of the Minoan and Mycenaean palaces; Linear A and B tablets; Mycenaean collapse and the beginning of the Iron Age; Homer's Iliad, archaeology and the Trojan War.

ANTH 3371. ARCHAEOLOGY OF GREECE. 3 Hours.

Material evidence relevant to our understanding of classical Greek culture and society from the collapse of the Mycenaean Empire through the Hellenistic Period (ca. 1200-31 B.C.). Examination of the magnificent (temples, sculpture, athletic monuments, ships) and the mundane (domestic architecture, pottery, crafts, coinage, inscriptions, architecture and artifacts of civic life, burials). Archaeological evidence will be considered in light of contemporary historical sources.

ANTH 3372. ARCHAEOLOGY OF THE ANCIENT NEAR EAST. 3 Hours.

Survey of the cultures of Mesopotamia, Syria, Palestine, and Anatolia from the earliest agricultural settlements to the late first millennium B.C. based on the surviving archaeological remains. Among the topics covered: Nature of early urbanism; development of religious and economic hierarchies; origins and impact of writing; interrelationships among early states.

ANTH 3373. ARCHAEOLOGY OF EGYPT. 3 Hours.

The culture of ancient Egypt from its earliest occupation until the Arab invasion (7th century A.C.), with emphasis on the first 20 pharaonic dynasties (third and second millennia B.C.). Egyptian social, religious, economic and political development traced through the surviving material culture (architecture, art, industries, artifacts of daily life, funerary remains, etc.) supplemented by historical and literary evidence as pertinent. Egypt's relations with neighboring regions (Crete, Anatolia, Palestine, Nubia and Libya) considered. Offered as AAST 3373 and ANTH 3373; credit will be granted in only one department.

ANTH 3374. ARCHEOLOGY OF EUROPE. 3 Hours.

Ancient Europe is a mosaic of archaeological regionalism whose complexity is arguably unparalleled elsewhere in the world. This course surveys the material remains of several prominent ancient cultures from Iberia to the Danube, from Scandinavia to Greece, dating from stone age to medieval times. Emphasis will be on understanding the various regional traditions and their interactions, and on explicating trends in technology, economy and religion in European society during this long period. Among the topics to be examined: Paleolithic hunters and artists; agricultural origins; megalithic monuments; bronze metallurgy and its ramifications; the first high civilizations in the Mediterranean; the rise of the Celts; the coming of iron; impact of Romanization; the nature of Viking exploration and expansion.

ANTH 3375. NEANDERTHALS AND THE ICE AGE WORLD. 3 Hours.

Explores the archaeological record of Neanderthals, early modern humans, and their contemporaries. Topics include new genetic and isotopic analyses, ancient environments, early art and symbolism, and how the Paleolithic is imagined in modern society.

ANTH 3390. SPECIAL TOPICS IN ANTHROPOLOGY. 3 Hours.

Selected, specialized topics in anthropology. These may be cultural, archaeological, or biological in focus, and vary each semester. Contact the department or click on the course link to find current course title and description. May be repeated for credit with departmental permission as topics vary.

ANTH 3409. PALEOANTHROPOLOGY. 4 Hours.

Paleoanthropology: an exploration of fossil evidence for human origins and human evolution. Course focuses on the evolution of humans and our close relatives, from our origins as a distinct lineage to "anatomically modern" Homo sapiens, including the relationship between biological and cultural/behavioral evolution. Offered as BIOL 3409 and ANTH 3409; credit will be granted only once.

ANTH 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in the designated area. Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of the instructor.

ANTH 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of the instructor.

ANTH 4315. GROWTH, DEVELOPMENT, AND EVOLUTION. 3 Hours.

A survey of topics at the nexus of modern human biological research in growth and development and the evolutionary record of hominid subadults. Offered as BIOL 4316 and ANTH 4315; credit will be granted only in one department. Prerequisite is only required for students registering for ANTH 4315. Prerequisite: ANTH 2307 or permission of the instructor.

ANTH 4322. PROBLEMS IN ANTHROPOLOGY. 3 Hours.

Intensive examination of an important problem in anthropological research selected by the instructor. May be repeated for credit whenever the topic varies.

ANTH 4342. TOPICS IN CULTURAL ANTHROPOLOGY. 3 Hours.

Selected topics, to include anthropological theory, population and cultural ecology, semiotics, and humanistic anthropology. May be repeated for credit with departmental permission. Also offered as ANTH 4342. Credit will be granted in only one department.

ANTH 4348. POLITICAL ANTHROPOLOGY. 3 Hours.

Relationships among power, identity, and culture in cross-cultural perspective. Traditional political systems, political symbols and rituals, gender and power, and the relationship between domination and resistance. How culture influences the ways in which men and women get power, use power, and resist power.

ANTH 4358. TOPICS IN ARCHAEOLOGY. 3 Hours.

Selected topics, to include examination of specific archaeological cultures of the Old World, archaeological theory, and archaeology and pseudoscience. May be taken up to four times for a total of 12 hours credit.

ANTH 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of the instructor.

ANTH 4393. INTERNSHIP IN ANTHROPOLOGY. 3 Hours.

Supervised internship program, in which students intern at various companies, non-profit and governmental agencies, and museums in the Metroplex. Applied use of anthropology in a non-academic setting. Students will learn skills of career development in anthropology. Requirements include several short assignments and a final report to the instructor. Prerequisite: ANTH 2307, ANTH 2322, OR ANTH 2339; permission of the instructor; and junior standing.

ANTH 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department.

ANTH 4398. SUMMER FIELD SCHOOL IN ANTHROPOLOGY. 3 Hours.

(3 or 6 hours credit). Offered only during the summer session. Experience in methods of field research in ethnography or archaeology. May be repeated for credit if research topic changes.

ANTH 4406. HUMAN OSTEOLOGY. 4 Hours.

Detailed examination of human skeletal morphology. Topics include form and function of all skeletal elements in the human body, differentiation of each bone, left and right side identification, identification of fragmented remains, and muscle attachments and articulations. Content useful in forensic anthropology, archaeology, and hominid paleontology. Offered as BIOL 4406 and ANTH 4406; credit will be granted only in one department.

ANTH 4459. BIOARCHAEOLOGY. 4 Hours.

The study of human remains in archaeological contexts in order to reconstruct individual identity, life history, and past population characteristics. No formal prerequisites, but familiarity with the human skeleton is helpful. Lab component is required. Offered as BIOL 4459 and ANTH 4459; credit will be granted only in one department.

ANTH 4460. ZOOARCHAEOLOGY. 4 Hours.

The study of faunal remains from archaeological contexts to understand past human economic strategies and ecological circumstances. Topics include skeletal and taxonomic identification, taphonomic processes, mortality profiles, biometric analyses, and human behavioral ecology. Lab component is required. Offered as BIOL 4460 and ANTH 4460; credit will be granted only once.

ANTH 4698. SUMMER FIELD SCHOOL IN ANTHROPOLOGY. 6 Hours.

(3 or 6 hours credit). Offered only during the summer session. Experience in methods of field research in ethnography or archaeology. May be repeated for credit if research topic changes.

ANTH 5191. CONFERENCE COURSE. 1 Hour.**ANTH 5307. FORENSIC ANTHROPOLOGY. 3 Hours.**

Estimating age, sex, race, stature, pathology, cause of death, and time since death from human remains. The role of skeletal biology and physical anthropology in criminal investigation. Case studies will be used to demonstrate application of the methods studied. Requires enrollment in the undergraduate lab section.

ANTH 5310. HISTORY OF ANTHROPOLOGICAL THEORY. 3 Hours.

This course is a critical examination of major theoretical trends in ethnological theory, from mid-19th century to the present.

ANTH 5315. ARCHAEOLOGICAL METHODS. 3 Hours.

An examination of research methods and underlying theory in archaeology and their evolution since the era of European antiquarianism. Origins and development of archaeology as a scholarly discipline. Emphasis on the period 1960-present; consideration of recent trends in analysis and reportage.

ANTH 5317. ARCHAEOLOGY OF EXPLORATION. 3 Hours.

Archaeological evidence for travel in antiquity. Technology of travel (horse/camel, wheeled vehicles, boats) and related topics (navigation; development of trade and trade routes; nature of discovery, settlement and colonization in antiquity). Case studies drawn from ancient cultures of the Old World from the Stone Age through Medieval times.

ANTH 5320. METHODS IN BIOLOGICAL ANTHROPOLOGY. 3 Hours.

This course covers several topical areas relevant to biological anthropologists specializing in human biology, including osteology and skeletal biology, skeletal maturation (both postcranial and craniofacial), growth and development from birth to biological maturity, and selected topics in forensics, anthropometry, physiology, nutrition, genetics, epidemiology, and demography.

ANTH 5325. QUALITATIVE METHODS. 3 Hours.

Students do fieldwork in anthropology. Students practice participant observation, conduct an interview, collect a kinship chart, map blocks, collect life histories and participate in rituals. Course emphasizes methods of data collection, analysis/interpretation of data, and critical writing.

ANTH 5341. POSTCOLONIAL SOUTH ASIA. 3 Hours.

It approaches the competing and complementary claims on postcolonial theory by mapping the intersections in historical anthropology, literary theory, and cultural analysis. More broadly it brings to focus the shifts from Marxist to Poststructuralist directions. Though the regional focus is on India, the endeavor is also to assess dialogues among varying strands of cultural perspectives and its impact in other postcolonial contexts, both within and beyond the South Asian subcontinent.

ANTH 5342. ADVANCED ETHNOLOGY. 3 Hours.

Seminar based on student reports and critiques of assigned readings. Major emphasis on the areas of ethnology and social anthropology.

ANTH 5344. CULTURES OF LATIN AMERICA. 3 Hours.

An ethnological comparison of societies and cultures in Central and South America. Emphasis on gender, ethnicity, and political economy.

ANTH 5345. RELIGION AND CULTURE. 3 Hours.

An ethnological comparison of native religions to understand non-western belief systems. Emphasis on rituals, myths, totemic systems, taboos, and cosmology.

ANTH 5346. MESOAMERICAN ARCHAEOLOGY. 3 Hours.

An examination of the diversities of several prehistoric Mesoamerican cultures including the Olmec, Maya, Teotihuacan, Zapotec, and the Aztec. Current issues including the beginnings of agriculture, early village life, the rise of complexity and the institution of kingship, warfare, and Mesoamerican ideology and cosmology will be addressed.

ANTH 5349. TOPICS IN ANTHROPOLOGY. 3 Hours.

May be repeated for credit as the topic changes.

ANTH 5351. EMERGENCE OF HUMANKIND. 3 Hours.

An intensive review of the evidence for, and main outlines of, human biological and cultural evolution up to agricultural origins.

ANTH 5353. MEDICAL ANTHROPOLOGY. 3 Hours.

An examination of anthropological concepts for understanding curing practices and attitudes toward health programs in various cultures.

ANTH 5355. HUNTERS AND GATHERERS. 3 Hours.

Cross-cultural approach to the ecological, social, and historical contexts of hunters, gatherers, and foragers.

ANTH 5363. ETHNOGRAPHY AND PERSONAL NARRATIVE. 3 Hours.

Focus is on anthropology and autobiography, autoethnography, life history, and narrative constructions of selfhood in different cultural contexts. Development of the life history approach in ethnographic research. Methods in the collections and analysis of life stories.

ANTH 5365. GLOBALIZATION AND INTERNATIONAL MIGRATION. 3 Hours.

Examines how the expansion of global capitalist economy has contributed to the growth of international migration around the world. Focuses on how transnational migration affects the economic, social, political, and cultural practices of immigrants in both their countries of origin and destination.

ANTH 5369. FOLKLORE AND MYTHOLOGY. 3 Hours.

Function, forms, and interpretation of folklore and myth in traditional societies; examination of oral literature as an expression of continuity and change; emphasis on a structural analysis of myth.

ANTH 5370. APPLIED ANTHROPOLOGY. 3 Hours.

Examines the application of anthropological knowledge to solve practical problems in today's global world. We learn how anthropological concepts, methods, and insights are applied to understand and solve important problems related to economic development, health, environmental issues, immigration, international business, and others.

ANTH 5371. RESEARCH PRACTICUM / INTERNSHIP. 3 Hours.

ANTH 5373. ARCHAEOLOGY FIELD SCHOOL. 3 Hours.

This course, conducted during the summer sessions, consists of on-site and classroom instruction in techniques of archaeological survey, excavation, laboratory, processing, and analysis. Students can receive either three or six hours of credit. Enrollment by permission of instructor only. Prior coursework in anthropology desirable but not necessary.

ANTH 5389. TEACHING ANTHROPOLOGY. 3 Hours.

To learn strategies of coping with practical problems of teaching undergraduate anthropology, students confer with one or more professors to discuss preparing syllabi and lectures, constructing and evaluating examinations, etc. Not to be counted toward the degree requirement.

ANTH 5392. CONFERENCE COURSE IN ANTHROPOLOGY. 3 Hours.

ANTH 5398. THESIS. 3 Hours.

ANTH 5406. HUMAN OSTEOLOGY. 4 Hours.

Detailed examination of human skeletal morphology. Topics include form and function of all skeletal elements in the human body, differentiation of each bone, left and right side identification, identification of fragmented remains, and muscle attachments and articulations. Content useful in forensic anthropology, archaeology, and hominid paleontology. If taken for undergraduate credit either as ANTH 4306 or ANTH 4406, cannot be repeated for graduate credit.

ANTH 5673. ARCHAEOLOGY FIELD SCHOOL. 6 Hours.

This course, conducted during the summer sessions, consists of on-site and classroom instruction in techniques of archaeological survey, excavation, laboratory, processing, and analysis. Students can receive either three or six hours of credit. Enrollment by permission of instructor only. Prior coursework in anthropology desirable but not necessary.

ANTH 5698. THESIS. 6 Hours.

Arabic (ARAB)

COURSES

ARAB 1441. BEGINNING ARABIC I. 4 Hours. (TCCN = ARAB 1411)

Multimedia Immersion in the culture and language of Arabic-speaking countries. Designed to enable students to understand and communicate effectively in Arabic at the beginning level.

ARAB 1442. BEGINNING ARABIC II. 4 Hours. (TCCN = ARAB 1412)

Continuation of beginning Arabic. Prerequisite: ARAB 1441 with a grade of C or better.

ARAB 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

ARAB 2301. LITERATURE IN TRANSLATION. 3 Hours.

The works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. ARAB 2301 may be taken to fulfill the foreign language requirement. Prerequisite: ENGL 1301 and ENGL 1302.

ARAB 2310. ARABIC CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Arabic-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

ARAB 2313. INTERMEDIATE ARABIC I. 3 Hours. (TCCN = ARAB 2311)

Continued immersion in the culture and language of Arabic-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: ARAB 1442 with a grade of C or better.

ARAB 2314. INTERMEDIATE ARABIC II. 3 Hours. (TCCN = ARAB 2312)

Continuation of intermediate Arabic. Prerequisite: ARAB 2313 with a grade of C or better.

ARAB 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

ARAB 3303. ARABIC CONVERSATION & CULTURE. 3 Hours.

Practice in oral expression with an emphasis on developing conversational skills and improving language proficiency in reading and writing. This course looks at the differences between classical and regional colloquialisms as well as elements of Middle Eastern culture. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3304. ARABIC CONVERSATION & CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge through the use of readings, film, and other media. Extensive conversation practice allows students to develop intermediate high level oral skills in a broad range of communicative and cultural contexts. Students learn to express more abstract ideas through description, comparison, and narration. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3305. ARABIC READING AND COMPOSITION. 3 Hours.

The analysis of Arabic texts and composition with emphasis on reading comprehension, grammar, writing skills, and compositional techniques. Readings may include newspaper articles, short stories, and essays on various topics of Arabic culture. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3310. ARABIC LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Arabic language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: ARAB 2314 or the equivalent with a grade of B or better. May not be repeated for credit.

ARAB 3311. ARABIC LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Arabic and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: ARAB 3310 with a grade of B or better.

ARAB 3312. TOPICS IN ARABIC LITERATURE AND CULTURE. 3 Hours.

Multimedia immersion in the language and culture of Arabic speaking countries through the study of selected literary texts in various genres and literary structures. Has an emphasis on developing language skills of reading, writing, and oral communication. May be repeated for credit as topic changes. Prerequisite: ARAB 2314 with a grade of C or better.

ARAB 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Arabic. ARAB 3310 is strongly recommended before ARAB 3345.

ARAB 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

An introduction to the business of localization with an emphasis on translation relevance, speed, and quality. The art of machine translation as well as the areas of cost and metrics will be addressed. Students will work with two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Arabic. Prerequisite: ARAB 3310.

ARAB 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Arabic. Prerequisite: ARAB 3310 or ARAB 3311.

ARAB 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

ARAB 3393. ARABIC INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

ARAB 4393. ARABIC INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Arabic, outside readings, and formal presentations. Prerequisite: Two ARAB 3000 level courses and permission of the instructor.

Architectural Engineering (AREN)

COURSES

AREN 1105. INTRODUCTION TO ARCHITECTURAL ENGINEERING. 1 Hour.

Introduction to basic architectural engineering practice. There are several writing assignments and an oral presentation. Use of spreadsheet and word processor software in solving architectural engineering problems and presenting solutions. Professional engineering licensure and the various specializations within civil engineering are covered.

AREN 1205. INTRODUCTION TO ARCHITECTURAL ENGINEERING. 2 Hours.

This course introduces students to the education and practice of architectural engineering, a discipline of engineering that prepares engineers to work effectively on teams that are creating buildings. Course content addresses engineering ethics, professional licensure, sustainability, creative approaches to problem solving and the role of architectural engineering and other engineering disciplines on building construction projects.

AREN 1252. COMPUTER TOOLS - AUTOCAD. 2 Hours.

Introduction to computer aided design, using AutoCAD. Creation of precise two-dimensional engineering drawings and solid models. Prerequisite: Grade of C or better in MATH 1421.

AREN 2152. COMPUTER TOOLS - MATHCAD. 1 Hour.

Introduction to computer aided mathematics, using Mathcad. Solution of engineering problems involving systems of simultaneous linear and nonlinear equations and elementary calculus, use of the tools for visualization. Prerequisite: Grade of C or better in PHYS 1443.

AREN 2153. COMPUTER TOOLS - CIVIL 3D. 1 Hour.

Introduction to civil engineering construction documentation and building information modeling (BIM) using AutoCAD Civil 3D. Prerequisite: Grade of C or better in AREN 1252.

AREN 2191. PROBLEMS IN ARCHITECTURAL ENGINEERING. 1 Hour.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 2221. DYNAMICS. 2 Hours.

Planar and spatial kinematics and kinetics of particles and rigid bodies utilizing Newton's Laws of Motion, the principle of work and energy, and the principle of impulse and momentum; introduction to single degree of freedom vibration. Prerequisite: Grade of C or better in AREN 2311; grade of C or better in MATH 2425.

AREN 2252. INTRODUCTION TO CONSTRUCTION DRAFTING. 2 Hours.

This course will introduce students to basic concepts of construction drafting including an introduction to orthographic drawings (plans, sections, elevations), principles of scale, line weight, drawing types and drawing conventions. The course introduces students to 2-dimensional Computer Aided Design tools which they use to produce the construction drawings. Prerequisite: Grade of C or better in MATH 1421; or concurrent enrollment in MATH 1426 or HONR-SC 1426; or grade of C or better in MATH 1426 or HONR-SC 1426.

AREN 2291. PROBLEMS IN ARCHITECTURAL ENGINEERING. 2 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 2311. STATICS. 3 Hours.

Vector algebra; composition and resolution of forces; equivalence of force couple systems; equilibrium of force systems acting on particles, and force - couple systems acting on rigid bodies, and systems of rigid bodies; internal forces in rigid bodies; shear and moment diagrams; centroids and moments of inertia; frictional forces. Prerequisite: Grade of C or better in PHYS 1443.

AREN 2313. MECHANICS OF MATERIALS I. 3 Hours.

Concepts of stress and strain; stress-strain relationships. Behavior of members subjected to tension, compression, shear, bending, torsion, and combined loading. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: Grade of C or better in AREN 2311; Grade of C or better in MATH 2425.

AREN 2315. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

Materials, methods and sequences of the construction process; emphasis on design, specification, purchase and use of concrete, steel, masonry and wood. An understanding of the uses of construction materials. Prerequisite: Grade of C or better in AREN 1205.

AREN 2391. PROBLEMS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

AREN 3110. ARCHITECTURAL ENGINEERING COMMUNICATIONS. 1 Hour.

Technical writing, oral communication, professional presentations, and other related topics. Prerequisite: Grade of C or better in COMS 2302.

AREN 3143. PROPERTIES AND BEHAVIOR OF SOILS. 1 Hour.

An introduction to determination of civil engineering properties of soil and their behavior, identification, grain size analysis, Atterberg limits, compaction, permeability, consolidation, and shear strength. Also an introduction to sampling of soil materials. Prerequisite: Concurrent enrollment in AREN 3343.

AREN 3191. PROBLEMS IN ARCHITECTURAL ENGINEERING. 1 Hour.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 3213. BUILDING SCIENCE. 2 Hours.

The interactions between humans and indoor environments are critical for accessing human comfort and energy efficiency in buildings. This course introduces the physical phenomena that affect building design and energy performance with respect to human comfort in buildings. Topics include both indoor environmental quality (thermal comfort, indoor air quality, visual comfort, audial comfort), relevant building systems (mechanical, electrical, envelope systems), and sustainable buildings. Prerequisite: Grade of C or better in CHEM 1465 and PHYS 1444.

AREN 3218. ARCHITECTURAL ENGINEERING GEOMETRIC DESIGN TOOLS. 2 Hours.

This course will address principles of Euclidean and non-Euclidean Geometry in the area of architectural engineering. Topics include golden ratio, golden mean, geodesics on surfaces, conic sections, parametric equations with focus on the techniques, skills, and modern engineering tools necessary for architectural engineering practices. Prerequisite: MATH 1421 or equivalent, AREN 1205.

AREN 3291. PROBLEMS IN ARCHITECTURAL ENGINEERING. 2 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 3301. STOCHASTIC MODELS FOR CIVIL ENGINEERING. 3 Hours.

Basic theory of probability and statistics with practical applications to civil and environmental engineering problems. Emphasis on sampling, distribution functions, tests of significance, and regression modeling. Prerequisite: Grade of C or better in MATH 2425.

AREN 3305. BASIC FLUID MECHANICS. 3 Hours.

Fundamentals of fluid statics, kinematics of fluid flow, fluid forces, similitude, and dimensional analysis. Related to steady flow of incompressible fluids in confined and free surface systems. Prerequisite: Grade of C or better in AREN 2311; Grade of C or better in MATH 3319 or concurrent enrollment.

AREN 3311. CONSTRUCTION ENGINEERING. 3 Hours.

Principles of construction engineering and the project management process, value engineering, specifications, different construction contracts and delivery methods, estimating and scheduling fundamentals and project control, and management of construction process. Prerequisite: Grade of C or better in IE 2308.

AREN 3331. MECHANICAL AND ELECTRICAL SYSTEMS. 3 Hours.

Mechanical and electrical systems with a major emphasis on estimating and installation, design and control of the electrical, heating, ventilation and cooling system, site planning and acoustical treatments. Prerequisite: Grade of C or better in PHYS 1444.

AREN 3341. STRUCTURAL ANALYSIS. 3 Hours.

Structural analysis/design process, structural forms, and basic structural elements. Analysis of statically determinate structures including beams, trusses, frames, and composite structures, shear and moment diagrams, influence lines, and moving loads. Methods to compute deflections including double integration, moment area, and virtual work. Methods of analysis for statically indeterminate structures including consistent deformation, slope deflection and moment distribution. Use of structural analysis programs. Prerequisite: Grade of C or better in AREN 2313.

AREN 3343. SOIL MECHANICS. 3 Hours.

An introduction to the significant geophysical and soil science properties and behavior of materials making up the earth's crust as they apply to civil engineering, sources of materials, classification, plasticity, permeability, stress distribution, consolidation, shear strength, and settlement. Also an introduction to basic foundation engineering concepts. Prerequisite: Grade of C or better in AREN 2313; Concurrent enrollment in AREN 3143.

AREN 3347. REINFORCED CONCRETE DESIGN. 3 Hours.

An analysis, design and synthesis course for concrete structures, emphasizing strength design method. Topics include strength and serviceability requirements, design of one way slabs, rectangular beams, flanged sections and columns, for strength, shear, bond, bearing, and serviceability. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in AREN 3341 and admission to the AREN Professional Program.

AREN 3391. PROBLEMS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the department chair.

AREN 4300. ADVANCED TOPICS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Advanced topics of current interest in any one of the various fields of architectural engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Consent of instructor required and Admission to the AREN Professional Program.

AREN 4301. ADVANCED TOPICS IN ARCHITECTURAL ENGINEERING WITH LAB. 3 Hours.

Advanced topics of current interest in any one of the various fields of architectural engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Consent of instructor required and Admission to the AREN Professional Program.

AREN 4307. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both AREN 4307 and CE 5382. Prerequisite: Grade of C or better in AREN 3311; Admission to the AREN Professional Program.

AREN 4309. THERMODYNAMICS FOR ARCHITECTURAL ENGINEERS. 3 Hours.

Basic concepts and definitions of thermodynamics, entropy, and introduction to first law of thermodynamics, second law of thermodynamics, and introduction to conductive, convective, and radiative transfer. Application of thermodynamics to building heating, cooling and ventilation (HVAC) systems; use of modern techniques for design and specifications of selected thermal and mechanical systems for buildings. Prerequisite: Grade of C or better in MATH 2425 (or HONR-SC 2425), PHYS 1444, and CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment).

AREN 4326. GIS/HYDROLOGIC & HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS-developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, and the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply. Prerequisite: Grade of C or better in AREN 3305; Admission to the AREN Professional Program.

AREN 4346. ELECTRICAL SYSTEMS & LIGHTING FOR ARCHITECTURAL ENGINEERS. 3 Hours.

Basic fundamentals of electrical principles and electric lighting principles; application of basic electrical science for the design and specification of electrical systems and lighting for buildings using modern techniques; safety and protection systems in buildings and national electrical code and standards. Prerequisite: Grade of C or better in MATH 2425 (or HONR-SC 2425) and PHYS 1444; Admission to the AREN Professional Program.

AREN 4348. STRUCTURAL DESIGN IN STEEL. 3 Hours.

A design synthesis course for structural steel structures using Allowable Strength Design and Load Resistance Factor Design. Topics include tension members, compression members, flexural members and simple connections. Building codes, American Institute of Steel Construction (AISC) specs, material specs, test methods, and recommended practice documents. Prerequisite: Grade of C or better in AREN 3341 and admission to the AREN Professional Program.

AREN 4352. PROFESSIONAL PRACTICE. 3 Hours.

Professional practice issues in the private and public sector are addressed by visiting practitioners. Topics include project management, teamwork, obtaining work, regulatory requirements, specifications, issues in design/build, design alternatives, cost estimation, design and construction drawings, contract and construction law, legal issues, ethics and professionalism, design reports, licensure, lifelong learning, ethical and engineering practice organizations. Learning principles of engineering practice by working as a team is emphasized. Oral and written presentations are required. Prerequisite: Admission to the AREN Professional Program.

AREN 4360. DESIGN OF STRUCTURAL MASONRY. 3 Hours.

Covers masonry unit types and mortar types, reinforcing and connections. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building Codes, Masonry Standards Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in AREN 3341; Admission to the AREN Professional Program.

AREN 4365. STRUCTURAL WOOD DESIGN. 3 Hours.

Covers material grade and properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and diaphragms. Building codes, National Design Specification for Wood Construction (NDS) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in AREN 3341; Admission to the AREN Professional Program.

AREN 4383. SENIOR PROJECT. 3 Hours.

This course will provide architectural engineering students the opportunity to apply tools, skills and principles of architecture engineering towards the planning, analysis of alternatives, and designs of engineering solutions for projects identified by the instructor. Projects will address engineering standards and multiple realistic constraints. Application of computer-aided design and engineering tools will be utilized for analysis and design. Student presentations will address alternative solutions, application of building code and engineering standards within architectural context. Students will work together and submit a team project. Prerequisite: Grade of C or better in AREN 4348; Completion of all required 3000 level courses; or permission of instructor.

AREN 4391. PROBLEMS IN ARCHITECTURAL ENGINEERING. 3 Hours.

Selected problems in architectural engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

AREN 4393. INDUSTRIAL INTERNSHIP. 3 Hours.

Student to experience industrial internship under supervision of an industrial mentor and internship committee. Prerequisite: Admission to the AREN Professional Program.

AREN 4394. RESEARCH INTERNSHIP. 3 Hours.

Student to experience research internship under supervision of a CE faculty. Prerequisite: Admission to the AREN Professional Program.

Architecture (ARCH)

COURSES

ARCH 1101. ACADEMIC SUCCESS SKILLS IN ARCHITECTURE. 1 Hour.

This is a required course intended to establish a solid overview of the School of Architecture and the architecture program for all first semester UTA students who intend to declare as an architecture major. Topics for the class include: critical thinking, presentation techniques, internships, attendance of exhibitions and lectures, navigating the advising process, portfolio review and techniques, and using the library and other university resource sources. Other topics may also be discussed. The course be taken only once for credit.

ARCH 1191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Permission of the instructor and architecture undergraduate advisor required. Restricted to architecture-intended majors.

ARCH 1301. INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN. 3 Hours.

The interrelationships between society, culture, and the built environment. Prerequisite: Department consent.

ARCH 1341. DESIGN COMMUNICATIONS I. 3 Hours.

Introduction to freehand drawing within the dual concepts of observation and representation. This course explores various graphic techniques with emphasis on preparatory sketching, composition, contrast, texture, narrative, and line quality. Students will also be exposed to color use, physical model-making, orthographic delineation, and digital documentation. Prerequisite: Restricted to Architecture-Intended, ARCH_UCOL, Interior Design-Intended and INTD_UCOL majors.

ARCH 1342. DESIGN COMMUNICATION II. 3 Hours.

A continuation of ARCH 1341 with emphasis on refined techniques and more complex drawing problems. This course focuses on constructed geometries and spatial representation through orthographic projection and axonometric delineation, digital modeling, and in-situ notational sketching. Students will also be exposed to line weight, multi-point perspectives, and digital documentation. This course is offered as INTD 1342; credit will be granted only once. Prerequisites: ARCH 1301, ARCH 1341. Restricted to Architecture-Intended, ARCH_UCOL, Interior Design-Intended and INTD_UCOL majors.

ARCH 2300. MASTERWORKS OF WESTERN ARCHITECTURE. 3 Hours.

Selected architectural complexes as representative of various periods of Western culture. Stresses cultural relevance rather than stylistic analysis. Intended as humanities elective for non-architecture majors.

ARCH 2303. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused primarily on the period from prehistory through 1750. Prerequisite: ARCH 1301, ARCH 1341 and ARCH 1342 or INTD 1342. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 2304. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused on the period from 1750 to the present. Prerequisites: ARCH 1301, ARCH 1341, ARCH 1342 or INTD 1342, and ARCH 2303. Sophomore standing in the program. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 2341. DESIGN COMMUNICATION FOR ENGINEERS. 3 Hours.

This course introduces engineering students to design communication skills. Content includes sketching, drawing, graphic layout, diagramming and an introduction to orthographic projections and perspectives. Media will be both analog and digital. Digital tools may include image processing software, graphic design software and computer aided design (CAD) software. Prerequisite: Restricted to AREN students.

ARCH 2391. TOPICS IN ARCHITECTURE. 3 Hours.

Selected topics in concepts, philosophy, and models of architecture and allied arts of design. Prerequisite: Department Consent.

ARCH 2551. BASIC DESIGN AND DRAWING I. 5 Hours.

An introduction to design, design drawing, and color theory utilizing lectures and studio exercises. Two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Emphasis on form, color, texture, and spatial determinants. Prerequisite: ARCH 1342 or INTD 1342, credit or concurrent enrollment in ARCH 2303. Sophomore standing in the program. Restricted to Architecture-intended, ARCH_UNIV, Interior Design-intended, and INTD_UNIV majors.

ARCH 2552. BASIC DESIGN AND DRAWING II. 5 Hours.

An introduction to design, design drawing, and color theory utilizing lectures and studio exercises. Two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Emphasis on form, color, texture, and spatial determinants. This course is offered as ARCH 2552 and INTD 2552, credit will not be granted for both. Prerequisite: ARCH 2303, ARCH 2551 and credit or concurrent enrollment in ARCH 2304. Restricted to Architecture-intended and Interior Design-intended majors.

ARCH 3312. HISTORY OF CONTEMPORARY THEORY. 3 Hours.

This course will familiarize students with major intellectual paradigms and themes that have informed postwar architectural practice in Western tradition. Through reading primary theoretical texts that have had major impact on practice, students will hone their skills of critical thinking and be better able to position themselves in their navigation of contemporary theoretical issues. Prerequisite: ARCH 2303 and ARCH 2304 and Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 3323. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

The nature of materials and structural concepts to be used in the construction process. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3324. STRUCTURES I. 3 Hours.

An introduction to architectural structures, including statics and strength of materials, with emphasis on design in timber. Prerequisite: ARCH 3323, PHYS 1441 or PHYS 1443, MATH 1327 or MATH 1426. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3336. STRUCTURAL SYSTEMS FOR ARCHITECTURAL ENGINEERS. 3 Hours.

This course covers the engineering design of various concrete, steel and masonry structural systems used in the construction of buildings. Building types vary from single-story commercial buildings to low-rise and high-rise buildings. Current building codes and project examples are examined from a fundamental structural engineering perspective, in which the rationale for the structural system is analyzed, calculations performed, and systematic construction design processes are developed for gravity loads and lateral loads from start to completion of each project. The project examples culminate with a detailed cost analysis based on current industry trends. Prerequisite: Restricted to CE_AENUCOL, CE_ARENINT, CE_ARENBS, and CE_AREPROB majors.

ARCH 3343. ARCHITECTURE COMPUTER GRAPHICS (DESIGN COMMUNICATION III). 3 Hours.

An advanced course to develop visual sensitivity and awareness of digital techniques to enable the student to study design ideas and present those ideas in the various design disciplines. Emphasis on the relationship of computer graphics with the design process. This course is offered as ARCH 3343 and INTD 2343, credit will only be granted once. Prerequisite: Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3354. INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES. 3 Hours.

Introduces major topics, questions, issues and methods within interdisciplinary and cross-disciplinary environmental studies. Includes a study of some of the most significant texts, studies, practices, and creative works from at least four different fields as they pertain to questions of environment, ecology, and sustainability. Prerequisite: Acceptance in the Environmental and Sustainability Studies Minor.

ARCH 3357. DESIGN TECHNOLOGIES - BUILDING INFORMATION MODELING FOR ARCHITECTS/ENGINEERS. 3 Hours.

Introduction to Building Information Modeling (BIM); discussions of the roles and impacts of BIM in the design process, energy assessment, and facility management. The course includes creating building elements such as walls, windows, doors, roof, ceiling, stairs, ramp, and structural and MEP systems. Course provides an overview of BIM applications such as daylight and energy analysis. Prerequisite: AREN 2352. Restricted to CE_AENUCOL, CE_ARENINT, CE_ARENBS, and CE_AREPROB majors.

ARCH 3361. ARCHITECTURE AND ENVIRONMENT. 3 Hours.

An overview of sustainable design integrated with natural resource conservation. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3364. SITE DESIGN. 3 Hours.

The related site design process includes site planning pertaining to land use, case studies, siting of structures, codes, and topography. Prerequisite: Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3551. BASIC DESIGN FOR ENGINEERS. 5 Hours.

This course is an introduction to design communication (verbal and graphic), the process of design, architectural principles and the process of navigating the relationship between architectural design and engineering. Precedent studies introduce students to Architecture and two- and three-dimensional studio exercises develop a sensibility to design fundamentals and vocabulary. Prerequisite: ARCH 1301 and ARCH 2341 and restricted to AREN students.

ARCH 3553. DESIGN STUDIO: ARCHITECTURE I. 5 Hours.

The reiteration of basic design principles/spatial concepts toward the synthesis of simple building types, with application of materials, introduction of structural systems, with preliminary understanding of site design and environmental issues. Credit will be given for only one of ARCH 3553 or INTD 3553. Prerequisite: ARCH 2552. Credit or concurrent enrollment in ARCH 3323 and ARCH 3343. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 3554. DESIGN STUDIO: ARCHITECTURE II. 5 Hours.

A continuation of ARCH 3553 with an increased complexity and scale of projects which address buildings within urban contexts incorporating a variety of design theory, technical, site and structural considerations. Prerequisite: ARCH 3323, ARCH 3343, ARCH 3553. Credit or concurrent enrollment in ARCH 3324 and ARCH 3364. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor.

ARCH 4305. THE CITY OF ROME. 3 Hours.

History, topography, and monuments of the city of Rome and its environs from its legendary founding in 753 B.C. until the 20th Century. Urban form and architecture will be inspected in context of contemporaneous culture, with special emphasis on imperial and papal Rome. Prerequisite: Department consent. Restricted to Architecture and Interior Design Majors.

ARCH 4306. URBAN DESIGN THEORY. 3 Hours.

Design theory and its application to the urban scale, as applied to historical and contemporary examples. Prerequisite: ARCH 2552. Department consent. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4307. THE LIFE OF CITIES. 3 Hours.

A look at a series of world cities by situating their architectural context, with a particular focus on the impact of 20th century modernism and postmodernism on city fabric. Prerequisite: ARCH 2303 and ARCH 2304 and Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4308. HISTORY OF URBAN FORM. 3 Hours.

The history of cities as physical form, influenced by political, economic, and social forces. Prerequisite: Department consent. Restricted to Architecture and Interior Design majors.

ARCH 4309. MUSEUMS: HISTORY, CULTURE, DESIGN. 3 Hours.

This course investigates the historical and cultural forces driving the design of museums in the 19th and 20th centuries with special attention to the development of a diverse range of new museum types beyond traditional art and natural science museums. Field trips to local museum sites are required. Prerequisite: ARCH 2303 and ARCH 2304, junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4311. TOPICS IN ARCHITECTURAL THEORY. 3 Hours.

Selected topics in concepts, philosophy, and models of architecture and allied arts of design with specific application to 20th Century problems. May be repeated for credit as specific topics vary. Prerequisites: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4313. THE ARCHITECT IN CONTEMPORARY SOCIETY. 3 Hours.

Readings on the Culture of Architecture The focus of this course is to examine this social construct in the belief that critical self-reflection can assist in improving success within it. This examination will be conducted through readings in a collection of publications both historical and contemporary that offer critical insight into the professional/social culture of architects. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture. This course is offered as ARCH 4314 and INTD 4314; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4315. TOPICS IN THE HISTORY OF ARCHITECTURE AND DESIGN. 3 Hours.

Selected topics in architecture and the allied arts of design. Some recent topics include: Architecture of Texas, The Life of Cities, History of Architecture Theory, Developing World Slum Housing, Architecture and Politics, and Contemporary Architecture. Certain topics may be offered every second or third year. The course may be repeated up to four times as the topics change. Prerequisite: ARCH 2303 and ARCH 2304, junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4316. MODERN ARCHITECTURE I. 3 Hours.

Development of 20th Century architecture from the origins of the modern movement in the 1890s until its diffusion in Europe and America in the 1930s. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4317. MODERN ARCHITECTURE II. 3 Hours.

Development of 20th Century architecture from the diffusion of modernism in the 1930s to the present day. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors, or Department consent.

ARCH 4319. HOUSING PROTOTYPES: 1920s TO PRESENT. 3 Hours.

An extensive investigation of the many states of housing that architects and educators have encountered in the last 100 years. The course is organized through introduction, research, analysis, and case study of various housing typologies, unit design principles, density concerns, site, relationship of inside and outside, zoning and building codes, and new emerging housing building types. Prerequisite: ARCH 2303 and ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4320. PERFORMANCE-BASED DESIGN IN ARCHITECTURE. 3 Hours.

An overview of Performance-Based Building Design (PBBD) in architecture and how clients' expectations are translated into performance requirements, how we describe performance objectives, how we define performance indicators, and finally, how we can quantify and assess building performance. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4325. ENVIRONMENTAL CONTROL SYSTEMS I. 3 Hours.

Acoustics and illumination and their significance in the total design. Prerequisite: PHYS 1442. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4326. ENVIRONMENTAL CONTROL SYSTEMS II. 3 Hours.

Climate controls, mechanical and electrical systems, and their significance in the total design. Prerequisite: ARCH 4325 or AREN 3331. Junior standing in program. Restricted to Architecture, Interior Design, and Architectural Engineering majors.

ARCH 4329. TOPICS IN COMPUTERS AND DESIGN. 3 Hours.

Selected topics in the range and potential of digital computer applications in the design professions. May be repeated for credit as specific topics vary. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4332. ENERGY USE AND CONSERVATION IN ARCHITECTURE. 3 Hours.

Basic concepts of the efficient use and conservation of energy related to architectural design principles. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4338. CODES AND REGULATIONS. 3 Hours.

A study of accessibility, building and energy codes and related regulations including the architects' responsibility for compliance. This course is offered as ARCH 4338 and INTD 3338; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4339. DIGITAL FABRICATION METHODOLOGY. 3 Hours.

The history, theory, and methodology framing the discourse for parametric design and digital fabrication with an emphasis on digital fabrication techniques and introduction to parametric modeling software. Prerequisites: Junior standing in program. Open to ARCH and INTD majors.

ARCH 4341. NOTATIONAL DRAWING. 3 Hours.

Seminar concerned with analytical drawing techniques and how to use the sketchbook as a tool and process for architectural production. Emphasis will be on cultivating drawing strategies that will heighten the ability to make observations through first-hand experience and record them with the correct conventions in order to enable recovery for future use in architectural design. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4344. CONCEPTUAL DRAWING. 3 Hours.

A seminar to explore the aspects of conceptual drawing for the architect and the relationship of design ideas in the drawing process. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4345. DIGITAL CONSTRUCTION. 3 Hours.

A workshop exploring video cartography using photography, animation, motion graphics and digital video. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4346. CONSTRUCTION DRAWINGS. 3 Hours.

The techniques of building construction, the communication of technical information, and the process of preparing contract drawings for construction. Prerequisite: ARCH 3343. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4347. DIGITAL TECTONICS & PROTOTYPING. 3 Hours.

The use of digital technology in the architectural design process focusing on the research and fabrication of full-scale production of prototypes. ARCH 4339 Digital Fabrication Methodology is highly recommended. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4348. ARCHITECTURAL PHOTOGRAPHY. 3 Hours.

Basic photography for architects. The use of photography as an investigative and presentation device in architecture. Emphasis on composition and black and white technique. Prerequisite: ARCH 2552. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4349. PORTFOLIO DESIGN. 3 Hours.

Principles and techniques of producing an architectural/interior design portfolio and resume including graphic design, layout, typography, grid systems, model photography as well as use of layout and photographic software. Prerequisite: ARCH 3553, ARCH 3554. Restricted to Architecture and Interior Design majors.

ARCH 4351. WILDERNESS: A CONDITION OF MIND. 3 Hours.

Changing conceptions of wilderness in Western thought, from ancestral prejudices to recent, revolutionary appreciation. Literary and visual documentation. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4352. HOUSING: FROM CAVES TO MANSIONS IN THE CLOUDS. 3 Hours.

This course examines the evolution of American urban settlements as they evolved from French, Spanish and English concepts of town-planning. The course begins with the Native American settlements in the American Southwest, particularly Mesa Verde and Hovenweep, followed by examination of the earliest European capital cities of Rome, Paris and London. Since the wholesale transplanting of European principles of town-planning traditions could not take root in the New World, distinctly American housing settlements evolved such as Savannah, Santa Fe, Taos and St. Augustine. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4353. HISTORY OF LANDSCAPE ARCHITECTURE. 3 Hours.

Development of landscape design from prehistory through 19th century with emphasis upon rural gardens and urban parks as representative of the social, cultural, and intellectual circumstances of the times and places in which they were created. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4354. CONVERGENCES: BETWEEN ART AND ARCHITECTURE. 3 Hours.

This course explores the convergences of artist methods of production with the processes of architectural practices. The course traces the work of leading filmmakers, both artistic and documentarian, whose professional leanings verge on the province of the architect. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

To gain a working knowledge of Building Information Modeling software (Revit) and advanced 3D modeling software. This course is offered as ARCH 4357 and INTD 3357, credit will only be granted once. Prerequisite: ARCH 3343, INTD 2343, or INTD 3343; and Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4360. POLITICS AND PRACTICE OF PRESERVATION. 3 Hours.

The history and theory of preservation and of the political context that influence these. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4362. STRUCTURAL SYSTEMS IN BUILDINGS. 3 Hours.

An overview of various structural systems including those used in long-span and high-rise buildings. Numerical work limited to the explanation of relevant structural concepts. Prerequisite: ARCH 3324. Junior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4365. CATALYTIC MAPPING. 3 Hours.

An advanced theory elective course and workshop using the potential of mapping as a design, analytic and research mechanism for exploring complex contexts. Prerequisite: Junior standing in Architecture, Interior Design or permission of the advisor.

ARCH 4366. RADICAL URBANISM. 3 Hours.

An advanced theory course focused on the exposure to and critical analysis of some of the most radical, inspirational, and transformative urban design ideas and projects from Vitruvius to today. Prerequisite: Junior standing in Architecture, Interior Design or permission by the advisor.

ARCH 4391. CONFERENCE COURSE. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor.

ARCH 4395. SELECTED TOPICS ARCHITECTURE. 3 Hours.

Studio and lecture courses to explore and present selected topics in architecture and design. May be repeated for credit as topics change. Prerequisite: Junior standing in program. Restricted to Architecture and Interior Design majors.

ARCH 4556. DESIGN STUDIO: ARCHITECTURE III. 5 Hours.

Advanced architectural design problems in programming schematic organization, synthesis and design of buildings in their environmental context. Prerequisites: ARCH 3324, ARCH 3337, ARCH 3343 and ARCH 3554. Senior standing in program. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4557. DESIGN STUDIO: ARCHITECTURE IV. 5 Hours.

Advanced architectural design problems in programming, schematic organization, synthesis and design of buildings in their environmental context. Prerequisite: ARCH 3324, ARCH 3337, ARCH 3343 and ARCH 3554. Restricted to Architecture majors. Minimum 2.8 GPAs both cumulative and within the major required.

ARCH 4591. CONFERENCE COURSE. 5 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor or the Architecture Undergraduate Advisor. Senior standing in program. Restricted to Architecture majors.

ARCH 4595. SELECTED TOPICS ARCHITECTURE. 5 Hours.

A transitional studio course to explore and present selected topics in architecture and design. May be repeated for credit as topics change. Prerequisite: Department consent.

ARCH 5191. CONFERENCE COURSE. 1 Hour.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit as topic changes.

ARCH 5301. INTRODUCTION TO ARCHITECTURE AND INTERIOR DESIGN. 3 Hours.

A survey study of the interrelationships between society, culture, and architecture. Concurrent enrollment of ARCH 5591 and ARCH 5342 required.

ARCH 5303. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN I. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused primarily on the period from prehistory through 1750. Prerequisite: Permission of the instructor.

ARCH 5304. HISTORY OF ARCHITECTURE AND INTERIOR DESIGN II. 3 Hours.

A global survey of architecture emphasizing the material and cultural context for design. Focused on the period from 1750 to the present. Prerequisite: ARCH 5303 and permission of the instructor.

ARCH 5305. CITY OF ROME. 3 Hours.

History, topography, and monuments of Rome and its environs from its legendary founding in 753 B.C. until the 20th Century, with special emphasis on imperial and papal Rome.

ARCH 5306. URBAN DESIGN. 3 Hours.

Urban design theory, method, and implementation using contemporary and historic examples.

ARCH 5307. THE LIFE OF CITIES. 3 Hours.

A look at a series of world cities by situating their architectural context, with a particular focus on the impact of 20th century modernism and postmodernism on city fabric. Prerequisites: ARCH 2303 & ARCH 2304 or ARCH 5303 & ARCH 5304.

ARCH 5308. HISTORY OF URBAN FORM. 3 Hours.

The history of cities as physical form, influenced by political, economic, and social forces.

ARCH 5309. MUSEUMS: HISTORY, CULTURE, DESIGN. 3 Hours.

This course investigates the historical and cultural forces driving the design of museums in the 19th and 20th centuries with special attention to the development of a diverse range of new museum types beyond traditional art and natural science museums. Field trips to local museum sites are required. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304. Department consent.

ARCH 5311. ARCHITECTURAL THEORY. 3 Hours.

A review and analysis of the concepts, philosophy, ideology, and models that promulgated 20th Century architectural design. May be repeated for credit as topics change. Prerequisite: ARCH 2303 or ARCH 5303, ARCH 2304 or ARCH 5304, and permission of the department.

ARCH 5313. THE ARCHITECT IN CONTEMPORARY SOCIETY. 3 Hours.

Readings on the Culture of Architecture The focus of this course is to examine this social construct in the belief that critical self-reflection can assist in improving success within it. This examination will be conducted through readings in a collection of publications both historical and contemporary that offer critical insight into the professional/social culture of architects. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304.

ARCH 5314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture.

ARCH 5315. TOPICS IN ARCHITECTURAL HISTORY. 3 Hours.

Courses to explore and present selected topics in architecture and related fields of the Ancient Mediterranean, the Classical World, the Middle Ages, the 19th Century, and the Non-Western Traditions. May be repeated for credit as topics change. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304. Department consent.

ARCH 5316. MODERN ARCHITECTURE I 1890 TO 1945. 3 Hours.

Origins and development of Modern Architecture in Europe from 1890 to World War II, and its further evolution in Europe and America from 1918 to 1945. Prerequisites: ARCH 2303 and ARCH 2304.

ARCH 5317. MODERN ARCHITECTURE II 1945 TO PRESENT. 3 Hours.

Architectural developments in Europe, Asia, and America since World War II. Prerequisites: ARCH 2303 and ARCH 2304.

ARCH 5319. HOUSING PROTOTYPES: 1920s TO PRESENT. 3 Hours.

An extensive investigation of the many states of housing that architects and educators have encountered in the last 100 years. The course is organized through introduction, research, analysis, and case study of various housing typologies, unit design principles, density concerns, site, relationship of inside and outside, zoning and building codes, and new emerging housing building types. Prerequisite: ARCH 2303 or ARCH 5303 and ARCH 2304 or ARCH 5304.

ARCH 5320. PERFORMANCE-BASED DESIGN IN ARCHITECTURE. 3 Hours.

An overview of Performance-Based Building Design (PBBD) in architecture and how clients' expectations are translated into performance requirements, how we describe performance objectives, how we define performance indicators, and finally, how we can quantify and assess building performance.

ARCH 5321. ADVANCED COMPUTER APPLICATIONS. 3 Hours.

The study and application of specialized computer programs in environmental design. Prerequisites: ARCH 3343 or INTD 3343 or ARCH 5343, or the equivalent. Department consent.

ARCH 5323. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

Construction materials and structural concepts as used in buildings. Prerequisite: permission of the instructor.

ARCH 5324. STRUCTURES I. 3 Hours.

Statics, strength of materials and simple structural systems in buildings. Prerequisite: permission of the instructor.

ARCH 5325. ENVIRONMENTAL CONTROL SYSTEMS I. 3 Hours.

Illumination, acoustics, climate controls, mechanical and electrical systems, and their significance in the total design.

ARCH 5326. ENVIRONMENTAL CONTROL SYSTEMS II. 3 Hours.

Climate controls, mechanical and electrical systems, and their significance in the total design.

ARCH 5327. STRUCTURES II. 3 Hours.

Continuation of ARCH 5324 with emphasis on structural theory and systems in wood and steel. Prerequisite: ARCH 5324.

ARCH 5328. STRUCTURES III. 3 Hours.

Continuation of ARCH 5327 with emphasis on structural theory and systems in masonry and reinforced concrete. Prerequisite: ARCH 5327.

ARCH 5329. TOPICS IN COMPUTERS AND DESIGN. 3 Hours.

Computer aided design, drafting and graphic techniques as applied to architecture. May be repeated for credit as topics change.

ARCH 5330. COMPARATIVE STRUCTURES. 3 Hours.

Comparative analysis and design of structural systems and construction techniques, including architectural and economic determinants. Prerequisite: ARCH 5328 or permission of the instructor.

ARCH 5331. PROFESSIONAL PRACTICE. 3 Hours.

Survey of the administrative functions, and the ethical and legal responsibilities of the architect.

ARCH 5332. ENERGY USE AND CONSERVATION IN ARCHITECTURE. 3 Hours.

Basic concepts of the efficient use and conservation of energy related to architectural design principles. Prerequisite: permission of the instructor.

ARCH 5333. CONSTRUCTION II. 3 Hours.

Advanced construction assemblies and methods, including the principles of cost control. Prerequisites: ARCH 5670.

ARCH 5335. ADVANCED PROFESSIONAL PRACTICE II: MARKETING DESIGN SERVICES. 3 Hours.

A study of the strategies and methods for marketing professional services. Presented as case studies of architecture, interior design, and landscape architecture firms.

ARCH 5336. PROGRAMMING AND SITE DESIGN II. 3 Hours.

The course focuses on project programming and the technical aspects of site design.

ARCH 5337. SOILS AND FOUNDATIONS. 3 Hours.

Soil classifications, field and laboratory identification, physical properties and load-bearing characteristics, retaining walls and foundations.

ARCH 5338. CODES AND REGULATIONS. 3 Hours.

A study of accessibility, building and energy codes and related regulations including the architects' responsibility for compliance. Prerequisite: Permission of Department.

ARCH 5339. DIGITAL FABRICATION METHODOLOGY. 3 Hours.

The conceptualizing and making of objects lying outside the traditional scope of architectural practice, including elements of industrial and product design and the development of working prototypes.

ARCH 5341. NOTATIONAL DRAWING. 3 Hours.

Seminar concerned with analytical drawing techniques and how to use the sketchbook as a tool and process for architectural production. Emphasis will be on cultivating drawing strategies that will heighten the ability to make observations through first-hand experience and record them with the correct conventions in order to enable recovery for future use in architectural design.

ARCH 5342. DESIGN COMMUNICATIONS. 3 Hours.

Architectural drawing, perception, projections, and three-dimensional representation. Prerequisite: Concurrent enrollment in ARCH 5591 is required.

ARCH 5343. ARCHITECTURAL GRAPHICS II. 3 Hours.

An advanced course to develop visual sensitivity and awareness of digital techniques to enable the student to study design ideas and present those ideas in the various design disciplines. Emphasis on the relationship of computer graphics to the design process. Prerequisite: ARCH 5342 or program approval.

ARCH 5344. CONCEPTUAL DRAWING. 3 Hours.

Seminar to explore aspects of conceptual drawing for the architect and the relationship of design ideas in the drawing process.

ARCH 5345. DIGITAL CONSTRUCTION. 3 Hours.

A workshop exploring video cartography using photography, animation, motion graphics and digital video.

ARCH 5346. CONSTRUCTION DRAWINGS I. 3 Hours.

The techniques of building construction, the communication of technical information, and the process of preparing contract drawings for construction.

ARCH 5347. DIGITAL TECTONICS & PROTOTYPING. 3 Hours.

The use of digital technology in the architectural design process focusing on the research and fabrication of full-scale production of prototypes. Completion of ARCH 4339 or ARCH 5339 Digital Fabrication Methodology is highly recommended.

ARCH 5348. ARCHITECTURAL PHOTOGRAPHY. 3 Hours.

The use of photography as an investigative and presentation medium in architecture. Emphasis on composition in black and white technique.

ARCH 5349. ARCHITECTURE PORTFOLIO. 3 Hours.

Seminar concerned with goal toward the production of a personal design portfolio.

ARCH 5350. VESSELS. 3 Hours.

The design of objects for the post-Industrial Age, including vehicles, furniture, jewelry, household objects, and clothing.

ARCH 5351. WILDERNESS: A CONDITION OF MIND. 3 Hours.

Changing conceptions of wilderness in Western thought, from ancestral prejudices to recent, revolutionary appreciation. Literary and visual documentation.

ARCH 5352. HOUSING: FROM CAVES TO MANSIONS IN THE CLOUDS. 3 Hours.

This course examines the evolution of American urban settlements as they evolved from French, Spanish and English concepts of town-planning.

ARCH 5354. CONVERGENCES: BETWEEN ART AND ARCHITECTURE. 3 Hours.

This course explores the convergences of artist methods of production with the processes of architectural practices. The course traces the work of leading filmmakers, both artistic and documentarian, whose professional leanings verge on the province of the architect.

ARCH 5355. HEMISPHERES. 3 Hours.

The study and analysis of Japanese arts and contemporary culture. The arts of ceramics, painting, calligraphy, and sculpture are examined.

Prerequisite: departmental approval.

ARCH 5357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

To gain a working knowledge of Autodesk Revit and 3D Studio Max. Prerequisites: ARCH 3343 or ARCH 5343 or INTD 3343.

ARCH 5361. ARCHITECTURE AND ENVIRONMENT. 3 Hours.

An overview of sustainable design integrated with natural resource conservation.

ARCH 5362. STRUCTURAL SYSTEMS IN BUILDING. 3 Hours.

An overview of various structural systems including those used in long-span and high-rise buildings. Numerical work limited to the explanation of relevant structural concepts. Prerequisite: ARCH 5324.

ARCH 5363. DESIGN RESEARCH. 3 Hours.

Seminar directed toward the understanding of research methods and the programming of an independent design project, leading to the thesis substitute. Graded P/F/R. Prerequisite: Permission of Graduate Advisor.

ARCH 5364. SITE DESIGN. 3 Hours.

The related site design process includes site planning pertaining to land use, case studies, siting of structures, codes, and topography.

ARCH 5365. CATALYTIC MAPPING. 3 Hours.

An advanced theory elective course and workshop using the potential of mapping as a design, analytic and research mechanism for exploring complex contexts.

ARCH 5366. RADICAL URBANISM. 3 Hours.

An advanced theory course focused on the exposure to and critical analysis of some of the most radical, inspirational, and transformative urban design ideas and projects from Vitruvius to today.

ARCH 5370. ADVANCED DESIGN STUDIO. 3 Hours.

Studio course in the generation and development of architectural ideas in formal and environmental contexts. May be repeated for credit. Two of these courses are equivalent to ARCH 5670.

ARCH 5381. PRACTICUM. 3 Hours.

Internship program including work done through an approved architect's office, designed to give practical experience leading to a broader knowledge of the profession. Placement in offices must be approved, and in some cases may also be arranged by the school. Students may enroll in ARCH 5381 for half-time employment or ARCH 5681 for full-time employment. Students enrolled in Practicum may also participate in the Intern Development Program of the American Institute of Architects. No more than six total credit hours in Practicum are allowed for degree. Graded P/F/R.

ARCH 5391. CONFERENCE COURSE. 3 Hours.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit as content changes. Prerequisite: Permission of Graduate Advisor.

ARCH 5395. TOPICS IN ARCHITECTURE. 3 Hours.

Studio, lecture or seminar courses to explore and present special topics in architecture and environmental design. May be repeated for credit as topics change.

ARCH 5591. DESIGN STUDIO I. 5 Hours.

An intensive studio course in architectonic theory and operations. Emphasis on analytic, conceptual, and manipulation procedures.

ARCH 5592. DESIGN STUDIO II. 5 Hours.

Continuation of ARCH 5591. Studio course emphasizing the interrelationship of formal/spatial ideas, use, and the building fabric. Prerequisite: ARCH 5591.

ARCH 5593. DESIGN STUDIO III. 5 Hours.

Continuation of ARCH 5592. Studio course emphasizing the interrelationship of formal/spatial ideas, use, and the building fabric with special attention to the urban context. Prerequisite: ARCH 5592.

ARCH 5594. DESIGN STUDIO IV. 5 Hours.

Continuation of ARCH 5593. Emphasis on complex building designs in urban environments. Off campus study may be substituted. Prerequisite: ARCH 5593.

ARCH 5665. INTERMEDIATE DESIGN STUDIO. 6 Hours.

Advanced architectural design problems in programming, schematic organization, synthesis and design of buildings in their environmental context.

ARCH 5670. ADVANCED DESIGN STUDIO. 6 Hours.

Studio course emphasizing the analysis and design of building aggregations within the urban context. May be repeated for credit.

ARCH 5671. INTEGRATIVE DESIGN STUDIO I. 6 Hours.

Introduces the design of a small to moderate scaled architectural building program. Focus on pre-design, site design, structural resolution, building assembly, building performance, detailing and materiality will be made through graphical identification, analysis, and evaluation. Additional considerations of codes, regulations, cost analysis, and life-cycle cost, are areas of emphasis informing the design process. Prerequisite: ARCH 5325 or ARCH 4325, ARCH 5327. Credit or concurrent enrollment in ARCH 5357, ARCH 4357, or INTD 3357.

ARCH 5672. INTEGRATIVE DESIGN STUDIO II. 6 Hours.

Introduces the design of a larger-scaled architectural project with more complex programming requirements. Focus on the integration of environmental stewardship, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems will be made through graphical identification, analysis, and evaluation, and technical documentation. Project demonstration includes problem identification, contextual evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation. Prerequisite: ARCH 5671 with a grade of C or above.

ARCH 5681. PRACTICUM. 6 Hours.

Internship program including work done through an approved architect's office, designed to give practical experience leading to a broader knowledge of the profession. Placement in offices must be approved, and in some cases may also be arranged by the school. Students may enroll in ARCH 5381 for half-time employment or ARCH 5681 for full-time employment. Students enrolled in Practicum may also participate in the Intern Development Program of the American Institute of Architects. No more than six total credit hours in Practicum are allowed for degree. Graded P/F/R.

ARCH 5691. CONFERENCE COURSE. 6 Hours.

Special subjects and issues as arranged with individual students and faculty members. May be repeated for credit. Prerequisite: Permission of Graduate Advisor.

ARCH 5693. DESIGN THESIS. 6 Hours.

Individual study project conducted by a supervising committee, with program and statement of intent to be filed with the Graduate Advisor during the previous semester. Graded R. Prerequisite: ARCH 5363.

ARCH 5695. TOPICS IN ARCHITECTURE. 6 Hours.

Studio, lecture or seminar courses to explore and present special topics in architecture and environmental design. May be repeated for credit as topics change. Prerequisite: Permission of Graduate Advisor.

ARCH 5698. RESEARCH THESIS. 6 Hours.

Art & Art History (ART)

COURSES

ART 1200. FIRST YEAR SEMINAR IN ART. 2 Hours.

This is a required course intended to establish a solid overview of the Art and Art History Department for all first semester UTA students who intend to declare a studio art or art history major. Topics for the class can include: visiting artist speakers, attendance of exhibitions, writing assignments, surviving the advising process and concentration portfolio review, and library resources. Other topics may be discussed. This course requires concurrent enrollment with UNIV 1131. This course may only be taken once for credit. Prerequisite: Requires concurrent enrollment in UNIV 1131.

ART 1300. FIRST YEAR SEMINAR IN ART. 3 Hours.

This is a required course intended to establish a solid overview of the Art and Art History Department for all first semester UTA students who intend to declare a studio art or art history major. Topics for the class can include: visiting artist speakers, attendance of exhibitions, writing assignments, surviving the advising process and concentration portfolio review, and library resources. Other topics may be discussed. This course may only be taken once for credit. This course includes student success curriculum and associated content and fulfills the University requirement for either UNIV 1101 or UNIV 1131.

ART 1301. ART APPRECIATION. 3 Hours. (TCCN = ARTS 1301)

Intended to develop an understanding, appreciation, and enjoyment of art in its many forms. Recommended as a fine arts elective for non-art majors.

ART 1305. TWO-DIMENSIONAL DESIGN. 3 Hours. (TCCN = ARTS 1311)

The principles and elements of two-dimensional design as expressed through concepts and problems with various media and techniques. Lab fee: \$35.

ART 1306. THREE-DIMENSIONAL DESIGN. 3 Hours. (TCCN = ARTS 1312)

Three-dimensional design principles will be explored to expand knowledge of various materials and develop an awareness of spatial elements as a creative expression. Formerly listed as ART 1303. Credit will not be granted for both ART 1303 and ART 1306. Lab fee: \$35.

ART 1307. DRAWING FUNDAMENTALS. 3 Hours. (TCCN = ARTS 1316)

Basic drawing principles and elements in varied media including such concepts and skills as hand-eye coordination, perceptual acuity, spatial organization, and interpretation of directly observed subjects.

ART 1309. INTRODUCTION TO ART HISTORY I: PREHISTORIC THROUGH 16TH CENTURY. 3 Hours. (TCCN = ARTS 1303)

Major developments in art, from Archaic Greece through the European Renaissance.

ART 1310. INTRODUCTION TO ART HISTORY II: 17TH CENTURY TO THE PRESENT. 3 Hours. (TCCN = ARTS 1304)

The work of major figures in European and American art from the 17th century to the present.

ART 1317. INTRODUCTION TO ART HISTORY III: AFRICA, ASIA, AMERICAS. 3 Hours.

This course is designed to introduce students to works of art in various media developed in isolation from the European tradition, including the arts of the Near East, Asia, the Ancient Americas, Africa, and Oceania. Using visual arts as a tool, this course will introduce students to the diverse social customs, religions, and beliefs of nonwestern peoples.

ART 2304. DIGITAL MEDIA. 3 Hours.

This course introduces students to a variety of digital software and hardware as applied to design and artistic concepts.

ART 2308. DRAWING CONCEPTS. 3 Hours. (TCCN = ARTS 1317)

Application of specific drawing skills with emphasis on personal expression. Course content will focus on conceptual development and media exploration as outlined by instructor. Previous drawing experience strongly recommended. Formerly listed as ART 1348. Credit will not be granted for both ART 1348 and ART 2308. Prerequisite: ART 1305 and ART 1307 or permission of instructor.

ART 2342. GLASSBLOWING. 3 Hours.

The manipulation, construction, and experimentation of glass as a sculptural medium. Emphasis will be on developing technical and aesthetic expertise in glassblowing and related techniques. Exploration of the conceptual application of the material will be addressed. Students who received credit for ART 3342 prior to Fall 2010 may not receive credit for ART 2342. Prerequisite: ART 1306 or permission of the academic advisor.

ART 2353. VISUAL COMMUNICATION FOUNDATION. 3 Hours.

Introduction to the studio practices in the area of Visual Communications. Focus is on advanced foundation design concepts and exposure to contemporary digital tools. In addition, an introduction to the purpose, industry, and broad history of visual communication will be established. Prerequisite: Art + Art History Major, Permission of Advisor, ART 1305.

ART 2354. TYPOGRAPHY. 3 Hours.

Creative problem solving using basic elements of visual communication with an introduction to typography, composition, and materials. Prerequisite: ART 2304 or permission of the instructor.

ART 2355. LAYOUT. 3 Hours.

Development and application of concept, layout, and design as related to visual communication. Prerequisite: ART 2304 or permission of advisor.

ART 2357. DIGITAL PHOTOGRAPHY FOR DESIGNERS. 3 Hours.

Introduction to the production of visuals through digital photographic imaging as related to the needs of the Visual Communication Design field. Students will study composition, camera function, studio lighting, and photographic proficiency to create compelling imagery. Students will be expected to incorporate these photographic skills and concepts into their design practice.

ART 2358. CINEMA PRODUCTION 1. 3 Hours.

Introduction to the video and filmmaking production process, techniques, history and aesthetics through the use of digital video, basic film, and basic digital (computer) video and audio editing. Students will write, produce, and edit a number of short original works.

ART 2360. INTRODUCTION TO PHOTOGRAPHIC CONCEPTS. 3 Hours. (TCCN = ARTS 2356)

Introduction to the essentials of photography including digital camera operation, digital printing, utilizing the principles of photography for artistic expression, and lighting techniques for documentation of 2D and 3D artwork and other objects. Students are encouraged to use their own digital camera; some cameras may be available for check out on a limited basis.

ART 2371. PAINTING. 3 Hours. (TCCN = ARTS 2316)

Fundamentals of painting, composition and techniques both traditional and contemporary. Prerequisite: ART 1305 and ART 1307 or permission of the instructor.

ART 2387. FILM ANALYSIS AND AESTHETICS. 3 Hours.

Students will critically engage in screenings of selected significant films and learn concepts and approaches to film analysis and criticism. The course will examine the emergence of the film form, the elements of film language, formal approaches and principles of film analysis, and the workings of motion pictures as a means of narrative expression.

ART 3300. METHODS FOR THE STUDY OF ART HISTORY. 3 Hours.

Sources and procedures of art historical research. Introduction to methodologies of art historical scholarship. Use of computer and data retrieval is emphasized.

ART 3302. ART OF ANTIQUITY. 3 Hours.

Art and architecture of Greco-Roman antiquity, beginning with the Aegean Bronze Age (ca 2500 BC) and concluding with the Late Roman Empire (4th century AD). Emphasis on the political and ritual role of art, especially in Periclean Athens and Augustan Rome. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3304. JAPANESE ART & ARCHITECTURE. 3 Hours.

Exposes students to the art and architectural traditions of Japan from the Jomon (12,000/10,500 - 300 BCE) through the Tokugawa periods (1615 - 1868). The course will focus on the cultural, social, and political movements that informed artistic changes over time. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3306. BYZANTINE AND MEDIEVAL ART. 3 Hours.

Art and architecture of the Mediterranean area and Northern Europe, beginning with Early Christian and Byzantine period (4th century AD) and concluding with the Late Middle Ages (14th century AD). Special attention is given to the religious and political context of art including Christian and Islamic influences. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3307. THE EARLY RENAISSANCE. 3 Hours.

Developments in the art and architecture of Italy in the 13th and 14th Centuries focused on the changing status of the artist and the political and religious role of art. Includes a workshop based on 14th century recipes for the making of art. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3308. HIGH RENAISSANCE. 3 Hours.

Developments in the art and architecture of 16th century Italy (Leonardo, Raphael, and Michelangelo) understood in historical context. Themes include the notion of creative genius in the Renaissance; Mannerism and the Counter-Reformation; the restoration of the Sistine Chapel. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3310. FILM AS ART. 3 Hours.

The history and aesthetics of the motion picture from 1895 to the present day. Screening and analysis of film as an artistic medium, focusing on various technical innovations, filmmakers, and landmarks of film history. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3311. AMERICAN ART. 3 Hours.

The role of art in the shaping of a national identity with emphasis on our beginnings and attention to vernacular and indigenous traditions. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3312. NEO-CLASSICISM AND ROMANTICISM. 3 Hours.

European art from c.1760 to c.1840. Emphasis is placed on cultural and historical contexts. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3313. BACKGROUNDS OF MODERN ART. 3 Hours.

Painting, sculpture, and photography of the period c. 1850-1900 in western Europe, focusing on Realism, Impressionism, Post-Impressionism and Symbolism (fin de siècle). Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3314. MODERN ART. 3 Hours.

The history of European and American art from the late 19th century to the mid-20th century. Emphasis on the formal and conceptual evolution of modernism in art and society, and on the rise of the avant-garde. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3315. IMPRESSIONISM. 3 Hours.

The history, theory, and aesthetics of Impressionist painting in France, from 1860 to 1900. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3316. ANCIENT EGYPTIAN & NEAR EASTERN ART. 3 Hours.

Study of select aspects of the material culture of ancient Mesopotamia and Egypt, with emphasis on religion and notions of kingship. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3317. ISLAMIC ART AND ARCHITECTURE. 3 Hours.

This is a survey course of Islamic art and architecture from the seventh century to present, covering arts from the Arabian peninsula, north and west Africa, southern Spain, central Asia and South Asia. Emphasis will also be given to the cultural and religious aspects that shape Islamic art, such as the forms and functions of different examples of sacred architecture; calligraphy; and the arts associated with pilgrimage. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3319. ART & ARCHITECTURE OF INDIA. 3 Hours.

Explores the history of Indian art and architecture, beginning with the Harappan civilization and progressing to the present. India's religious and cultural impact on its East and Southeast Asian neighbors will also be examined. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3320. ART OF THE ANCIENT AMERICAS. 3 Hours.

Art and architecture of the Olmecs, Maya, Aztecs, Inca, Anasazi and other selected cultures of Mexico, Central America, South America and North America. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3321. CHINESE ART & ARCHITECTURE. 3 Hours.

Introduces students to the art and architectural traditions of China from Neolithic times (5th to 3rd millennium BCE) to the end of the Qing dynasty in the early 20th century. The course will focus on the cultural, social, and political movements that informed artistic changes over time. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3322. INTRODUCTION TO ART EDUCATION. 3 Hours.

This course studies the theories and outlines the history of art education and provides undergraduate students with the basic knowledge, skills, and strategies for teaching art. Students will be introduced to current issues in art education including multicultural, visual culture, technological art education, creativity, museum collaborations, and arts for special needs. The course will cover TEKS and national visual arts standards, a child's artistic development, learning styles, and philosophy. Also, students will learn and understand professional development resources. Prerequisites: None.

ART 3323. PLANNING AND CONSTRUCTING ART CURRICULA. 3 Hours.

This course reviews and introduces the elements needed to create art education curricula including production, performance and exhibition of visual art and other performing arts practices, historical and cultural contexts as well as critical and aesthetic response. Students will focus on curriculum development for both 2D and 3D artwork for various age levels. Prerequisite: None; however students are highly encouraged to take ART 3322 before, or concurrent with, this course.

ART 3325. STUDIES IN THE BAROQUE. 3 Hours.

Developments in the art and architecture of Baroque Europe (Italy, Low Countries and Spain), with an emphasis on patronage and the social, religious and historical context of artistic production. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3331. BRITISH ART. 3 Hours.

An overview of British art from prehistory to the present with an emphasis on cultural and historical contexts. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3332. ART OF SUB-SAHARAN AFRICA. 3 Hours.

An examination of the art and architectural traditions of cultures within and south of the Sahara Desert of Africa. Emphasis is on indigenous visual traditions prior to Muslim and European contact and contextualizing our understanding through anthropological perspectives. This course incorporates critical considerations of the biases involved in the study of sub-Saharan arts. May include participation with local African arts and archival collections and various campus collections to undertake experiential analysis of primary sources. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3340. KILN FORMED GLASS. 3 Hours.

The exploration of various non-blowing techniques of glass construction and manipulation. Students will use kilns to explore fusing, slumping, pate de verre, and casting. May be repeated for credit. Prerequisite: ART 1306 or permission of the instructor.

ART 3341. SCULPTURE. 3 Hours.

An exploration of sculptural forms, concepts, and methods through various media. Emphasis on contemporary processes and individual expression. May be repeated for credit. Prerequisite: ART 1306. For non-art majors, permission of the instructor.

ART 3342. INTERMEDIATE GLASSBLOWING. 3 Hours.

Continued technical and aesthetic development, manipulation, construction, and experimentation with glass as a sculptural medium. Other techniques may be introduced in order to explore a stronger conceptual application of glass. Prerequisite: ART 2342 or permission of the academic advisor.

ART 3343. PRINTMAKING. 3 Hours.

Development in the technical and conceptual practice of printmaking. Emphasis placed on an understanding of the history, theory and philosophy of independently published prints. Both traditional and nontraditional processes for creating printed images will be explored, including: lithography, relief, intaglio, silk screen, monoprints, book arts, and photomechanical technologies. Prerequisite: ART 1305 and ART 1307 or permission of the instructor.

ART 3345. WORKS ON PAPER. 3 Hours.

The class will focus on works on paper as a finished work of art as opposed to being preliminary study for paintings, sculptures, and other disciplines. Class may work in a variety of media including watercolor, drawing, collage, painting and mixed media. Personal creativity and development is stressed along with critical thinking and analysis. May be repeated for credit. Prerequisite: ART 1306, ART 1307, and ART 2308 or permission of the instructor.

ART 3346. PAPERMAKING. 3 Hours.

Procedures for the understanding and development of both Eastern and Western handmade papers. Focus will be on sheet-forming, casting, and marbling papermaking processes. Emphasis placed on personal expression, process, and innovation. May be repeated for credit. Prerequisite: ART 1305, ART 1306.

ART 3347. ADVANCED DRAWING. 3 Hours.

Conceptual and expressive problems to encourage independent thinking with regard to contemporary drawing issues. May be repeated for credit. Prerequisite: ART 2308.

ART 3348. LIFE DRAWING. 3 Hours.

Drawing of the human figure using a variety of media in the solution of figure construction problems with emphasis on perceptual and creative expression. May be repeated for credit. Prerequisite: ART 2308.

ART 3349. WATER MEDIA PAINTING. 3 Hours.

Transparent and opaque water color media and techniques. Emphasis on conceptual and manipulative skills. May be repeated for credit. Prerequisite: ART 1305, ART 1307, and ART 2371 or permission of the instructor.

ART 3350. SCREENWRITING 1. 3 Hours.

Students will learn the principles of storytelling and will apply these principles to the craft of screenwriting. As part of this process students will learn to evaluate and improve their own and other's original stories, characters, dramatic conflict, dialogue and descriptions. All screenplays must use proper screenwriting formatting and all creative projects must demonstrate the use of content introduced in class. Offered as ENGL 4330 when that course is taught as Screenwriting; credit will be granted in only one department. Prerequisite: ENGL 1301 and ENGL 1302 or permission of instructor.

ART 3351. ILLUSTRATION. 3 Hours.

Practical approach to concepts, techniques, and problem solving with illustration. May be repeated for up to 9 hours credit. Prerequisite: ART 1307 and ART 2304. Advisor permission required to enroll in this course.

ART 3352. DIGITAL IMAGING. 3 Hours.

Basic course in computer imaging for art majors. Emphasis is on the introduction and use of the computer as a tool for personal expression. Fundamental principles in electronic media are explored with additional emphasis on experimental and innovative techniques. May be repeated for credit.

ART 3353. METALS. 3 Hours.

Both contemporary and traditional metalworking techniques and concepts, including the construction of small metal forms with a sculptural approach. Emphasis on basic fabrication and manipulation methods. Exploration of integrating other media is also encouraged. Prerequisite: ART 1306. For non-art majors, permission of the instructor.

ART 3354. SIGN AND SYMBOL. 3 Hours.

Design and problem solving focusing on transformation of visual elements into logos, logotypes, information and environmental graphics. May only be taken once for credit. Prerequisite: ART 2304, or permission of the advisor.

ART 3355. ADVANCED TYPOGRAPHY. 3 Hours.

Typographic theory exploring traditional and non-traditional forms, both historical and contemporary typographic achievements. Prerequisite: ART 2354, ART 2355, or permission of the advisor.

ART 3356. WEB TYPOGRAPHY. 3 Hours.

Instruction of typographic theories and practice for the web to facilitate connections with words, ideas, and information. Emphasis is placed on the structuring of information hierarchy, grid application, and typographic systems. May be repeated once. This course was formerly titled Electronic Design. Prerequisite: ART 2355.

ART 3357. SUSTAINABLE DESIGN. 3 Hours.

An overview of critical environmental issues that affect the contemporary practice of visual communication. Emphasis on ethics, environmental and society responsibility, and creative visual problem solving. Course may include, but is not limited to, lecture, discussion, reading, and creative design exploration. Prerequisite: ART 2354 or permission of the advisor.

ART 3358. CINEMA PRODUCTION 2. 3 Hours.

Continuation of ART 2358 with emphasis on more advanced concepts, production techniques, film/video history, and aesthetics. May include basic 16mm film production, digital video post-production and studio editing. Students will propose, write, produce and edit a number of short, original works. Prerequisite: ART 2358 and ART 3350 or permission of the instructor.

ART 3359. APPLYING AND TEACHING ART CURRICULA. 3 Hours.

This course provides art education students with an overview of teaching in the K-12 art classroom through further exploration in curriculum and instructional methods as well as observation in the DFW area public schools. Students are provided opportunities to observe various work situations, to reflect on their own education, and to examine teaching practices within the arts. Emphasis is placed on both 2D and 3D studio issues. Students are expected to develop professional skills in observation and written and oral communication. The material in this course serves to establish a foundation for building professional awareness and a normative philosophy of art education. Prerequisite: ART 3323.

ART 3360. BLACK AND WHITE PHOTOGRAPHY. 3 Hours.

This course introduces students to black and white photography as a means to express ideas and become more aware of the potential of photographic art. Some coursework may be digitally based but the emphasis will be on analog black and white processes. Students will learn how to use various film camera formats, process film, and produce black and white darkroom prints. May be repeated for credit. Prerequisite: ART 2360 (or equivalent), or permission of instructor.

ART 3361. SITUATIONAL LIGHTING. 3 Hours.

This course is a skills based class that will explore augmenting and improving existing light at photographic locations. Prerequisite: ART 2360 or permission of instructor.

ART 3362. MOTION GRAPHICS. 3 Hours.

A course exploring animation and/or digital footage to create the illusion of motion for implementation in multimedia applications. Motion graphics incorporates animation pre-production processes to improve viewer engagement by crafting believable motion. Prerequisite: ART 2304 and ART 2358; or permission from the instructor.

ART 3363. CLAY. 3 Hours.

The various methods of construction, manipulation, and decoration of clay. The integration of form, design, and concept, emphasizing clay as an expressive medium. Prerequisite: ART 1306. For non-art majors, permission of the instructor.

ART 3371. INTERMEDIATE PAINTING. 3 Hours.

Continued development of painting techniques, composition and exploration of traditional and contemporary media. Specific problem solving assignments, creative thinking, and idea development will be emphasized. Prerequisite: ART 2308, ART 2371 or permission of the instructor.

ART 3383. MOLDMAKING & CASTING IN CLAY. 3 Hours.

Continuation of ceramic media techniques and forming processes. The introduction of moldmaking, mold forming, slipcasting, tile design, kiln firing, and glaze techniques. Prerequisite: ART 3363 or permission of the instructor.

ART 3384. CINEMATOGRAPHY. 3 Hours.

An intense study of the visual language/style of film imagery through cinematography, lighting, gaffing, gripping, and extensive camerawork. Students will use digital equipment to shoot exercises, light sets and locations, and learn to accurately expose, color correct, and manipulate motion picture film. Students will also learn the proper use of advanced lighting equipment, professional production standards, camera crew responsibilities, and how to interpret a scene through visuals. Students will work in digital video and/or 16mm film format. May be repeated once for credit. Prerequisite: ART 2358 and ART 2360 or permission of instructor.

ART 3386. DIRECTING 1: ACTOR LAB. 3 Hours.

This course is designed to help student directors understand how actors approach their craft and will study the language of acting and various techniques and approaches for casting. Directors and actors will work together in rehearsal and on set to craft a performance for film and develop confidence in the skills necessary for collaboration. Prerequisite: ART 2358 or permission of instructor.

ART 3387. DIRECTED SCREENINGS. 3 Hours.

This course will screen significant films. It will examine the emergence of the film form, the elements of film language and the significance of film form and style. Motion pictures will be screened weekly with commentary or discussion by film faculty in class. This course may be taken only once for credit.

ART 3388. DIRECTING 2: VISUAL STORYTELLING. 3 Hours.

This course will cover the relationship of actor performance to the placement and/or movement of the camera and other cinematic techniques. Students will explore approaches to visual style and distinctly cinematic expression and study specific shot compositions, camera movement and blocking dynamics. Prerequisite: ART 3358 or permission from the instructor.

ART 3389. CONTEMPORARY ART. 3 Hours.

This course offers a focus on the period from 1980 to the present emphasizing the themes within contemporary art, how they build on the modernism of earlier decades and extend globally across issues of aesthetics and identity, developing artwork engaged with performance, the legacies of conceptual and pop art practices, as well as minimalism and activist art. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3390. HISTORY OF GRAPHIC DESIGN. 3 Hours.

A broad overview of the history and evolution of design from prehistory to the present day. Course emphasis is on the cultural and technological contexts that influenced the practice of graphic design in Europe and the United States. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3391. HISTORY OF PHOTOGRAPHY. 3 Hours.

The history of still photography from its inception to the present. Emphasis on the conceptual and technical evolution of photography as an artistic medium. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 3399. DISABILITY & ART. 3 Hours.

Explores the many connections between disability and art, including both art created by people with disabilities and the wide variety of artistic representations about disability. Examines the purposes of art-making by people with disabilities: for therapeutic reasons, as a means of self-expression, to achieve professional goals, or as an act of activism. Investigates historical depictions of disability in art as well as art's role as a visual voice for the disability rights movement. Offered as DS 3399 and ART 3399; credit will only be granted once. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor or Disability Studies.

ART 4100. SENIOR EXHIBITION. 1 Hour.

Application of professional practices for graduating BFA art majors. Primary concentration is preparation for BFA exhibition/presentation. Prerequisite: ART 4200 or, for graphics students, ART 4356.

ART 4101. PORTFOLIO PRESENTATION. 1 Hour.

This course is the capstone of the Bachelor of Arts track. Working with their advisor, students will prepare an artist's talk about their work and deliver this presentation at an advertised public lecture. This course is to be taken in the student's last semester before graduation.

ART 4191. INDEPENDENT STUDY. 1 Hour.

Mature, capable students may be permitted to pursue individual art problems. Problems must be stated in writing, a definite conference schedule arranged, and the paperwork must be approved by both the supervising faculty member and the department chair prior to registration. May be repeated for credit for varied subject matter. Prerequisite: B average in art concentration.

ART 4291. INDEPENDENT STUDY. 2 Hours.

Mature, capable students may be permitted to pursue individual art problems. Problems must be stated in writing, a definite conference schedule arranged, and the paperwork must be approved by both the supervising faculty member and the department chair prior to registration. May be repeated for credit for varied subject matter. Prerequisite: B average in art concentration.

ART 4300. PROFESSIONAL PRACTICES. 3 Hours.

Professional practices for upcoming graduating BFA art majors in studio and media concentration, excluding graphics. Exploration of professional capabilities applied to media and studio areas. Emphasis on complex professional skills, knowledge and presentation.

ART 4301. ART AND GENDER. 3 Hours.

Approaches to the interpretation of art from the stance of gender and feminism. Emphasis is placed on the work of significant female artists and on the gendered representations of art. Offered as ART 4301 and WOMS 4301; credit will be granted only once. Fulfills the Social/Cultural Studies requirement. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4304. ART AND THE HUMAN CONDITION. 3 Hours.

A seminar offered to students in majors across campus, undergraduate and graduate. Practice in the analysis of visual information and discussion of topics which relate to medical humanities, disability studies, the impact of race and ethnicity, the representation of aging, narrative medicine, and art therapy. Students engage in research and creative projects and present their works to the class. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor, Medical Humanities, or Disability Studies.

ART 4306. MID-RENAISSANCE. 3 Hours.

Art and architecture in 15th century Italy, beginning with developments in Renaissance Florence. The relation of humanism and science to the visual arts, patronage, and the social and historical contexts of artistic production. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4307. SPECIAL TOPICS IN ASIAN ART. 3 Hours.

Special studies seminar dealing with various aspects of the history and development of Asian art, architecture, and archeology. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4308. FINE ART MUSEUMS AND RESEARCH COLLECTIONS. 3 Hours.

Examines current issues and developments in museum practice. This course uses area museums, auction houses, and research collections as a learning resource. This course is supplemented by on-site visits and readings. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4310. TOPICS IN CINEMA STUDY. 3 Hours.

Historical surveys of nonfiction film, experimental cinema, and genres (e.g., the western, the gangster film, science-fiction films), as well as geographical or national movements (e.g., German expressionism, Italian neo-realism, French new wave) and film theory and criticism. The particular subject will change from year to year. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission of the instructor.

ART 4311. SCRIPT TO SCREEN. 3 Hours.

This course for Cinematic Arts majors is a high energy merger of a production class and a short film writing class to both write and produce a film per week during the Summer sessions. Students in this class will have a realistic view of the production consequences of writing for the screen. May be repeated once for credit. Prerequisite: ART 3350 or permission of instructor.

ART 4312. TOPICS IN NINETEENTH CENTURY ART. 3 Hours.

An in-depth study of topics in European and American art c. 1780 to 1900, such as the art and revolutions (the French Revolution, the American Revolution, 1830, 1848, the Commune); Romanticism; Symbolism. May be repeated for credit as course content changes. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4313. COLLECTIONS MANAGEMENT. 3 Hours.

This course will examine the history of museum and research collections, long-term care and sustainability of works, and the concerns of ethics and law in relation to acquisition and management of these collections. This course is enriched by guest speakers and on-site visits to area collections. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4314. TOPICS IN 20TH CENTURY ART. 3 Hours.

Topics from c. 1900 to c. 2000, such as analysis of an individual movement, medium, or theme. May be repeated for credit as course content changes. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4315. ASPECTS OF CONTEMPORARY ART. 3 Hours.

Topics from c. 1970 to the present, such as performance and conceptual art, art in and about the natural environment, post-modernism and critical perspectives, art in the social context, and the genres of the 1980s. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4317. ART AND ISLAM. 3 Hours.

This upper level art history course studies Islamic art and architecture from the seventh century to the present, covering arts from the Arabian peninsula, north and west Africa, southern Europe, central Asia, and south Asia. Emphasis may also be given to the cultural and religious aspects that shape Islamic art including sacred architecture, calligraphy, and pilgrimage. Prerequisites: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4318. ADVANCED DIGITAL IMAGING. 3 Hours.

Advanced level course in computer imaging for art majors. Conceptual as well as expressive problems are introduced to encourage independent and creative problem solving in digital imaging. Emphasis is placed on both manipulation of photo-based media and creation of two-dimensional animation. May be repeated for credit. Prerequisite: ART 3352.

ART 4320. BEYOND PHOTOGRAPHY: WORKING OUTSIDE THE IMAGE. 3 Hours.

This course will examine different approaches to art that are not medium-specific but assumes the student has knowledge of photography as art. Projects will be structured as responses to lectures on topics in modern and contemporary art with emphasis on installation and conceptual work. Prerequisite: 3 hours to be selected from ART 4318, ART 4344, ART 4359, ART 4360, ART 4363, ART 4372.

ART 4330. 18TH CENTURY ART. 3 Hours.

A history of European art from the end of the Baroque era through the Rococo and Neoclassical styles to the beginning of Romanticism. Emphasis will be on cultural and global contexts in which paintings, prints, sculptures, and architecture were produced. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4340. ADVANCED KILN FORMED GLASS. 3 Hours.

Continuation of ART 3340. This class focuses on glass kiln forming techniques and concepts including kiln casting, fusing, slumping, and various cold working processes. Emphasis is on using glass as an expressive and creative art media. Prerequisite: ART 3340 or permission of instructor.

ART 4341. ADVANCED SCULPTURE. 3 Hours.

Advanced work in continuation of ART 3341. Students are encouraged to develop a creative style in their own personal direction. A variety of materials and techniques is explored. May be repeated for credit. Prerequisite: ART 3341 or permission of the instructor.

ART 4342. ADVANCED GLASS. 3 Hours.

Continued development of ART 3342 with emphasis on advanced technique, manipulation and form development. Course assignments will emphasize personal creativity and exploration. May be repeated for credit. Prerequisite: ART 3342 or permission of instructor.

ART 4343. ADVANCED CLAY. 3 Hours.

Further development and focus on techniques and personal expression in sculptural, hand-built, and wheel thrown clay forms. Continuation of kiln firing, moldmaking, slipcasting, and glazemaking. May be repeated for credit. Prerequisite: ART 3363 or permission of the instructor.

ART 4344. ALTERNATIVE PHOTOGRAPHIC PROCESSES. 3 Hours.

This class explores the use of hand-made, physical photographic processes, both historical and modern. Techniques may include camera obscura, pinhole, cyanotype, VanDyke brownprint, tintype, and inkjet negatives. May be repeated for up to six hours credit. Prerequisite: ART 3360, or ART 4360, or permission of the instructor.

ART 4345. ADVANCED PRINTMAKING. 3 Hours.

Continued study and development of both conceptual and technical practice of printmaking. Emphasis placed on personal expression of ideas as well as the broader implications of printed images. Explorations and innovations will be encouraged. May be repeated for credit. Prerequisite: ART 1305, ART 1307, and ART 3343 or permission of the instructor.

ART 4346. GRAPHICS: PORTFOLIO PREPARATION. 3 Hours.

This course concentrates on the creation, development, and evaluation of the graphic design portfolio. Course work will include advanced level conceptual assignments and various methods of presentation. May be repeated for credit. Lab fee: \$50. Prerequisite: ART 3355 and ART 4355 with grades of B or better, or permission of the instructor.

ART 4347. PUBLICATION DESIGN. 3 Hours.

Philosophy, concepts, and structures of magazine and book design. May be repeated for up to six hours credit. Prerequisite: ART 2354 and ART 2355.

ART 4348. INFORMATION VISUALIZATION. 3 Hours.

This course is an exploration of the graphic visualization and representation of data driven information sets to achieve insights into the cognitive and perceptive complexities of the world around us. Course may be repeated for credit. The previous title of this course was Interactive Design. Prerequisite: ART 2304.

ART 4349. ADVANCED CINEMA PRODUCTION (ACP): VIDEO ART & NEW GENRES. 3 Hours.

Advanced work involving production, postproduction, and distribution with a special emphasis on experimental and innovative applications. Instruction may include video integrated with performance, installation, audio/sound art, and computer graphics appropriate to the medium. Lectures, readings, and screenings will frame video art within an historical and critical survey of new genres. May be repeated once for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4350. ADVANCED CINEMA PRODUCTION (ACP): DOCUMENTARY. 3 Hours.

Using film and video as a tool for creative research, students will produce, write, direct and edit original documentaries or nonfiction films/videos under supervision of the instructor. May be repeated once for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4351. ADVANCED CINEMA PRODUCTION (ACP): COMMERCIAL. 3 Hours.

Commercial and corporate applications of video. Students produce original individual projects integrating concepts and technical skills under supervision of the instructor. May be repeated for credit. Prerequisite: ART 3358 or permission of instructor.

ART 4352. ADVANCED CINEMA PRODUCTION (ACP): FICTION. 3 Hours.

Narrative storytelling film/video techniques. Students write, produce, direct and edit original, short narrative film/video projects under supervision of the instructor. May be repeated once for credit. Prerequisite: ART 2358 or ART 3350 or permission of the instructor.

ART 4353. FOUNDRY. 3 Hours.

This advanced studio class will explore work in sculpture methods specific to casting and related mold making processes. Students will develop expertise in model preparation, silica-based slurry mold processes, and chasing metal castings.

ART 4354. SCREENWRITING 2. 3 Hours.

A continuation of ART 2350 focusing on writing an original (no adaptations), narrative, full-length screenplay through all stages to final draft status primarily focusing on the development of a polished first act. Students study screenplays, view films, conduct actor readings, and complete various other assignments. May be repeated once for credit. Prerequisite: ART 3350 or permission of the instructor.

ART 4355. VISUAL IDENTITY SYSTEMS. 3 Hours.

Creative exploration and application of complex visual communication skills to the development of a visual identity system. Prerequisite: ART 3354, or permission of the advisor.

ART 4356. PROFESSIONAL PREPARATION. 3 Hours.

Exploration and development of the visual communication portfolio. Course work includes advanced level conceptual assignments. Emphasis on complex professional skills. May be repeated for up to six hours credit. Prerequisite: ART 3354, or permission of the advisor.

ART 4357. ADVERTISING DESIGN. 3 Hours.

Typography, layout, visualization, and conceptual problem solving as applied to advertising. Prerequisite: ART 3354, or permission of the advisor.

ART 4358. ADVANCED CINEMA PRODUCTION (ACP): EDITING. 3 Hours.

An advanced workshop in video editing and post production. Emphasis will be placed on long form editing, the aesthetics of editing, and editing work flow. May be taken 3 times for credit. Prerequisite: ART 3358 or permission of instructor.

ART 4359. ADVANCED PHOTOGRAPHY. 3 Hours.

This course encourages students to use a variety of photographic processes (black & white, color, non-silver, computer imaging, etc.) with an emphasis on the development of a personal stance. Students will work on individual projects and present work in an environment of critical discussion. May be repeated for credit. Prerequisite: Three hours to be selected from ART 4344, ART 4360, ART 4363, or permission of the instructor.

ART 4360. COLOR PHOTOGRAPHY. 3 Hours.

This course will direct students to an understanding of color photography as a contemporary art medium. Students will utilize various digital photographic techniques including color correction and digital printing. Color theory, use of color as an element in image making, and the psychology of color may be covered. May be repeated for up to six hours credit. Prerequisite: ART 3360 or permission of the instructor.

ART 4361. ADVANCED CINEMA PRODUCTION (ACP): 3-D ANIMATION. 3 Hours.

Intensive study of digital computer animation and 3-D digital animation tools and techniques. Students will produce a number of short, original works under the supervision of the instructor. May be repeated for credit. Prerequisite: ART 2304 and ART 2358, or permission of instructor.

ART 4362. CINEMA THESIS PRODUCTION. 3 Hours.

This capstone course is designed to bring together ideas, processes, practices, and theories in the service of the production of a substantial work of cinema. Students will pursue an entire project from conception to completion, combining intensive preproduction, production, and post-production with in-depth instruction on lab work, distribution, and exhibition. Throughout the course, emphasis is placed on instructor, peer, and self-critique. May be repeated for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4363. STUDIO PHOTOGRAPHY. 3 Hours.

The theory and practice of studio photography. Students will master studio strobe lighting, large format film camera, and digital camera techniques. Prerequisite: ART 3360 or permission from the instructor.

ART 4364. MOBILE APP DESIGN. 3 Hours.

An overview of the development and design process for mobile web applications and portable technologies. Exploration of best practices for mobile app design and brand strategy, user experience, concept development, mobile content strategy, information architecture, interaction/interface design, visual design, and rapid prototyping. No coding is required or expected with this course. Prerequisite: ART 3356.

ART 4365. TECHNOLOGY IN ART EDUCATION. 3 Hours.

This course provides digital media presentation strategies to enhance teacher effectiveness and explores how to incorporate the use of digital media in curriculum development. It also enables students to develop an electronic teaching portfolio to prepare students for job interviews and to showcase both personal and student artwork. Reading assignments, research, hands-on experiences, and in-class discussion provide students with an understanding of technology and its application to an art education classroom. Students will gain a working knowledge of current best practice digital technology, including the internet and video software. Prerequisite: None; however students are highly encouraged to take ART 3323 before, or concurrent with, this course.

ART 4366. WEB DESIGN. 3 Hours.

Concentrated study in the use of design, creation, and strategic planning of websites. Emphasis is placed on creative concepts, information architecture, user experience, and site development. Course work will explore issues of differing perspectives of technology as a tool, a medium, and/or an environment. May be repeated for credit with grade of B or better. Prerequisite: ART 3356.

ART 4367. ADVANCED CINEMA PRODUCTION (ACP): 2-D ANIMATION. 3 Hours.

This course introduces techniques for two-dimensional animation presented in an historical and aesthetic context. Students will produce short animated films utilizing basic animation principles and developing the conceptual skills necessary for creating motion designs. May be repeated for credit. Prerequisite: ART 2304 and ART 2358 or permission of the instructor.

ART 4368. ADVANCED DARKROOM PHOTOGRAPHY. 3 Hours.

This advanced level course explores the use of medium and large format film cameras, film development, gelatin silver printing techniques, and archival presentation. May be repeated for up to 6 hours credit. Prerequisite: ART 3360.

ART 4370. STAGED ENVIRONMENTS. 3 Hours.

This course concentrates on the conceptualization, development and execution of tableaus designed exclusively for the camera. Lectures, readings and presentations will cover view cameras, studio lighting, set design, scouting locations, using props, and working with models. Prerequisite: ART 3360 or permission of the instructor.

ART 4371. ADVANCED PAINTING. 3 Hours.

Students will be encouraged to develop a personal direction which complements their development as visual thinkers. The student will be required to plan a course outline of conceptual development with the instructor at the beginning of each semester. May be repeated for credit. Student must earn a grade of "B" or above in the course to repeat it. Prerequisite: ART 2308, ART 2371 and a grade of B or above in ART 3371 or permission of the instructor. Transfer students will be required to schedule a portfolio review with the painting instructor to gain permission to enroll in the class.

ART 4373. ADVANCED THREE-DIMENSIONAL STUDIES. 3 Hours.

Class is designed for students to continue the development of advanced three-dimensional work and engage in a cross section of various media. May be repeated for credit. Prerequisite: 12 hours to be selected from ART 3341, ART 3342, ART 3363, ART 4341, ART 4342, ART 4343, ART 4353, or permission of the instructor. Formerly ART 4366. Credit will be granted for both.

ART 4374. PACKAGING & 3D CAD. 3 Hours.

Packaging structure design, materials, performance, testing and sustainability. The curriculum integrates with the Corrugated Prototype Design and CAD Production Lab (CORRPRO). Students use 3D structural design software, a variety of materials, and a computer-aided design (CAD) table to produce significant packaging solutions. May be repeated once for credit. Prerequisite: ART 1306 and ART 2304.

ART 4375. DESIGN TEXAS. 3 Hours.

Visual Communication outreach and problem solving. Individual and group projects for clients selected by the instructor. Provides advanced undergraduate students an opportunity to interact with clients on the development and completion of complex communication design problems. May be taken up to three times for credit. Prerequisite: ART 3355.

ART 4376. ADVANCED CINEMA PRODUCTION (ACP): SOUND. 3 Hours.

An advanced workshop in sound recording, sound design, and editing. Through lectures, lab, class demonstrations, and projects, students develop skills and knowledge in the technical and artistic aspects of sound techniques for film. May be repeated once for credit. Prerequisite: ART 3358 or permission from the instructor.

ART 4377. ADVANCED CINEMA PRODUCTION (ACP): PRODUCING. 3 Hours.

This course investigates real-world methodologies and best practices used in the art of producing. Topics may include cinematic, episodic, and documentary formats, as well as evolving formats such as VR/AR. Students develop a professional regard for the three vital elements of production: Time, Money, and Labor. With an eye on the intersection of aesthetic, legal, and practical considerations, students take a methodical approach to development and production through distribution and profit participation. May be repeated once for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4378. TOPICS IN SCREENWRITING. 3 Hours.

This course will focus on specialized areas of screenwriting beyond foundational and developmental content. The content covered may include screenwriting adaptation, non-linear storytelling, and serial/episodic screenwriting. May be repeated for credit as topics change. Prerequisite: ART 3350 or permission from the instructor.

ART 4382. ENTREPRENEURSHIP IN THE ARTS. 3 Hours.

Students will apply creativity, imagination, and innovation as they explore opportunities for entrepreneurship in the arts. Prerequisite: Student must have completed 60 credit hours or have the permission of the instructor.

ART 4383. INDEPENDENT CINEMA PRODUCTION. 3 Hours.

Students will produce a major film or video in the genre of their choosing (narrative, documentary, commercial, or animation). Students may elect to work in a variety of media (including 16 mm film, digital video or installation) to produce original works. Students will be individually mentored as their productions move through preparation, shooting and post-production. May be repeated for credit. Prerequisite: ART 3358 or permission of instructor.

ART 4384. ADVANCED CINEMA PRODUCTION (ACP): DIGITAL VISUAL EFFECTS. 3 Hours.

Analysis of the shooting requirements, set and location considerations, and software choices and techniques used for various visual effects treatments. Includes digital compositing and techniques such as matte generation, camera tracking, color correction, roto-scoping, chromakey, set extension, and 3D integration. May be repeated once for credit. Prerequisite: ART 2304 and ART 2358, or permission of the instructor.

ART 4390. CONFERENCE COURSE: ART HISTORY. 3 Hours.

Independent study or research in an area of art history agreed upon in advance with the instructor. Written permission and the determination of obligations and objectives are required before registration. May be repeated for credit. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4391. INDEPENDENT STUDY. 3 Hours.

Mature, capable students may be permitted to pursue individual art problems. Problems must be stated in writing, a definite conference schedule arranged, and the paperwork must be approved by both the supervising faculty member and the department chair prior to registration. May be repeated for credit for varied subject matter. Prerequisite: B average in art concentration.

ART 4392. SPECIAL STUDIES. 3 Hours.

Special course work in new or experimental offerings for which there is immediate need and for which special resources are available. May be repeated for credit. Primarily for art majors.

ART 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

ART 4395. ART INTERNSHIP. 3 Hours.

An opportunity to apply academic training as participant/observer in a professional organization relevant to a major area of concentration. With permission of advisor, internships may be repeated for up to a maximum of nine hours credit. Internships must be arranged with the internship supervisor in the semester prior to enrolling for this course. Prerequisite: permission of the instructor.

ART 4396. SPECIAL STUDIES IN ART HISTORY. 3 Hours.

Subjects of immediate interest in various fields of art history; to complement temporary museum exhibitions and/or faculty research specializations. May be repeated for credit as course content changes. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

ART 4397. ADVANCED CINEMA PRODUCTION (ACP): SPECIAL STUDIES. 3 Hours.

Topics in this course respond to emerging technologies, immediate needs, and specialized processes. May be repeated for credit. Prerequisite: ART 3358 or permission of the instructor.

ART 4695. ART INTERNSHIP. 6 Hours.

An opportunity to apply academic training as participant/observer in a professional organization relevant to a major area of concentration. With permission of advisor, internships may be repeated for up to a maximum of nine hours credit. Internships must be arranged with the internship supervisor in the semester prior to enrolling for this course. Prerequisite: permission of the instructor.

ART 5000. SUPERVISED TEACHING STUDIO ART. 0 Hours.

Training in teaching methods and procedures for studio art classes, including weekly group meetings with the instructor and individual consultations. Prerequisite: graduate standing in studio art, or graduate standing and appointment as a teaching assistant. May be repeated.

ART 5320. ART CRITICISM & THEORY. 3 Hours.

A discussion of placing art within the context of the history of ideas.

ART 5321. CREATIVE STRATEGIES. 3 Hours.

This is a seminar class for graduate students and will focus on exploring research strategies including the collection, interpretation and presentation of visual information. Students will read selected writings by artists, film and video makers, art historians, critics, designers and arts professionals on a weekly basis, contribute to class discussions, and examine their own creative strategies. A major component of this course will also be a series of in-class presentations by UTA Art+Art History faculty. The purpose of these lectures is to provide new graduate students with access to the diversity of faculty and their own unique perspectives. Invited faculty will work with the course instructor in selecting topics and readings for discussion within the seminar.

ART 5322. ENTREPRENEURSHIP IN ARTS MANAGEMENT AND ARTS BRANDING. 3 Hours.

Entrepreneurship in Arts Management and Arts Branding will offer students the opportunity to create, imagine, develop and implement individualized and collaborative entrepreneurial strategies that will strengthen their potential for success in their careers.

ART 5323. RESEARCH FILM/VIDEO: EAST-WEST CINEMA. 3 Hours.

Study of the cinema production process using significant works representative of important historic and contemporary ideas and movements from East and West.

ART 5330. CRITICAL PERSPECTIVE IN THE VISUAL ARTS & VISUAL COMMUNICATION. 3 Hours.

Seminar course that focuses on graduate student interaction with visiting artists, scholars, curators, critic, designers, and filmmakers.

ART 5340. RESEARCH IN STUDIO INTERMEDIA. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5341. RESEARCH IN SCULPTURE. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5342. RESEARCH IN GLASS. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5343. RESEARCH IN PRINTMAKING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5347. RESEARCH IN DRAWING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5355. RESEARCH IN VISUAL COMMUNICATION. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5359. RESEARCH IN PHOTOGRAPHY DIGITAL IMAGING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and graduate advisor.

ART 5360. TOPICS IN THE HISTORY OF ART & DESIGN. 3 Hours.

Special seminar/topics course focusing on enhancing the art and design knowledge base of MFA candidates in the areas of film/video, visual communication, intermedia-expanded studio, and glass as art.

ART 5363. RESEARCH IN CLAY. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5371. RESEARCH IN PAINTING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5383. RESEARCH IN FILM/VIDEO: SCREENWRITING. 3 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5384. RESEARCH IN FILM/VIDEO: CINEMATOGRAPHY. 3 Hours.

Emphasis is given to individual application of technical skills and aesthetic abilities of cinematography to develop students' "creative eye." Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5385. RESEARCH FILM/VIDEO: EDITING. 3 Hours.

An advanced workshop in video editing and post production. Emphasis will be placed on diverse editing genres and styles and the aesthetics of editing and post-production workflow. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5386. RESEARCH FILM/VIDEO: SHORT FILM PRODUCTION. 3 Hours.

This course will concentrate on the narrative form with the goal of directing a 3-5-minute original short film exploring dramatic beats and the use of blocking and camera as narrator. The course involves the planning, production, and post-production of short narrative films. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5387. RESEARCH IN FILM/VIDEO: PRE THESIS FILM PRODUCTION I. 3 Hours.

Students will develop scripts or treatment and finish all the major pre-production works and production for pre-thesis films to be edited in pre-thesis Film Production. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5388. RESEARCH FILM/VIDEO: PRE THESIS FILM PRODUCTION II. 3 Hours.

Students will finish all the major post-production works for pre-thesis films. The class will work through a number of topics relating to digital post-production including video editing, sound design, basic compositing, color correction, and exporting final projects for various exhibition platforms with an exploration of the aesthetics and guiding principles behind each area. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5389. RESEARCH FILM/VIDEO: SPECIAL TOPICS TECHNIQUES. 3 Hours.

The class will provide a foundation for the student in learning the art of Producing and Production Management. It will encompass the four phases of film making: development, production, post production and distribution. Prerequisite: permission of instructor.

ART 5390. RESEARCH FILM/VIDEO: SPECIAL TOPICS IN FILM STUDIES. 3 Hours.

Exploration of a specific area of cinema studies, designed to enhance and enrich the traditional production curriculum and provide significant professional research for an ever-changing discipline. Prerequisite: permission of the instructor.

ART 5391. INDEPENDENT STUDY. 3 Hours.

Independent and directed research in the area of Studio Intermedia. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5392. INDEPENDENT STUDY IN VISUAL COMMUNICATION. 3 Hours.

Independent and directed research in the study of Visual Communication.

ART 5393. INDEPENDENT AND DIRECTED RESEARCH IN FILM AND VIDEO. 3 Hours.

Independent and directed research in Film and Video.

ART 5394. INDEPENDENT STUDY IN GLASS. 3 Hours.

Independent and directed research in the study of glass.

ART 5395. INDEPENDENT STUDY IN ART HISTORY AND CRITICISM. 3 Hours.

Independent and directed research in art history and criticism.

ART 5396. SPECIAL TOPICS IN ART HISTORY. 3 Hours.

Subjects of immediate interest in various fields of art history; to compliment faculty research specializations. May be repeated for credit as course content changes. Permission of the instructor required.

ART 5397. MASTER OF FINE ARTS EXHIBITION. 3 Hours.

This course is intended to be the final course in the Master of Fine Arts (M.F.A.) students program of study. Here, students will concentrate their studio activity towards the completion of a body of work to be exhibited, complete the written component of the degree as well as oral examinations. Students must have 30 hours of coursework in the concentration completed in their program of study prior to enrolling for this course.

ART 5640. RESEARCH IN STUDIO INTERMEDIA. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5641. RESEARCH IN SCULPTURE. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5642. RESEARCH IN GLASS. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5643. RESEARCH IN PRINTMAKING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5647. RESEARCH IN DRAWING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5655. RESEARCH IN VISUAL COMMUNICATION. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5659. RESEARCH IN PHOTOGRAPHY DIGITAL IMAGING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5663. RESEARCH IN CLAY. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5671. RESEARCH IN PAINTING. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5683. RESEARCH IN FILM/VIDEO: FILM PRODUCTION. 6 Hours.

Independent and directed research in the student's area of concentration. Studio hours to be arranged. May be repeated for credit. Prerequisite: Graduate standing in studio art and consent of instructor and the graduate advisor.

ART 5697. MASTER OF FINE ARTS EXHIBITION. 6 Hours.

This course is intended to be the final course in the Master of Fine Arts (M.F.A.) student's program of study. Here, students will concentrate their studio activity towards the completion a body of work to be exhibited, complete the written component of the degree as well as oral examinations. Students must have 30 hours of coursework in the concentration completed in their program of study prior to enrolling for this course.

Astronomy (ASTR)

COURSES

ASTR 1345. INTRODUCTORY ASTRONOMY I. 3 Hours.

ASTR 1345 and ASTR 1346 constitute a one-year sequence for any student who is interested in learning his/her place within the astronomical universe. The first semester consists of an essentially descriptive treatment of the apparent motions and properties of members of the Solar System including the Sun, the planets and their moons, comets and rockets, and satellites as well as the mechanics and evolution of the Solar System. The laboratory work includes the use of astronomical telescopes for observation.

ASTR 1346. INTRODUCTORY ASTRONOMY II. 3 Hours.

Follows ASTR 1345 and focuses on the science of stars and galaxies. Properties of light are applied to the understanding and classification of stars and to determining their distances. Topics include nuclear reactions, binary stars, variable stars, exploding stars, black holes, and star clusters. The course concludes with the structure of the Milky Way and the role galaxies play in modern cosmological theories. The laboratory work includes telescopic observations.

Bilingual ESL Early Child Prog (BEEP)

COURSES

BEEP 3381. INTRODUCTION TO SPECIAL LANGUAGE PROGRAMS. 3 Hours.

Legal foundations and historical development of bilingual education, dual language, and special language programs will be introduced. Various models of bilingual education and English as a Second Language will be examined. An overview of special education, gifted and talented, and compensatory education legislation and its impact on the implementation of special language programs will be examined.

BEEP 4302. IMPLEMENTATION OF EC-6 DUAL LANGUAGE CURRICULUM MODELS. 3 Hours.

This course addresses programmatic, cultural, academic and linguistic considerations for the creation, implementation and maintenance of dual language curriculum models in EC-6 settings. In the course students will explore and implement various research-based teaching methods and strategies used in effective programs. It will also cover key components of dual language teaching and learning, including curriculum alignment (e.g., horizontal, vertical, spiral), language separation, and parent collaboration. Prerequisite: BEEP 4305.

BEEP 4305. BILITERACY DEVELOPMENT IN DUAL LANGUAGE PROGRAMS. 3 Hours.

Analysis of the structure of English and Spanish including phonology, morphology, syntax, semantics, lexicon, and pragmatics. Topics also include language interference and cross-linguistic transfer to promote biliteracy.

BEEP 4306. FAMILY LITERACY AND SECOND LANGUAGE ACQUISITION. 3 Hours.

Examines the relationships among family literacy, second-language acquisition, and literacy development in children. The course provides opportunities for students to explore a variety of home-school literacy programs designed to facilitate the development of literacy skills in parents and support reading and writing at home. Specific focus on theories regarding the relationship between first and second language acquisition and early education. Prerequisite: BEEP 3381.

BEEP 4311. MATH IN DUAL LANGUAGE SETTINGS. 3 Hours.

Integration of mathematic concepts in relation to the cognitive and linguistic development of English learners (ELs). Analysis of the State curriculum for mathematics in K-6. Design and implementation of instruction in dual language settings. Field experience required. Prerequisite: BEEP 3381.

BEEP 4312. SCIENCE AND HEALTH EDUCATION IN DUAL LANGUAGE SETTINGS. 3 Hours.

Integration of science and health concepts in relation to the cognitive and linguistic development of English learners (ELs). Analysis of the State curriculum for health and science in K-6. Design and implementation of instruction in dual language settings. Field experience required.

BEEP 4314. CREATIVE ARTS AND SOCIAL STUDIES IN DUAL LANGUAGE SETTINGS. 3 Hours.

Integration of visual arts, music, and social studies with a focus on instructional processes and skills for increasing children's understanding and appreciation of aesthetics. Implementation of the Texas Curriculum in Social Studies and Art Education in EC-6 dual-language classrooms; field experience required.

BEEP 4319. ASSESSMENT OF CULTURALLY AND LINGUISTICALLY DIVERSE STUDENTS IN EC-6 SETTINGS. 3 Hours.

Study of formal and informal assessment instruments and techniques for assessing the language development and literacy of English Learners(ELs) in EC-6 classrooms. Also, focus on diagnosing literacy learning strengths and needs.

BEEP 4366. SPANISH FOR TEACHERS IN DUAL LANGUAGE PROGRAMS: AN IMMERSION APPROACH. 3 Hours.

Development of Spanish proficiency for bilingual education teacher candidates through an immersion approach. Emphasis on concepts, functions and the scenarios used in the Spanish proficiency examination required for bilingual education teacher candidates.

BEEP 4382. LITERACY INSTRUCTION IN SPANISH FOR THE BILINGUAL CLASSROOM. 3 Hours.

Focuses on the development of literacy for bilingual children. Specific emphasis will be placed on the rationale, methods, and materials for literacy instruction in Spanish. The successful transition from first-language literacy instruction to literacy instruction in English will also be addressed. The course will be delivered in Spanish and students will be exposed to content and techniques to master the oral and written components of the Spanish language proficiency test required to become certified in bilingual education. Prerequisite: BEEP 4305, BEEP 4302.

BEEP 4384. LITERACY METHODS FOR ESL/BILINGUAL CLASSROOMS. 3 Hours.

The rationale and implementation of various instructional methods for English learners (ELs) will be discussed. Examination of language instruction for students at different stages of development. Sheltered English instruction for the teaching of content areas will also be presented. Students will be assigned to a special language program to examine methods of instruction and modifications for language minority children. Prerequisite: BEEP 3381, BEEP 4306.

BEEP 4385. SHELTERED ENGLISH INSTRUCTION. 3 Hours.

Analysis of the linguistic, cognitive, academic and cultural considerations required to provide meaningful and developmentally appropriate content area instruction to English language learners (ELLs) in PK-6. Prerequisite: BEEP 3381.

BEEP 4687. CLINICAL TEACHING IN EC-6 BILINGUAL/ESL CLASSROOMS. 6 Hours.

Full-time supervised and directed clinical teaching in EC-6 bilingual and ESL classrooms. Clinical teaching must immediately follow the field experience semester. Prerequisites: BEEP 4311, BEEP 4312, and BEEP 4314.

BEEP 5315. CLINICAL TEACHING. 3 Hours.

Clinical teaching in candidate's certification area(s). This semester-long experience will help candidates apply theory and research to practice.

BEEP 5318. FOUNDATIONS IN BILINGUAL EDUCATION. 3 Hours.

Analyzes the development of bilingual education in the United States. Introduces bilingual education program models and discusses research findings on their effectiveness.

BEEP 5321. ESL METHODS FOR EC-6 LEARNERS. 3 Hours.

Compares first and second-language acquisition processes. Identifies effective teaching practices to meet the needs of English learners (ELs). Analyzes elements from Spanish that can affect the acquisition of literacy in English. Offered as BEEP 5321 and LIST 5361. Credit will only be counted towards one program.

BEEP 5361. LANGUAGE LEARNING: EDUCATIONAL PERSPECTIVES PRACTICUM II. 3 Hours.

The practicum provides opportunities to apply effective instructional practices in teaching ESL students. Deals with the relationship between first and second language acquisition and literacy, dialect, linguistics, culture; nature and definition of language; overview of linguistic science and language with pedagogical applications.

BEEP 5362. LITERACY INSTRUCTION IN ESL/BILINGUAL SETTINGS. 3 Hours.

This course bridges theory to practice, stressing how the relationship between first and additional language acquisition and development can inform teaching ESL/bilingual students. Provides opportunities to apply effective instructional practices in teaching students to foster development in speaking, listening, reading, and writing within a framework of cultural understanding.

BEEP 5363. LITERACY DEVELOPMENT IN ENGLISH AND SPANISH. 3 Hours.

Focuses on the development of literacy in bilingual students with specific emphasis on the rationale, methods, and materials for literacy instruction in the student's home language. Attention to evaluating and supplementing first-language literacy materials and supporting the successful transition from first-language literacy instruction to literacy instruction in English.

BEEP 5364. LITERACY INSTRUCTION IN SPANISH IN THE CONTENT AREAS. 3 Hours.

Focuses on methods and materials for teaching content-area subjects in the student's home language. Additional focus on supporting the transition from home-language instruction to English-language instruction.

BEEP 5365. ORGANIZATION & ADMINISTRATION OF DUAL LANGUAGE PROGRAMS. 3 Hours.

Analysis of the research background and implementation of various models of dual language instruction. Insight of the process, data collection, and reporting requirements of the state and federal special populations legislation. This course requires an internship with the office of Federal Programs and/or the office of Bilingual/ESL Education in local school districts. Prerequisite: BEEP 5318.

BEEP 5366. SPANISH FOR SCHOOL ADMINISTRATORS & TEACHERS. 3 Hours.

Development of Spanish proficiency for teachers and administrators through an immersion approach. Emphasis on concepts and terminology related to education, program administration, community involvement, and communication with Spanish-speaking parents. This course can be repeated.

BEEP 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for course substitution or a topic agreed upon between the student and instructor. May be repeated for credit with permission.

Bioengineering (BE)

COURSES

BE 1000. UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

BE 1105. MEDICAL APPLICATIONS OF ENGINEERING. 1 Hour.

Introduction to basic biology and engineering problems associated with living systems and health care delivery. Examples will be used to illustrate how basic concepts and tools of science & engineering can be brought to bear in understanding, mimicking and utilizing biological processes.

BE 1325. INTRODUCTION TO BIOENGINEERING. 3 Hours.

Topics include introduction to basic engineering principles and quantitative methods, their applications in analyzing and solving problems in biology and medicine. Also includes new trends in the development of bioengineering and biotechnology.

BE 2000. UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

BE 2300. SPECIAL TOPICS IN BIOENGINEERING. 3 Hours.

A study of selected topics in Bioengineering. May be repeated when topics vary.

BE 2310. ENGINEERING APPROACHES TO SOLVING CLINICAL CHALLENGES. 3 Hours.

In this sophomore course, students will apply engineering principles to find solutions to current clinical problems presented to the class. As small groups, students will work as teams to design a process or system to meet the desired needs of the given clinical challenges based on the necessary constraints. As a final project presentation, students will use what they have learned to identify a new clinical challenge and work to define a meaningful set of manufacturing, fiscal, safety, ethical, and health-related constraints associated with the problem. Students will be highly encouraged to identify solutions to these newly derived clinical problems and to integrate this clinical challenge as part of their future senior design project. Prerequisite: C or better in BE 1105, BE 1325, MATH 2425, CHEM 1442, BE 2315, and either EE 2440 or CSE 2440 or consent of BE undergraduate advisor.

BE 2315. INTRODUCTORY COMPUTATIONAL TOOLS FOR BIOENGINEERS. 3 Hours.

Students learn programming concepts (variable, array, command, logics, do-loop, etc.) through the use of SolidWorks, MatLab, and Image J, etc. Students learn to use these computational tools by working on problems and exercises of biological, physiological relevance and clinical applications. Prerequisite: A course grade of C or better in BE 1325, MATH 1426, and ENGR 1250 (or ENGR 1300) or consent of BE undergraduate advisor.

BE 3000. UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum 3 times.

BE 3101. SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current research interest in the field of bioengineering. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3191. DIRECTED RESEARCH IN BIOENGINEERING. 1 Hour.

Student participates in a research project under the individual instruction of a faculty supervisor. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor and the instructor.

BE 3195. INTERNSHIP IN BIOENGINEERING. 1 Hour.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assign projects and a faculty member monitors the student's progress. Prerequisite: Completion of at least 70 undergraduate credit hours in BE and good standing in the undergraduate program. Permission of Undergraduate Academic Advisor.

BE 3295. INTERNSHIP IN BIOENGINEERING. 2 Hours.

Students receive training in a bioengineering company or a hospital to gain first hand industrial or clinical engineering experience. The company or hospital assigns projects and a faculty member monitors the student's progress. Prerequisite: Completion of at least 70 undergraduate credit hours in BE and good standing in the undergraduate program. Permission of Undergraduate Academic Advisor.

BE 3301. CELL PHYSIOLOGY FOR BIOENGINEERS. 3 Hours.

This course will cover principles of molecular omics (i.e., genomics, transcriptomics, proteomics and synthetic biology); the field of molecular bioengineering and processes involving inducible transcription and chimeric proteins; the composition of cell membranes, ion transport and the application of optogenetics in cell physiology regulation; the way cells communicate and integrate signals and translate them in intracellular metabolic cascades through the understanding of phosphoproteomics, energy metabolism, metabolomics, cellular motility, and molecular motors; the processes involved in cell proliferation, abnormal cell division dysregulation in cancer, and nanotechnology techniques for tumor treatment. Preferred background: basic understanding of general biology and general chemistry. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3310. BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LABORATORY. 3 Hours.

Following an introduction to the basics of solid, fluid mechanics, student learn the fundamental behavior of various biological materials, flow properties of blood, viscoelastic properties of cells, tissue matrix, as well as their roles in human physiology at normal and disease states. Examples also include the design aspects of medical prosthetic devices. The course will cover biomechanics across a wide range of scales from organism, organ, tissue, cell and to protein levels. Students learn computational modeling to formulate and solve bioengineering problems. Preferred background: basic understanding of general physics, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3317. LINEAR SYSTEMS IN BIOENGINEERING. 3 Hours.

Time-domain transient analysis, convolution, Laplace Transforms, Fourier Series, Transforms and their applications, transfer functions, signal flow diagrams, Bode plots, stability criteria, sampling, filter designs, and Discrete-time signals and systems. Examples with applications in bioengineering will be emphasized. Preferred background: basic understanding of general physics, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3320. MEASUREMENT LABORATORY. 3 Hours.

Hands-on experiments with use of transducers used for chemical, mechanical, electrical, and thermal biomedical measurements. Computer-based means of converting analog transducer output into digital form. Analysis of experimentally collected data including error analysis, repeatability, resolution, and functional specifications. Prerequisite: C or better in MATH 2326, BE 2315 and PHYS 1444 (PHYS 1444 may be taken concurrently), or consent of the BE undergraduate advisor.

BE 3325. FLUORESCENCE MICROSCOPY. 3 Hours.

Introduction to the anatomy of fluorescence microscopy and the physical principles of its operation; confocal and multi-photon microscopy; molecular imaging applications based on Forster Resonance Energy Transfer (FRET), Fluorescence Lifetime Imaging (FLIM), Fluorescence Correlation Spectroscopy (FCS), Fluorescence Recovery After Photobleaching (FRAP) and Total Internal Reflection Fluorescence (TIRF) Microscopy. Preferred background: basic understanding of general physics, general chemistry, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3327. TISSUE OPTICS. 3 Hours.

Introduction to the science and technology behind tissue optical imaging systems and their design requirements for different clinical applications; diffuse optical tomography; fluorescence tomography; bioluminescence tomography; multi-modality imaging. Preferred background: basic understanding of general physics, general chemistry, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3343. MATLAB AND APPLICATIONS FOR BIOENGINEERS. 3 Hours.

This course consists of two parts: the first part teaches students how to use MATLAB for engineering computation, quantitative analysis, scientific plotting/graphing presentation, and numerical modeling in solving real-world problems. After enabling students to generate arrays, files, functions, and to write MATLAB programs, the course will focus on using MATLAB for bioengineering applications, including 2D and 3D graphing for biological images, data processing for time-varying signals, and 2D Fourier transform for medical image processing. A variety of examples often encountered in the biological, biomedical engineering field will be used as class demonstration, presentation and project assignments. Preferred background: basic programming skills. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3344. BIOINSTRUMENTATION. 3 Hours.

Fundamental principles of bioinstrumentation, including operational amplifiers and instrumentation amplifiers; measurements of biopotentials; signals and noise in biological systems; mechanical transducers; resistive, inductive, capacitive transducers; measurement of temperature, blood pressure and flow; electrical safety. Prerequisite: C or better in EE 2440 or CSE 2440; accepted in BE Professional Program or consent of the BE undergraduate advisor.

BE 3346. MEDICAL IMAGING. 3 Hours.

This course introduces basic medical imaging modalities, including X-ray Computed Tomography (CT), Nuclear Medicine Imaging (PET and SPECT), Magnetic Resonance Imaging (MRI), and image-guided interventions. Through this course, the students will learn fundamental knowledge on how medical images are obtained and how they can be used for diagnosis, therapy, and surgery. Preferred background: basic understanding of general physics, general biology and basic calculus. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3352. DIGITAL PROCESSING OF BIOLOGICAL SIGNALS. 3 Hours.

Fundamental techniques for extraction of useful information from signals acquired from biological systems. Topics include time and frequency domain analysis, cross correlation, spectrum analysis, and convolution. Design of finite impulse response (FIR) and infinite impulse response (IIR) filters for processing biological signals are described. Examples include cardiac, respiratory, and biomechanical movements. Preferred background: basic understanding of general physics and differential equations. Prerequisite: Accepted into the BE Professional Program and BE 3317 (or equivalent course) or consent of the BE undergraduate advisor.

BE 3367. CELL CULTURE AND DRUG DELIVERY LABORATORY. 3 Hours.

This course will cover techniques commonly used in tissue engineering and biomaterial research, including culture media preparation, cell culture/subculture, degradable scaffold, their modification, histological staining, and imaging analyses. The course will also include development of systems for delivery of pharmaceutical agents used for treating different diseases; an understanding of the underlying pharmacokinetics principles is emphasized. Preferred background: basic understanding of general chemistry and general biology. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3380. HUMAN PHYSIOLOGY IN BE. 3 Hours.

An introduction to human physiology emphasizing biomedical engineering related topics. The course focuses on understanding basic function with the relationships on the cellular as well as organ level in both healthy and diseased states. Preferred background: basic understanding of general biology. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 3395. INTERNSHIP IN BIOENGINEERING. 3 Hours.

Students receive training in a bioengineering company or a hospital to gain first hand industrial or clinical engineering experience. The company or hospital assigns projects and a faculty member monitors the student's progress. Prerequisite: Completion of at least 70 undergraduate credit hours in BE and good standing in the undergraduate program. Permission of Undergraduate Academic Advisor.

BE 3415. FUNDAMENTALS OF BIOMOLECULAR ENGINEERING. 4 Hours.

The course will introduce the principles of engineering living systems at the atomic, molecular, and cellular levels. Fundamentals covered in the course will include topics such as chemical bonding and reactions; synthesis, structure and function of carbohydrates, polypeptides, nucleic acids, and lipids; as well as analytical and engineering tools for characterization, design, and production of synthetic biological systems. A laboratory component will provide hands on experience including methods important to synthetic biochemistry, protein engineering, cellular reprogramming, and metabolic engineering. Knowledge of college level general chemistry is required. Prerequisite: C or better in BE 1105, BE 1325, CHEM 1442, and MATH 2425, or consent of the BE undergraduate advisor.

BE 4000. UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

BE 4191. DIRECTED RESEARCH IN BIOENGINEERING. 1 Hour.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 4291. DIRECTED RESEARCH IN BIOENGINEERING. 2 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 4300. SPECIAL TOPICS IN BIOENGINEERING. 3 Hours.

A study of selected topics in Bioengineering. May be repeated when topics vary. Prerequisite: Consent of instructor and undergraduate advisor.

BE 4312. TISSUE BIOMECHANICS AND BIOENGINEERING. 3 Hours.

This course introduces biomechanics as a means to describe mechanical behavior of biological tissues. A comprehensive course, it covers the fundamental concepts, experimental and theoretical approaches of biomechanics, and their applications in modern bioengineering, including mechano signal transduction, pathophysiology, tissue engineering and regeneration, medical implants, surgical intervention. Structural-mechanical properties of specific tissues, such as heart valves, cardiac tissues, blood vessels, tendon/ligament, skeletal muscles, cartilage, and meniscus will be discussed in great details. This course integrates the concepts of biomechanics, the underlying structural and biological mechanisms, illustrates how experimental, analytical and computational methods have been used to address clinical needs in enhancing the quality of health care delivery. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4314. BIOMEDICAL IMPLANTS. 3 Hours.

A comprehensive course covers the essential knowledge in biomedical implants. The goal is to provide students with the knowledge and skills to understand the clinical needs, the engineering principles, methodologies used in implant design, the resulting host-implant interaction, and the constraints, limitations on engineering design optimization, as well as the evaluation and assessment of the implant performance and clinical outcomes. Case studies include mechanical, bio-prosthetic and trans-catheter heart valves, vascular grafts, stents, pacemakers, orthopedic implants, dental implants, etc. The course also covers topics on regulatory issues, patent protection, design validation in animal models and clinical trials, IACUC, IRB, Good Manufacture Practice (GMP), and FDA regulations and approvals. Students are expected to be able to apply the learning to solve problems in the rapidly growing field of biomedical engineering. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4324. BIOMEDICAL OPTICS LABORATORY. 3 Hours.

The primary objective of this course is to provide students hands-on experience with fundamental optical techniques and instrumentation used in modern biomedical research and applications. The skills learned will be valuable to anyone who intends to work in an experimental setting that requires working knowledge of optical instrumentation and techniques. The course is divided into ten core lab modules that cover topics ranging from basic optical techniques to advanced imaging and spectroscopy techniques. Preferred background: satisfactory completion of BE 3320. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4325. FUNDAMENTALS OF BIOENGINEERING. 3 Hours.

Topics cover fundamentals of biosensors, bio-signal processing, and bioinstrumentation. An introduction to various imaging modalities such as ultrasound, magnetic resonance, optical tomography, and x-ray radiography is also presented. Other bioengineering topics may be included as time allows or as is appropriate. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4326. TISSUE ULTRASOUND-OPTICAL IMAGING. 3 Hours.

This course will introduce the fundamental principles of ultrasound and optical related imaging techniques, such as ultrasonic, tissue optical, and photoacoustic imaging techniques. Some topics related to the new progresses and applications in the related fields will be introduced. Students are expected to know the principles of these imaging techniques, and use mathematical, numerical simulation and experimental methods to understand these technologies and their biomedical applications. Preferred background: satisfactory completion of PHYS 1443, PHYS 1444 and BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4329. NEURAL ENGINEERING. 3 Hours.

This course consists of both lecture/discussion and laboratory. Lecture topics include central and peripheral nervous system injury and regeneration, brain/machine interfacing, primary culture of neural cells, neuroinflammatory and neurodegenerative disease. Laboratories include embryonic and neonatal rat derived neuronal culturing, immunostaining and quantitative analysis. Preferred background: satisfactory completion of BE 3367 and BE 3380. Prerequisites: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4330. MEDICAL IMAGE PROCESSING. 3 Hours.

Principles and computational methods in digitally processing medical images are presented. Topics include image reconstruction, two and three dimensional visualization, image registration, quantitative image analysis, image enhancement, and statistical processing methods including Monte Carlo methods. Prerequisites: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4331. BIOPOLYMERS AND BIOCOMPATIBILITY. 3 Hours.

This is a foundation course in polymeric biomaterial design, synthesis, characterization, and processing. The topics include design, surface-engineering, functionalization, characterization, as well as micro- and nano-fabrication of polymeric biomaterials. The biomedical applications of the polymeric biomaterials and their interaction with cell/tissue is discussed. Preferred background: basic understanding of general chemistry and successful completion of BE 3415. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4333. NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION. 3 Hours.

Synthesis, fabrication, characterization, and biomedical applications of nanobiomaterials. Topics include synthetic nanobiomaterials, biological nanobiomaterials (DNA nanomaterials, protein and peptide nanomaterials, etc.), biofunctionalization of nanobiomaterials, and use of nanobiomaterials in tissue engineering, drug delivery, gene delivery. Preferred background: basic understanding of general chemistry and successful completion of BE 3415. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4337. TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING. 3 Hours.

Principles of momentum, mass and heat transfer; description of blood flow, trans-capillary, interstitial, lymphatic fluid transport and pulmonary gas exchange. Applications in the design of blood oxygenator, dialysis devices, and strategies in drug delivery, hyperthermia treatment. Preferred background: basic understanding of general physics, biology and calculus, and successful completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4345. BIOSENSORS. 3 Hours.

The course will cover major classes of bio-sensing technologies currently used in practice and the emerging ones that are currently being evaluated. The basic operating principle behind bio-sensing technologies will be explained and its implementation in medical devices will be discussed. Explanation of biosensor operation will involve understanding the mechanism of bio-signal transduction (bio-parameter to biomechanical, electrical, optical or chemical signal), detection method, and their analysis. Methodology for device calibration and data interpretation of physiological parameters will be discussed. The course material will be derived from book chapters and review papers. Course includes hand-on learning experience in laboratory by deconstructing commercially available biosensors and using experimental bio-sensing instruments. Students will be required to design and implement a point-of-care biosensor. Preferred background: satisfactory completion of EE 2440 or CSE 2440. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4350. SENIOR DESIGN PROJECT I. 3 Hours.

First of two courses in design of biomedical systems and processes. Major design project in biomedical engineering, incorporating engineering standards and realistic design constraints. This course prepares students through a major design experience incorporating engineering principles and realistic constraints that include most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, and social consideration. Prerequisite: C or better in BE 3317, BE 3380 and BE 4382; accepted into the BE Professional Program, and consent of the BE undergraduate advisor.

BE 4355. SENIOR DESIGN PROJECT II. 3 Hours.

Second in two courses in design of biomedical systems. Proposals approved in BE 4350 will be completed. Teams will address, resolve limitations in the design and present final results through an oral presentation. Teams are required to submit a final project report with their design notebooks to the course instructors. Prerequisite: C or better in BE 4350.

BE 4360. FUNDAMENTALS OF ULTRASOUND IN BIOENGINEERING. 3 Hours.

This course instructs the students in the physics of ultrasound transducers, their operation, and their biomedical applications. The material includes modeling of the interaction of acoustic waves with various types of tissue and cells. Mathematical methods for analyzing the reflected and refracted waves as well as constructing images from the waves will be covered. Prerequisite: Accepted into the BE Professional Program and EE 2440 or CSE 2440, BE 3344, or consent of the BE undergraduate advisor.

BE 4364. TISSUE ENGINEERING LECTURE. 3 Hours.

Fundamentals of cell/extracellular matrix interactions in terms of cell spreading, migration, proliferation and function; soft and hard tissue wound healing and nerve regeneration; polymer scaffolding materials and fabrication methods; cell-polymer interactions; in vitro and in vivo tissue culture and organ replacement. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4365. TISSUE ENGINEERING LABORATORY. 3 Hours.

Each student will be given the opportunity to perform the techniques commonly used in tissue engineering and biomaterial research. These techniques are culture media preparation, cell culture/subculture, degradable scaffold preparation, scaffold modification, histological sections and staining, and cell imaging analyses. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4366. PROCESS CONTROL IN BIOTECHNOLOGY. 3 Hours.

Principles and methods and measurement, data acquisition, and analysis. Application of control theory in biological systems and in biotechnology processes; control of pressure, flow, temperature, and pH. Prerequisite: Accepted into the Professional Program and BE 3317 (or equivalent course) or consent of the BE undergraduate advisor.

BE 4368. AN INTRODUCTION TO TISSUE ENGINEERING AND DRUG DELIVERY. 3 Hours.

Topics include fundamentals of cell-ECM interactions, cell spreading, migration, proliferation and function; soft and hard tissue wound healing and nerve regeneration; polymer scaffolding materials and fabrication methods; cell-polymer interactions; in vitro and in vivo tissue culture and organ replacement. Students will be introduced to basic principles of pharmacokinetics and pharmacodynamics. Topics also include design and development of targeted and controlled drug delivery systems, including transdermal, inhalation, drug-eluting stents, stimulated-drug, as well as encapsulated nano and micro-particles for controlled release. Underlying principles of drug delivery, targeting, modification, distribution and diffusive transport will be discussed. Preferred background: satisfactory completion of BE 3380 (or co-requisite). Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4372. DRUG DELIVERY SYSTEMS. 3 Hours.

This class focuses on the development, design, and application of controlled and targeted drug delivery systems including transdermal, inhalation, drug eluting stents, stimulation-drug, as well as microparticles and nanoparticles for controlled drug delivery. Principles of drug delivery, targeting, modification, distribution and diffusion will be discussed. Preferred background: satisfactory completion of BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4373. FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS. 3 Hours.

This class will provide students with hands-on experience in the development of drug delivery systems such as hydrogels, scaffolds, microparticles and/or nanoparticles that can be loaded with and release pharmaceutical agents to treat various diseases. The emphasis is synthesis, characterization and pharmacokinetic studies of these drug delivery systems. Preferred background: satisfactory completion of BE 4372. Prerequisite: Accepted into the BE Engineering Professional Program or consent of the BE undergraduate advisor.

BE 4382. LABORATORY PRINCIPLES. 3 Hours.

Introduction to fundamental biomedical engineering laboratory procedures including human studies and animal surgery; includes clinical laboratory projects, data collection, analysis, and interpretation. Preferred background: satisfactory completion of BE 3320 and BE 3380. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4385. STEM CELL TISSUE ENGINEERING. 3 Hours.

Students will gain experience and expertise in stem cell culture and differentiation, and engineering stem cell-based 2D and 3D tissue constructs. Using phenotypic markers and appropriately integrating with biocompatible scaffolds, the engineered tissue constructs will be differentiated to several tissue types and functionally validated. Lectures will cover stem cells, designing scaffolds and multimodal imaging techniques. The final projects may include acquisition of big data images, data mining and development of pattern recognition algorithms. Prerequisite: Accepted into the BE Professional Program and BE 3380, BE 3301, BE 3367, or consent of the undergraduate advisor.

BE 4388. BIOMEDICAL PRODUCT DESIGN AND DEVELOPMENT. 3 Hours.

This course aims to provide, 1) A comprehensive knowledge of biomedical product design and development life cycle, 2) Basic knowledge on developing business plan, securing funding, designing product and process, conducting preclinical and clinical studies, 3) Basic training and classroom exercises on various biomedical product design and development tools, 4) Basic knowledge of FDA regulation and quality control, 5) Basic training on intellectual property and industrial project management. Prerequisite: Accepted into the BE Professional Program or consent of the BE undergraduate advisor.

BE 4390. UNDERGRADUATE RESEARCH PROJECT. 3 Hours.

Student works on an independent, individual research or development project under supervision of faculty instructor. A final project report is required. Prerequisite: Permission from Instructor.

BE 4391. DIRECTED RESEARCH IN BIOENGINEERING. 3 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5101. SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current interest in the field of bioengineering.

BE 5191. DIRECTED RESEARCH IN BIOENGINEERING. 1 Hour.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5193. MS COMPREHENSIVE EXAMINATION. 1 Hour.

Individual instruction, directed study, consultation, and comprehensive examination over coursework leading to the Thesis-Substitute Master of Science degree in bioengineering. Graded P/F/R. Required of all Thesis-Substitute MS students.

BE 5201. SEMINAR IN BIOENGINEERING. 2 Hours.

University and guest lecturers speak on topics of current research interest in the field of bioengineering. Students are expected to write a report for each topic to summarize the presentation and to offer critiques. Prerequisite: Graduate admission to the BE MS program.

BE 5281. BEST PRACTICES IN TEACHING AND LEARNING. 2 Hours.

Introduction to approaches and activities that can facilitate learning. Students gain insight into specific challenges of teaching, basics of designing a course, role of assessments and evaluations, good presentation skills and comparisons of various engagement levels. Students teach mock lessons and are given feedback.

BE 5291. DIRECTED RESEARCH IN BIOENGINEERING. 2 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5293. MASTERS COMPREHENSIVE EXAMINATION. 2 Hours.

Individual instruction, directed study, consultation, and comprehensive examination over coursework leading to the Master of Science degree in bioengineering. Required of all MS students.

BE 5300. SELECTED TOPICS IN BIOENGINEERING. 3 Hours.

Material may vary from semester to semester. May be repeated for credit if different topics are covered for each registration. Prerequisite: permission of the instructor.

BE 5301. CELL PHYSIOLOGY FOR BIOENGINEERS. 3 Hours.

This course will cover principles of molecular omics (i.e., genomics, transcriptomics, proteomics and synthetic biology). The field of Molecular bioengineering and processes involving inducible transcription and chimeric proteins. The composition of cell membranes, ion transport and the application of optogenetics in cell physiology regulation. The way cells communicate and integrate signals and translated them in intracellular metabolic cascades through the understanding of phosphoproteomics, energy metabolism, metabolomics, cellular motility, and molecular motors. The processes involved in cell proliferation, abnormal cell division dysregulation in cancer, and nanotechnology techniques for tumor treatment. Prerequisite: Graduate Level or Instructor Permission.

BE 5309. HUMAN PHYSIOLOGY IN BIOENGINEERING. 3 Hours.

An introduction to human physiology emphasizing biomedical engineering related topics. The course focuses on understanding basic function with the relationships on the cellular as well as organ level both in healthy and diseased states.

BE 5310. BIOMECHANICS AND FLUID FLOW WITH COMPUTATIONAL LAB. 3 Hours.

Follow an introduction to the basics of solid, fluid mechanics, student learn the fundamental behavior of various biological materials, flow properties of blood, viscoelastic properties of cells, tissue matrix, as well as their roles in human physiology at normal and disease states. Examples also include the design aspects of medical prosthetic devices. The course will cover biomechanics across a wide range of scales from organism, organ, tissue, cell and to protein levels. Students learn computational modeling to formulate and solve bioengineering problems. Prerequisite: Undergraduate solid and fluid mechanics courses or consent of the instructor.

BE 5312. TISSUE BIOMECHANICS AND BIOENGINEERING. 3 Hours.

This course introduces biomechanics as a means to describe mechanical behavior of biological tissues. A comprehensive course, it covers the fundamental concepts, experimental and theoretical approaches of biomechanics, and their applications in modern bioengineering, including mechano signal transduction, pathophysiology, tissue engineering and regeneration, medical implants, surgical intervention. Structural-mechanical properties of specific tissues, such as heart valves, cardiac tissues, blood vessels, tendon/ligament, skeletal muscles, cartilage, and meniscus will be discussed in great details. This course integrates the concepts of biomechanics, the underlying structural and biological mechanisms, illustrates how experimental, analytical and computational methods have been used to address clinical needs in enhancing the quality of health care delivery.

BE 5314. BIOMEDICAL IMPLANTS. 3 Hours.

A comprehensive course covers the essential knowledge in biomedical implants. The goal is to provide students with the knowledge and skills to understand the clinical needs, the engineering principles, methodologies used in implant design, the resulting host-implant interaction, and the constraints, limitations on engineering design optimization, as well as the evaluation and assessment of the implant performance and clinical outcomes. Case studies include mechanical, bio-prosthetic and trans-catheter heart valves, vascular grafts, stents, pacemakers, orthopedic implants, dental implants, etc. The course also covers topics on regulatory issues, patent protection, design validation in animal models and clinical trials, IACUC, IRB, Good Manufacture Practice (GMP), and FDA regulations and approvals. Students are expected to be able to apply the learning to solve problems in the rapidly growing field of biomedical engineering.

BE 5315. FUNDAMENTALS OF BIOMOLECULAR ENGINEERING. 3 Hours.

The course will introduce the principles of engineering living systems at the atomic, molecular, and cellular levels. Fundamentals covered in the course will include topics such as chemical bonding and reactions; synthesis, structure and function of carbohydrates, polypeptides, nucleic acids, and lipids; as well as analytical and engineering tools for characterization, design, and production of synthetic biological systems.

BE 5316. FUNDAMENTAL MATH AND PHYSICS FOR BIOENGINEERING. 3 Hours.

This course introduces the basic physics concepts such as introduction to electromagnetism, Maxwell's equations, computation of Fresnel coefficients, interference and diffraction of light, waveguides and optical fibers, photon counting statistics, and Beer-Lambert law. It also covers basic mathematical concepts such as curvilinear coordinates, vector calculus, Stokes theorem and solving differential equations with initial conditions and the diffusion equation.

BE 5323. INTRODUCTION TO BIOPHOTONICS. 3 Hours.

Introduction to properties of light, light-cell/tissue interactions, optical techniques, and optical instrumentation, in the context of biophotonic medical applications. Topics that will be covered include fundamental properties of optical wave fields, basic properties and characterization of laser sources and detectors used in modern biomedicine, interferometry, linear and nonlinear light-tissue interactions exploited for biomedical imaging and sensing applications, and spectroscopy.

BE 5324. BIOMEDICAL OPTICS LABORATORY. 3 Hours.

The primary objective of the Biomedical Optics Laboratory course is to provide students hands-on experience with fundamental optical techniques and instrumentation used in modern biomedical research and applications. The skills learned will be valuable to anyone who intends to work in an experimental setting that requires working knowledge of optical instrumentation and techniques. The course is divided into ten core lab modules that cover topics ranging from basic optical techniques to advanced imaging and spectroscopy techniques.

BE 5325. FLUORESCENCE MICROSCOPY. 3 Hours.

Introduction to the anatomy of a fluorescence microscope and the physical principles of its operation. Confocal and multi-photon microscopy. Molecular imaging applications based on Forster Resonance Energy Transfer (FRET), Fluorescence Lifetime Imaging (FLIM), Fluorescence Correlation Spectroscopy (FCS), Fluorescence Recovery After Photobleaching (FRAP) and Total Internal Reflection Fluorescence (TIRF) Microscopy.

BE 5326. TISSUE ULTRASOUND OPTICAL IMAGING. 3 Hours.

This course will introduce the fundamental principles of ultrasound and optical related imaging techniques, such as ultrasound, tissue optical, photo-acoustic and ultrasound-modulated optical imaging techniques. Lectures, laboratories, simulations, and paper presentations and discussion will be adopted in this course. Some topics related to the new progresses and applications in the related fields will be introduced. Prerequisite: Graduate level or instructor permission.

BE 5327. TISSUE OPTICS. 3 Hours.

Introduction to the science and technology behind tissue optical imaging systems and their design requirements for different clinical applications. Diffuse optical tomography, fluorescence tomography, bioluminescence tomography, multi-modality imaging.

BE 5329. NEURAL ENGINEERING. 3 Hours.

This course consists of both lecture/discussion and laboratory. Lecture topics include central and peripheral nervous system injury and regeneration, brain/machine interfacing, primary culture of neural cells, neuroinflammatory and neurodegenerative disease. Laboratories include embryonic and neonatal rat derived neuronal culturing, immunostaining and quantitative analysis.

BE 5331. POLYMERS AND BIOCOMPATIBILITY. 3 Hours.

This is a foundation course in polymeric biomaterial design, synthesis, characterization, and processing. The topics include design, surface-engineering, functionalization, characterization, as well as micro- and nano-fabrication of polymeric biomaterials. The biomedical applications of the polymeric biomaterials and their interaction with cell/tissue is discussed.

BE 5333. NANO BIOMATERIALS AND LIVING-SYSTEMS INTERACTION. 3 Hours.

Synthesis, fabrication, characterization, and biomedical applications of nanobiomaterials. Topics include synthetic nanobiomaterials, biological nanobiomaterials (DNA nanomaterials, protein and peptide nanomaterials, etc.), biofunctionalization of nanobiomaterials, use of nanobiomaterials in tissue engineering, drug delivery, gene delivery.

BE 5335. BIOLOGICAL MATERIALS, MECHANICS, & PROCESSES. 3 Hours.

Typical functional behavior of various biological materials, flow properties of blood, bioviscoelastic fluids and solids, mass transfer in cardiovascular and pulmonary systems.

BE 5337. TRANSPORT PHENOMENA IN BIOMEDICAL ENGINEERING. 3 Hours.

Principles of momentum, mass and heat transfer; description of blood flow, trans-capillary, interstitial, lymphatic fluid transport and pulmonary gas exchange. Applications in the design of blood oxygenator, dialysis devices, and strategies in drug delivery, hyperthermia treatment. Prerequisite: undergraduate courses in CE 2312 Statics/Dynamics, MAE 2314 Fluid Mechanics I or CE 3305 and MAE 3310 Thermodynamics I or CHEM 3321.

BE 5340. FINITE ELEMENT APPLICATIONS IN BIOENGINEERING. 3 Hours.

The course describes the fundamental principles of the finite element method and various numerical modeling techniques. Topics include variational and Galerkin formulations, linear and Hermitian elements, accuracy and convergence. Applications in biological systems and to the design of prosthetic devices are emphasized. Topic areas include linear elasticity, fluid dynamics, heat transfer, and mass transport processes.

BE 5343. IMAGE PROCESSING WITH MATLAB: APPLICATIONS IN MEDICINE AND BIOLOGY. 3 Hours.

This course focuses on introduction to image processing for applications in medicine and biology. After a review of how to use MATLAB arrays, files, functions, and to write MATLAB programs for quantitative computation and graphing, students will learn the fundamental tools in image processing, image analysis, and two-dimensional Fourier transform, using MATLAB functions available in the textbook. Topics also include image segmentation. Real-world research-based examples will be presented, and discussed in the course. With hands-on exercises, students will learn the basic skills, knowledge on MATLAB usage and the problem-solving techniques required for medical image processing. Prerequisite: MATH 3319 or consent of the instructor.

BE 5344. BIOINSTRUMENTATION I. 3 Hours.

Fundamental principles of bioinstrumentation, including operational amplifiers and instrumentation amplifiers; measurements of biopotentials; signals and noise in biological systems; mechanical transducers; resistive, inductive, capacitive transducers; measurement of temperature, blood pressure and flow; electrical safety.

BE 5345. BIOSENSOR. 3 Hours.

The course will cover major classes of bio-sensing technologies currently used in practice and the emerging ones that are currently being evaluated. The basic operating principle behind bio-sensing technologies will be explained and its implementation in medical devices will be discussed. Explanation of biosensor operation will involve understanding the mechanism of bio-signal transduction (bio-parameter to biomechanical, electrical, optical or chemical signal), detection method, and their analysis. Methodology for device calibration and data interpretation of physiological parameters will be discussed. The course material will be derived from book chapters and review papers. Course includes hand-on learning experience in laboratory by deconstructing commercially available biosensors and using experimental bio-sensing instruments. Students will be required to design and implement a point-of-care biosensor. Prerequisite: Undergraduate instrumentation courses or consent of the instructor.

BE 5346. MEDICAL IMAGING. 3 Hours.

This course introduces basic medical imaging modalities, including X-ray Computed Tomography (CT), Nuclear Medicine Imaging (PET and SPECT), Magnetic Resonance Imaging (MRI), and image-guided interventions. Through this course, the students will learn fundamental knowledge on how medical images are obtained and how they can be used for diagnosis, therapy, and surgery.

BE 5347. PRINCIPLES OF FUNCTIONAL MAGNETIC RESONANCE IMAGING. 3 Hours.

This course introduces basic principles of Magnetic Resonance Imaging (MRI) and functional MRI (fMRI) for brain functional imaging. After taking this course, the students will gain basic knowledge on how functional brain images are obtained from MRI and fMRI as well as how they can be used for diagnosis, therapy, and surgery. The emphasis in this course is on fMRI. This course will include lecture and some laboratory exercises involving actual fMRI measurement data.

BE 5350. MODELING AND CONTROL OF BIOLOGICAL SYSTEMS. 3 Hours.

Introduction to fundamental methods of modeling, analysis and control of biological systems. Linear system modeling, state space modeling, stability analysis, basic identification techniques. Examples from cardiopulmonary, visual, and motor control systems. Prerequisite: an undergraduate course in linear systems, control theory, or consent of the instructor.

BE 5352. DIGITAL PROCESSING OF BIOLOGICAL SIGNALS. 3 Hours.

Fundamental techniques for extraction of useful information from signals acquired from biological systems. Topics include time and frequency domain analysis, cross correlation, spectrum analysis, and convolution. Design of FIR and IIR filters for processing biological signals are described. Examples include cardiac, respiratory, and biomechanical movements. Prerequisite: an undergraduate engineering course in signals and systems analysis or consent of the instructor.

BE 5360. DESIGN AND APPLICATION OF ARTIFICIAL ORGANS. 3 Hours.

Fundamental principles of fluid mechanics, mass transfer and chemical reaction in engineered biological systems. Simple solutions are developed for the design of artificial ventricular assist devices, total artificial hearts, lungs and kidneys.

BE 5361. BIOMATERIALS AND BLOOD COMPATIBILITY. 3 Hours.

This course is an introduction to polymer structure and fabrication methods. Blood and tissue interactions with materials, and methods to improve the biocompatibility of materials are discussed.

BE 5364. TISSUE ENGINEERING LECTURE. 3 Hours.

Fundamentals of cell/extracellular matrix interactions in terms of cell spreading, migration, proliferation and function. Soft and hard tissue wound healing and nerve regeneration. Polymer scaffolding materials and fabrication methods. Cell-polymer interactions. In vitro and in vivo tissue culture and organ replacement.

BE 5365. TISSUE ENGINEERING LAB. 3 Hours.

Each student will be given the opportunity to perform the techniques commonly used in tissue engineering and biomaterial research. These techniques are culture media preparation, cell culture/subculture, degradable scaffold preparation, scaffold modification, histological sections and staining, and cell imaging analyses.

BE 5366. PROCESS CONTROL IN BIOTECHNOLOGY. 3 Hours.

Principles and methods of measurement, data acquisition and analysis. Application of control theory in biological systems and in biotechnology processes; control of pressure, flow, temperature, and pH. Prerequisite: an undergraduate course in control theory or consent of the instructor.

BE 5370. BIOMATERIAL - LIVING SYSTEMS INTERACTION. 3 Hours.

This course describes current developments in molecular structure and organization at synthetic material interfaces with tissues and the subsequent influences on cells and cell membranes. It is designed to lay the groundwork for an improved understanding of events at the biomaterial-living system interface.

BE 5372. DRUG DELIVERY. 3 Hours.

This class focuses on the development, design and application of controlled and targeted drug delivery systems including transdermal, inhalation, drug eluting stents, stimulated-drug as well as microparticles and nanoparticles for controlled drug delivery. Principles of drug delivery, targeting, modification, distribution and diffusion will be discussed.

BE 5373. FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS. 3 Hours.

This class will provide the students with hands-on experience for developing drug delivery systems such as microparticles and nanoparticles that deliver pharmaceutical agents to treat various diseases. The emphasis is on understanding the principles of pharmacokinetics and drug delivery systems to improve the clinical efficacy and reduce side effects.

BE 5382. LABORATORY PRINCIPLES. 3 Hours.

Introduction to fundamental biomedical engineering laboratory procedures including human studies and animal surgery; includes clinical laboratory projects; data collection, analysis, and interpretation. Prerequisite: permission of the instructor.

BE 5385. STEM CELL TISSUE ENGINEERING. 3 Hours.

Students will gain experience and expertise in stem cell culture and differentiation, and engineering stem cell-based 2D and 3D tissue constructs. Using phenotypic markers and appropriately integrating with biocompatible scaffolds, the engineered tissue constructs will be differentiated to several tissue types and functionally validated. Lectures will cover stem cells, designing scaffolds and multimodal imaging techniques. The final projects may include acquisition of big data images, data mining and development of pattern recognition algorithms.

BE 5388. BIOMEDICAL PRODUCT DESIGN AND DEVELOPMENT. 3 Hours.

This course aims to provide 1) A comprehensive knowledge of biomedical product design and development life cycle, 2) Basic knowledge on developing business plan, securing funding, designing product and process, conducting preclinical and clinical studies, 3) Basic training and classroom exercises on various biomedical product design and development tools, 4) Basic knowledge of FDA regulation and quality control, 5) Basic training on intellectual property and industrial project management.

BE 5390. RESEARCH PROJECT. 3 Hours.

Taken by students enrolled in the non-thesis option for the MS degree. Individual instruction in research and/or instrumentation development and evaluation conducted under supervision of the instructor. A final report required. Prerequisite: Permission of the instructor.

BE 5391. DIRECTED RESEARCH IN BIOENGINEERING. 3 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5395. INTERNSHIP IN BIOENGINEERING. 3 Hours.

Students receive training in a Bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. Permission of Graduate Academic Advisor.

BE 5398. THESIS. 3 Hours.

Prerequisite: graduate standing in biomedical engineering.

BE 5691. DIRECTED RESEARCH IN BIOENGINEERING. 6 Hours.

Student participates in a research project under the individual instruction of a faculty supervisor.

BE 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: Graduate standing in Biomedical Engineering.

BE 6101. PhD SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current research interests in the field of bioengineering. Prerequisite: Graduate admission to BE PhD program.

BE 6102. PhD SEMINAR IN BIOENGINEERING. 1 Hour.

University and guest lecturers speak on topics of current research interests in the field of bioengineering. Prerequisite: Graduate admission to BE PhD program.

BE 6103. PhD SEMINAR IN BIOENGINEERING. 1 Hour.

This course serves as a forum to present recent scientific and technological topics in Bioengineering and as a practical guide to organize and deliver proper and effective scientific oral presentations. Prerequisite: PhD student status.

BE 6194. DOCTORAL DIAGNOSTIC EXAMINATION. 1 Hour.

Individual instruction, directed study, consultation, and diagnostic examination. Required of all doctoral students in the semester when they take any portion of the diagnostic examination.

BE 6195. DOCTORAL COMPREHENSIVE EXAMINATION. 1 Hour.

Individual instruction, directed study, consultation, and comprehensive examination on a detailed prospectus of proposed dissertation research as well as an oral examination. Required of all doctoral students in the semester when they take the comprehensive examination. Prerequisite: BE 6194.

BE 6197. RESEARCH IN BIOENGINEERING. 1 Hour.

Individually approved research projects leading to a doctoral dissertation in the area of biomedical engineering.

BE 6297. RESEARCH IN BIOENGINEERING. 2 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of biomedical engineering.

BE 6395. INTERNSHIP IN BIOENGINEERING. 3 Hours.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE and good standing in the graduate program.

BE 6397. RESEARCH IN BIOENGINEERING. 3 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of bioengineering.

BE 6399. DISSERTATION. 3 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Biomedical Engineering.

BE 6499. DISSERTATION. 4 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. This course is only to be taken by students preparing a dissertation for submission that is supervised primarily by a University of Texas Southwestern Medical School faculty member and must be taken concurrently with a 5-hour dissertation course at that institution. To satisfy requirement that a P be awarded in a 9-hour dissertation course in their final semester of enrollment, a student must be concurrently enrolled in this course and the 5-hour dissertation course at the University of Texas Southwestern Medical School and receive a P in both courses at the end of that semester. If a P is not awarded in both classes, the two classes must be repeated until P grades are concurrently awarded.

BE 6695. INTERNSHIP IN BIOENGINEERING. 6 Hours.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE and good standing in the graduate program.

BE 6697. RESEARCH IN BIOENGINEERING. 6 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of bioengineering.

BE 6699. DISSERTATION. 6 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Biomedical Engineering.

BE 6995. INTERNSHIP IN BIOENGINEERING. 9 Hours.

Students receive training in a bioengineering company or a hospital to gain firsthand industrial or clinical engineering experience. The company or hospital assigns projects, and a faculty member monitors the student's progress. Prerequisite: Completion of at least 9 graduate credit hours in BE with good standing in the graduate program. International students need to complete at least 2 full semesters and comply with OIE/CPT rules to enroll. Prerequisite: Completion of at least 9 graduate credit hours in BE and good standing in the graduate program.

BE 6997. RESEARCH IN BIOENGINEERING. 9 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of bioengineering.

BE 6999. DISSERTATION. 9 Hours.

Preparation and submission of a doctoral dissertation in an area of bioengineering. Graded P/R/F. Prerequisite: admission to candidacy for the Ph.D. in Biomedical Engineering.

BE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Biology (BIOL)

COURSES

BIOL 1301. NUTRITION. 3 Hours. (TCCN = BIOL 1322)

Nutrients essential to an adequate diet and good health and the nutritive values of common foods are reviewed. Offered as BIOL 1301 and HEED 1301: credit will be granted for only one of these courses. Students seeking certification in Health Education must enroll in HEED 1301. Students seeking credit toward their science requirement must enroll in BIOL 1301. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, or medical technology.

BIOL 1333. DISCOVERING BIOLOGY: MOLECULES, CELLS AND DISEASE. 3 Hours. (TCCN = BIOL 1306)

Scientific literacy is crucial for navigating health-related issues in today's society. In this lecture and lab course, non-science majors will learn about the molecules of life, the cell, energy and metabolism, cell division, genetics and inheritance and diseases, such as cancer and diabetes. This course will satisfy the laboratory science requirements for students in the Colleges of Liberal Arts and Business Administration, and in the School of Social Work. Formerly listed as BIOL 1433, credit will not be given for both.

BIOL 1334. LIFE ON EARTH: EVOLUTION, ECOLOGY AND GLOBAL CHANGE. 3 Hours. (TCCN = BIOL 1307)

Scientific literacy is crucial for understanding the natural world and our relationship to it. In this lecture and lab course, non-science majors will learn about biologically-based problems facing today's society. Course themes include evolution, antibiotic resistance, genetic diversity, animal and bacterial and plant diversity, ecosystems, ecology and global change. This course will satisfy the laboratory science requirements for students in the Colleges of Liberal Arts and Business Administration, and in the School of Social Work. Formerly listed as BIOL 1434, credit will not be given for both.

BIOL 1345. BIOLOGY I FOR NURSING STUDENTS. 3 Hours.

This course focuses on the chemical and molecular basis of life, including metabolism, cell structure and function, and genetics to provide knowledge of these subjects for those pursuing a degree in nursing. Note: This course cannot be applied for credit toward a degree in Biology.

BIOL 1441. CELL AND MOLECULAR BIOLOGY. 4 Hours. (TCCN = BIOL 1406)

(BIOL 1406) This course focuses on the chemical and molecular basis of life, including metabolism, cell structure and function, and genetics. Laboratory experiments are designed to complement theory presented in lecture. Formerly listed as BIOL 1449; credit will not be given for both.

BIOL 1442. EVOLUTION AND ECOLOGY. 4 Hours. (TCCN = BIOL 1407)

Reviews significant aspects of organismal biology and presents current hypotheses concerning the origin and diversification of life on earth. The ecological and behavioral interactions between organisms and their biotic/abiotic environments are considered from an evolutionary perspective. The laboratory will examine evolution, ecology and the diversity of life using hands-on observational and experimental approaches. Prerequisite: BIOL 1441.

BIOL 2300. BIOSTATISTICS. 3 Hours.

Introduction to the collection, description, and analysis of data with statistical methods appropriate for biological sciences. Specific topics covered include but are not limited to: descriptive statistics, frequency distributions, random sampling, probabilities, binomial distribution, normal distribution theory and calculations, confidence intervals, t-tests (independent sample and paired designs), Chi-square tests (one-way and two-way analysis), analysis of variance, correlation and linear regression. Prerequisite: BIOL 1441 and BIOL 1442, or permission of the instructor.

BIOL 2317. BASIC CONCEPTS IN HUMAN SEXUALITY. 3 Hours.

The physiological, psychological, and sociological aspects of human sexuality. Offered as BIOL 2317, HEED 2317, PSYC 2317, and WOMS 2317. Credit will be granted for one of these courses only. Students seeking certification in Health Education must enroll in HEED 2317. Students seeking credit toward their science requirement must enroll in BIOL 2317. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, medical technology, psychology, or sociology.

BIOL 2444. GENERAL MICROBIOLOGY. 4 Hours.

Fundamental principles of microbiology including the structure and function of microbial cells and their activities in nature. Bacteria will be used in the laboratory to provide training and experimental methodology. Formerly listed as BIOL 3444; credit will not be granted for both. Prerequisite: BIOL 1441, CHEM 1441 or CHEM 1341.

BIOL 2457. HUMAN ANATOMY AND PHYSIOLOGY I. 4 Hours. (TCCN = BIOL 2401)

Functional morphology of humans, cellular function, principles of support and movement, and neural and endocrine control systems. Laboratory exercises involve both anatomical and experimental aspects of principles introduced in the lecture. This class is designed for students in sport activities (EXSA), medical technology and pre-nursing. Prerequisite: BIOL 1345 or BIOL 1441 or equivalent, or approval of the department. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology or microbiology.

BIOL 2458. HUMAN ANATOMY AND PHYSIOLOGY II. 4 Hours. (TCCN = BIOL 2402)

Functional morphology of humans, maintenance of the human body, and continuity of life. Topics will include the cardiovascular, respiratory, digestive, urinary, immune, and reproductive systems. Laboratory exercises explore both anatomical and experimental aspects of principles introduced in the lecture. This class is designed for students in sport activities (EXSA), medical technology, and pre-nursing. Prerequisite: BIOL 2457 or equivalent. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology or microbiology.

BIOL 2460. NURSING MICROBIOLOGY. 4 Hours.

The intention of this course is to present basic information, relevant to nursing practice, with the principles of microbiology and the nature of microbial disease. This course will give the nursing student a fundamental background of knowledge that will be applicable to the care of infectious patients, to the control of microbial diseases, and an understanding of microorganisms. The laboratory will provide practice in aseptic techniques, the use of disinfectants and antimicrobial agents, and microscopic study of bacteria. This course cannot be applied for credit toward a degree in Biology. Prerequisite: BIOL 1345, or BIOL 1441 or equivalent.

BIOL 3101. CURRENT TOPICS IN BIOLOGY. 1 Hour.

Seminar on significant topics and issues in modern biology. Students will present seminars on selected topics and participate in discussions of those topics. Topics will vary depending on instructor. This course will satisfy the oral communication competency required in Biology. May be repeated once for biology credit.

BIOL 3131. SERVICE LEARNING. 1 Hour.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisite: Permission of the Instructor.

BIOL 3149. COOPERATIVE PROGRAM IN BIOLOGY. 1 Hour.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 3231. SERVICE LEARNING. 2 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisite: Permission of the Instructor.

BIOL 3249. COOPERATIVE PROGRAM IN BIOLOGY. 2 Hours.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 3301. CELL PHYSIOLOGY. 3 Hours.

An introduction to the basic physical, chemical, and biological principles which govern function in eukaryotic cells, and the relationships between cells and their environments. Prerequisite: BIOL 1441. CHEM 2181 and CHEM 2321 are recommended.

BIOL 3302. UNDERGRADUATE RESEARCH EXPERIENCE. 3 Hours.

In this laboratory course, students will learn core concepts in Biology through an intense research experience. Students will master skills including quantitative data analysis, oral and written communication, and critical thinking. Permission is required to enroll in this course.

BIOL 3303. DRUGS AND BEHAVIOR. 3 Hours.

A survey of the psychoactive agents, their therapeutic uses, and social abuses. Alcohol, nicotine, caffeine, narcotics, hallucinogens, stimulants, and tranquilizers. Offered as BIOL 3303, HEED 3303, and PSYC 3303; credit will be granted only once. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology, microbiology, or medical technology. Students seeking certification in health education must enroll in HEED 3303.

BIOL 3304. MICROBIAL GENETICS. 3 Hours.

Consideration of the physical, chemical, and functional nature of genetic processes in micro-organisms. Prerequisite: BIOL 2444 or BIOL 3444, or permission of instructor.

BIOL 3306. BACTERIAL PHYSIOLOGY AND ANTIBIOTICS. 3 Hours.

This course will cover the fundamentals of how bacterial cells work, and how antibiotics interfere with essential functions to stop bacterial cells from working. This class is taught largely through reading and discussion of the primary literature, and with active learning and writing assignments. Prerequisite: BIOL 2444 or BIOL 3444.

BIOL 3307. EVOLUTIONARY MEDICINE. 3 Hours.

The application of evolutionary theory to the practice of medicine from an anthropological perspective. Topics include diet/paleodiets, sleep habits, infectious diseases, the developmental origins of health and disease, mental health, women's health and reproduction, and aging/senescence, among others. Offered as BIOL 3307 and ANTH 3307; credit will only be granted in one department.

BIOL 3308. MICROBIAL ECOLOGY AND EVOLUTION. 3 Hours.

The diversity, ecology and evolution of microorganisms in natural systems. Topics will include the role of bacteria and fungi in the functioning of terrestrial ecosystems; microbial biogeography; taxonomic and metabolic diversity; evolutionary diversification; and interactions among microbes and with plant and animal hosts. Prerequisite: BIOL 2444 or BIOL 3444.

BIOL 3310. SELECTED TOPICS IN BIOLOGY. 3 Hours.

Topics in biology not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for biology elective credit as different topics are offered. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3311. SELECTED TOPICS IN MICROBIOLOGY. 3 Hours.

Topics in microbiology not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for microbiology elective credit as different topics are offered. Prerequisite: BIOL 1441, BIOL 3444.

BIOL 3312. IMMUNOLOGY. 3 Hours.

An introduction to the components, properties, and manifestations of the adaptive immune response that occurs in vertebrates. Prerequisite: BIOL 1441, BIOL 3444. CHEM 2181, CHEM 2321 are recommended.

BIOL 3313. HUMAN ADAPTATION AND THE CONCEPT OF RACE. 3 Hours.

The study of modern human biological variation in the context of the history of the concept of race. Detailed historical review explores changing perspectives on variation within our species. Course examines physiological adaptations to environmental stress among a variety of human populations and implications of recent genetic research. Offered as BIOL 3313 and ANTH 3311; credit will only be granted in one department.

BIOL 3314. PRIMATE EVOLUTION AND BEHAVIOR. 3 Hours.

An overview of the Primate Order covering primate origins, evolution, ecology, adaptation, and behavior. Examination of the environmental context within which primates live, how the form of their bodies reflects their activities, and how they relate behaviorally to their environments and to one another. Offered as BIOL 3314 and ANTH 3313; credit will only be granted in one department.

BIOL 3315. GENETICS. 3 Hours.

Principles of molecular and classical genetics. The function and transmission of hereditary material in microorganisms, plants, and animals, including humans. Prerequisite: BIOL 1441.

BIOL 3316. ASTROBIOLOGY I. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include properties of life, origin and evolution of life on Earth, terrestrial geology and habitability, environmental forcings, extremophiles, mass extinctions, meteorites, searches for life in the solar system. Offered as BIOL 3316, GEOL 3316 and PHYS 3316; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent.

BIOL 3317. GENOMICS. 3 Hours.

This course presents an integrative approach to genome science, combining elements of genetics, state of the art technologies in genomic analysis. A basic knowledge of genetics and probability concepts is required. Use of the World Wide Web will be an essential part of the course. Prerequisite: BIOL 3315 or permission of instructor.

BIOL 3318. LIMNOLOGY. 3 Hours.

The living and nonliving components of inland waters. An introduction to the geological, physical, and chemical background, and to the major organisms and ecological processes. Prerequisite: BIOL 1441, BIOL 1442 or equivalent.

BIOL 3319. HUMAN GENETICS. 3 Hours.

This course will enable students to comprehend the basic principles of genetics applied to human inheritance and disease, to interpret the research strategies aimed to identify and study the genes responsible for diverse functions and traits, as well as to assess the consequences of the genetic technologies in our society. Prerequisites: BIOL 1441 and BIOL 3315.

BIOL 3320. BIOLOGY OF TEXAS. 3 Hours.

This course is an introduction to habitat diversity and the number of species found in the state of Texas. Students will learn about the physical, climatological, and human geography of Texas and how that affects animal and plant life within the state. Descriptions of state and federal endangered species listing processes will also be covered. Prerequisite: BIOL 1441 and BIOL 1442.

BIOL 3321. INFECTIOUS DISEASE. 3 Hours.

This course will cover key concepts that relate to the history and background of infectious diseases, as well as the emergence, spread, and control of infectious disease epidemics. Vaccination, antibiotic resistance, and eradication of diseases will also be discussed. Prerequisite: BIOL 3444.

BIOL 3322. BRAIN AND BEHAVIOR. 3 Hours.

An introduction to the anatomical structures and physiological processes that determine behavior. Topics include the acquisition and processing of sensory information, the neural control of movement, and the biological bases of complex behaviors (such as learning, memory, sex, language, and addiction), as well as the basic functioning of the nervous system. Offered as BIOL 3322 and PSYC 3322. Credit will be granted only once. BIOL 3322 prerequisite: BIOL 1441, BIOL 1442. PSYC 3322 prerequisite: BIOL 1441 or PSYC 1315.

BIOL 3324. HUMAN ECOLOGY OF FOOD. 3 Hours.

Modern food production and consumption is a complex, interdisciplinary topic directly relevant to global environmental and public health issues. This course will examine our place in the food web from ecological, biogeographical, historical, cultural, and sociopolitical perspectives. Course participants will examine the implications of our everyday decisions as consumers who play a key role in an intricate ecological system. Prerequisite: BIOL 1441 and BIOL 1442.

BIOL 3326. ANIMAL BEHAVIOR. 3 Hours.

A survey of research and theory comparing behavior at various phyletic levels. Offered as BIOL 3326 and PSYC 3326. Credit will be granted for only one of these courses. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3327. MICROBIAL DIVERSITY. 3 Hours.

This course is an introduction to the great diversity of microbial life. The topic material explores this diversity by considering the great age of bacteria, their evolution, biochemistry, habitat and form. The course of study focuses attention on organisms not commonly encountered in General Microbiology laboratories. Prerequisite: BIOL 3444 Microbiology.

BIOL 3328. ENVIRONMENTAL MICROBIOLOGY. 3 Hours.

An introduction to the principles, methodology, and practical applications and implications of environmental microbiology. Lecture topics include habitat and community approaches to environmental microbiology, measures of microbial populations and activities, interactions among microbial communities, the role of microorganisms in the origin of mineral resources, microorganisms and pollution, and current developments on energy flow through microbial communities. Prerequisite: BIOL 3444.

BIOL 3331. SERVICE LEARNING. 3 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisite: Permission of the Instructor.

BIOL 3339. INTRODUCTION TO EVOLUTION. 3 Hours.

The goals of this course are: to introduce students to the process of evolution, the patterns that result, and the way that evolutionary history has shaped the diversity of organisms on Earth; to explore how evolutionary biologists formulate and test hypotheses; to investigate applications of evolutionary biology to mainstream medical research; and to investigate current controversies in evolutionary biology. Prerequisites: BIOL 1441 and BIOL 3315 (or equivalent), or permission of instructor.

BIOL 3340. BIOINFORMATICS. 3 Hours.

This course is an applied introduction to bioinformatics and computational genomics. The course is geared toward the student with a biology background and limited programming experience. The course provides an entrance to commonly used programming/scripting languages and an introduction to numerous aspects of modern genomic data analyses (e.g. identification of coding and regulatory features in novel sequences, expression analysis, and comparative/phylogenetic analyses). Prerequisite: BIOL 1442 and BIOL 3315, or permission of instructor.

BIOL 3348. PRE-MEDICAL PRECEPTORSHIP. 3 Hours.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment. This course offers an introduction to the general principles and the environment of the practice of medicine in various specialties. Students are afforded the opportunity to observe a physician in a real-world setting, often including inpatient and operating theater scenarios. Students will also be exposed to the primary literature and practice oral presentation skills over biomedical topics.

BIOL 3349. COOPERATIVE PROGRAM IN BIOLOGY. 3 Hours.

The purpose of this course is to allow students to earn college credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 3352. INTRODUCTION TO FORENSIC LAB SCIENCE. 3 Hours.

An introduction to the various disciplines of Forensic Science including DNA analysis, drug analysis, and firearms basics. Laboratory consists of hands-on investigation of mock crime scenes, fingerprint enhancement methods, and biological analysis of fluids. Prerequisite: BIOL 1441, BIOL 1442, CHEM 1441.

BIOL 3355. TOXICOLOGY. 3 Hours.

An introduction to the general principles of toxicology with an emphasis on certain classes of toxic agents, their sources and toxic effects, as well as their environmental fates. Pollution of various media (air, water and soil) and the differences between them will be discussed. Prerequisite: BIOL 1441 or 4 hours of BIOLTRAN; CHEM 1441.

BIOL 3356. ENVIRONMENTAL SYSTEMS, BIOLOGICAL ASPECTS. 3 Hours.

Biological components of environmental systems. Population dynamics, species interactions, community structure, biodiversity, bioenergetics, nutrient cycling and human impacts are reviewed. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3358. ASTROBIOLOGY II. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include basic properties of life, habitability of Earth, studies of possible life regarding Mars, Europa & Titan, space missions, exoplanets and exomoons, stellar habitable zones, multistellar systems, exoEarths, biomarkers, SETI, Fermi paradox, Drake equation, cosmology. Offered as BIOL 3358, GEOL 3358, and PHYS 3358; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent. Note that Astrobiology I is strongly recommended to students to be taken prior to Astrobiology II, but is not a prerequisite.

BIOL 3409. PALEOANTHROPOLOGY. 4 Hours.

Paleoanthropology: an exploration of fossil evidence for human origins and human evolution. Course focuses on the evolution of humans and our close relatives, from our origins as a distinct lineage to "anatomically modern" Homo sapiens, including the relationship between biological and cultural/behavioral evolution. Offered as BIOL 3409 and ANTH 3409; credit will be granted only once.

BIOL 3410. SELECTED TOPICS IN BIOLOGY. 4 Hours.

Topics in biology not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May include lab, service learning or any other experiential learning module. May be repeated for biology elective credit as different topics are offered. Prerequisite: BIOL 1441 or BIOL 1442.

BIOL 3420. GENETICS METHODS LAB. 4 Hours.

Computational and experimental approach to genomics research. The course theme will be transposable elements. Prerequisite: BIOL 3315.

BIOL 3427. PLANT SCIENCE. 4 Hours.

A survey of plant science including the importance of plants to people and the human side of botany: the structure, reproduction, physiology, and classification of plants. The laboratory includes the study of structure, function, reproduction, and classification of plants. Replaces BIOL 3327 and BIOL 3183. Credit cannot be given for BIOL 3427 and BIOL 3327 and 3183. Prerequisite: BIOL 1441, BIOL 1442 or equivalent.

BIOL 3442. HUMAN PHYSIOLOGY. 4 Hours.

A comparative study of vertebrate function. The general principles of physiological mechanisms on the cellular, tissue, organ, and organismal levels will be examined. Laboratory studies will complement lecture material and will stress experimental design, data analysis, and the understanding of critical research in physiology. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 3445. METHODS IN MOLECULAR MICROBIOLOGY. 4 Hours.

An overview of different techniques used during manipulation of microorganisms. It will allow students to gain an historical perspective of techniques used in microbiology as well as learn state of the art molecular characterization of microorganisms and their genetic manipulation. Introduces biochemical, physiological, and molecular biology methods to assess community diversity and microbial activity in a variety of ecosystems. Bacterial growth and survival, population biology, and microbial interactions will also be discussed. Prerequisite: BIOL 1441 and BIOL 3444.

BIOL 3446. HUMAN ANATOMY. 4 Hours.

Study of the gross functional anatomy of the human body. Students will participate in laboratory exercises designed to familiarize them with human anatomical structures and their functions. Use of eponyms for anatomical terms will be minimized. Prerequisite: BIOL 1441, BIOL 1442 or 8 hours of Bioltran.

BIOL 3454. GENERAL ZOOLOGY. 4 Hours.

An overview of animal life including the diversity and evolution of major animal phyla, reproduction, development and aspects of physiological function. The laboratory examines form, function and phyletic relationships in a wide variety of animal types. Prerequisite: BIOL 1441, BIOL 1442, or equivalent, or permission of instructor.

BIOL 3457. GENERAL ECOLOGY. 4 Hours.

An examination of the theoretical and experimental aspects of the relationship between the biological and physical environments (organisms, food, space, and time) at the individual, population, community, and ecosystem levels. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 4089. RESEARCH IN BIOLOGY. 0 Hours.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. Prerequisite: written permission of the supervising instructor prior to registration. This is a non-credit course. Prerequisite: Written permission of the supervising instructor prior to registration.

BIOL 4179. RESEARCH AND DIRECTED STUDY. 1 Hour.

Research or independent study by individual students in biology under the supervision of a biology faculty member. Topics must be approved by the supervising faculty member. Prerequisite: BIOL 1441, BIOL 1442, and permission of instructor.

BIOL 4189. RESEARCH IN BIOLOGY. 1 Hour.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. A limit of two hours per semester is imposed and only a total of three hours may be counted toward degree requirements. These courses are offered only on a pass/fail basis. Prerequisite: written permission of the supervising instructor prior to registration.

BIOL 4279. RESEARCH AND DIRECTED STUDY. 2 Hours.

Research or independent study by individual students in biology under the supervision of a biology faculty member. Topics must be approved by the supervising faculty member. Prerequisite: BIOL 1441, BIOL 1442, and permission of instructor.

BIOL 4289. RESEARCH IN BIOLOGY. 2 Hours.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. A limit of two hours per semester is imposed and only a total of three hours may be counted toward degree requirements. These courses are offered only on a pass/fail basis. Prerequisite: written permission of the supervising instructor prior to registration.

BIOL 4307. MOLECULAR EVOLUTION. 3 Hours.

This course focuses on understanding how genes and genomes evolve at the molecular level. Molecular biology provides the data while population genetics provides the theoretical framework. Prerequisite: BIOL 3315, BIOL 3339.

BIOL 4309. NEUROPHARMACOLOGY. 3 Hours.

A survey of how drugs affect the nervous system. General topics will include cellular and molecular foundations of neuropharmacology, receptors and modulation of neural signaling. The specific role of neurotransmitter systems (i.e. acetylcholine, dopamine, norepinephrine, serotonin, and opiate) will be explored. Offered as BIOL 4309 and PSYC 4309; credit will be granted only once. Prerequisite: one or more of the following courses or permission of instructor: BIOL 1441 or PSYC 3322/BIOL 3322 or BIOL 3301.

BIOL 4311. HISTOLOGY. 3 Hours.

Histology is a branch of biological science concerned with structure and function of the organism on a cellular level. The objective in this class is to provide students with the skills and knowledge needed to identify and describe tissues and organs in the microscopic images based on the characteristic morphologies of cells and arrangement of tissues. Students will learn about basic histological techniques used in slide preparation, four basic tissue types and types of tissue, followed by the survey of microscopic images of all organ systems. This course bridges the "whole body" disciplines of anatomy and physiology and cell-level sciences such as cell physiology and genomics. It will help students understand how the differential expression of the genome leads to different cell morphology that in turn leads to different functions. Prerequisite: BIOL 1441, BIOL 1442.

BIOL 4312. INTRODUCTION TO VIROLOGY. 3 Hours.

The nature, reproduction, and host cell interactions of viruses and virus-like agents of bacteria, animals, and plants. Prerequisite: BIOL 3444.

BIOL 4316. GROWTH, DEVELOPMENT, AND EVOLUTION. 3 Hours.

A survey of topics at the nexus of modern human biological research in growth and development and the evolutionary record of hominid subadults. Offered as BIOL 4316 and ANTH 4315; credit will be granted only in one department. Prerequisite is only required for students registering for ANTH 4315. Prerequisite: ANTH 2307 or permission of the instructor.

BIOL 4317. BACTERIAL PATHOGENESIS. 3 Hours.

Host-pathogen relationships in microbial diseases. Topics include bacterium-host interactions; pathogens and pathogenic factors; techniques in pathogenesis research; molecular mechanisms of pathogenesis by major bacterial pathogens; antimicrobial compounds and resistance to antibiotics; and discussion of human genomics and susceptibility to infections. Prerequisites: BIOL 3312, BIOL 3444.

BIOL 4327. BEHAVIORAL GENETICS. 3 Hours.

Genetic influences on behavioral phenotypes. Research strategies, quantitative methods, and pharmacogenetic approaches to the brain; sociality and altruism; the personality, emotionality and intelligence; psychopathology; chromosomal abnormalities; forensic implications of genetic counseling. Offered as BIOL 4327 and PSYC 4327; credit will be granted only once. Students seeking credit toward the science requirement must enroll in BIOL 4327. Prerequisite: PSYC 1315 or BIOL 1441.

BIOL 4329. NEURAL ENGINEERING. 3 Hours.

This course consists of both lecture/discussion and laboratory. Lecture topics include central and peripheral nervous system injury and regeneration, brain/machine interfacing, primary culture of neural cells, neuroinflammatory and neurodegenerative disease. Laboratories include embryonic and neonatal rat derived neuronal culturing, immunostaining and quantitative analysis. Prerequisites: BIOL 3301, CSE 1310, CHEM 2322, and MATH 3319.

BIOL 4332. POLYMERS IN BIOMEDICAL ENGINEERING. 3 Hours.

This is a foundation course in polymeric biomaterial design, synthesis, characterization, and processing. The topics include design, surface-engineering, functionalization, characterization, as well as micro- and nano-fabrication of polymeric biomaterials. The biomedical applications of the polymeric biomaterials and their interaction with cell/tissue is discussed. Prerequisite: BIOL 3301, CSE 1310, CHEM 2322 and MATH 3319.

BIOL 4333. NANOBOMATERIALS. 3 Hours.

Synthesis, fabrication, characterization, and biomedical applications of nanobiomaterials. Topics include synthetic nanobiomaterials, biological nanobiomaterials (DNA nanomaterials, protein and peptide nanomaterials, etc.), biofunctionalization of nanobiomaterials, use of nanobiomaterials in tissue engineering, drug delivery, gene delivery. Prerequisites: BIOL 3301, CSE 1310, CHEM 2322, and MATH 3319.

BIOL 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with 4 independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment; junior or senior standing.

BIOL 4345. MICROBIAL PHYSIOLOGY. 3 Hours.

This course considers the anatomy and physiology of the bacterial cell in detail. Lecture topics consider the molecular architecture of cell walls, membranes and organelles, synthesis of wall material and membranes, insertion of proteins into membranes and regulation of biosynthetic systems at the whole cell level. Prerequisite: BIOL 1441 and BIOL 3444. CHEM 4311 recommended.

BIOL 4350. CONSERVATION BIOLOGY. 3 Hours.

Introduction to theory and practice of conservation biology, with emphasis on applications of modern quantitative and genetic techniques to preservation of organisms and habitats. Topics include identification and prioritization of units for protection; conservation genetics; preserve design; public policy issues; and case studies. Prerequisite: BIOL 3315 or equivalent (Genetics), or permission of the instructor.

BIOL 4352. FORENSIC BIOLOGY. 3 Hours.

A comprehensive review of biological principles, applied to forensic science, including sample recovery and handling, analytical techniques, profile matching/exclusion, reporting, and testimony. Prerequisite: BIOL 3315; statistics course recommended; or permission of instructor.

BIOL 4355. METHODS IN FORENSIC BIOLOGY. 3 Hours.

Analysis of typical biological evidentiary samples including extraction of DNA, quantitation, amplification and electrophoresis of examples. Instrumentation utilized includes thermal cyclers and ABI 377 genetic analyzer. Prerequisite: BIOL 4352 or concurrent enrollment.

BIOL 4357. HEALTH PSYCHOLOGY. 3 Hours.

This course provides a broad introduction to health psychology and its interface with the medical world. The course provides a balanced presentation of the important issues in the field, as well as specific content topics that are especially relevant today to better understand health and illness. Offered as BIOL 4357, HEED 4357, and PSYC 4357. Students seeking science requirement credit must enroll in BIOL 4357; students seeking Certification in Health must enroll in HEED 4357. Prerequisite: PSYC 1315 or BIOL 1333 or BIOL 1441 or BIOL 2457; junior standing recommended.

BIOL 4365. TISSUE ENGINEERING LAB. 3 Hours.

Each student will be given the opportunity to perform the techniques commonly used in tissue engineering and biomaterial research. These techniques are culture media preparation, cell culture/subculture, degradable scaffold preparation, scaffold modification, histological sections and staining, and cell imaging analyses. Prerequisites: BIOL 3301, CSE 1310, CHEM 2322, and MATH 3319.

BIOL 4379. RESEARCH AND DIRECTED STUDY. 3 Hours.

Research or independent study by individual students in biology under the supervision of a biology faculty member. Topics must be approved by the supervising faculty member. Prerequisite: BIOL 1441, BIOL 1442, and permission of instructor.

BIOL 4388. INSTRUCTIONAL TECHNIQUES IN BIOLOGY. 3 Hours.

Students will participate in laboratory instruction and student recitation sessions under the supervision of a faculty member. A maximum of 3 hours can be applied to the major for biology or microbiology credit. Enrollment by departmental permission only. A maximum of 6 hours credit from this class will be used to calculate a student's grade point average. Students on probation or who have not qualified for major status may not enroll in this course.

BIOL 4389. RESEARCH IN BIOLOGY. 3 Hours.

Research problems on an individual basis, conducted under the direction of a member of the biology faculty. A limit of two hours per semester is imposed and only a total of three hours may be counted toward degree requirements. These courses are offered only on a pass/fail basis. Prerequisite: written permission of the supervising instructor prior to registration.

BIOL 4390. INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY. 3 Hours.

Students will participate in laboratory instruction and laboratory preparation under the supervision of the lab coordinator. A maximum of 3 hours can be applied to the major for biology or microbiology credit. Enrollment by departmental permission only. A maximum of 6 hours credit from this class will be used to calculate a student's grade point average. Students on probation or who have not qualified for major status may not enroll in this course.

BIOL 4392. INSTRUCTIONAL TECHNIQUES IN MICROBIOLOGY LEADER. 3 Hours.

Students will take on a leadership role in laboratory instruction and preparation under the supervision of the lab coordinator. Students will strengthen their skill set and gain experience in a supervisory role. A maximum of 3 hours can be applied to the major for biology or microbiology credit. Enrollment by departmental permission only. A maximum of 6 hours credit from this class will be used to calculate a student's grade point average. Students on probation or who have not qualified for major status may not enroll in this course.

BIOL 4393. HONORS SENIOR PROJECT IN BIOLOGY. 3 Hours.

A topic will be selected after consultation with a supervising professor and will involve both original research and writing a formal report. The work will be evaluated by a faculty honors committee. Completion of this course will satisfy the thesis requirement for the Honors College described elsewhere in this catalog.

BIOL 4395. FORENSICS-EL PA. 3 Hours.**BIOL 4406. HUMAN OSTEOLOGY. 4 Hours.**

Detailed examination of human skeletal morphology. Topics include form and function of all skeletal elements in the human body, differentiation of each bone, left and right side identification, identification of fragmented remains, and muscle attachments and articulations. Content useful in forensic anthropology, archaeology, and hominid paleontology. Offered as BIOL 4406 and ANTH 4406; credit will be granted only in one department.

BIOL 4421. ADVANCED TOPICS IN NEUROSCIENCE. 4 Hours.

This course will cover current topics in Neuroscience using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Neuroscience research. Completion of this course is essential for students who are interested in pursuing a career in Neuroscience research. Offered as BIOL 4421 or PSYC 4421. Credit will be granted only once. Junior standing recommended. Prerequisite: C or better in BIOL 3322 or PSYC 3322.

BIOL 4440. LABORATORY METHODS IN BACTERIAL PATHOGENESIS. 4 Hours.

This course is intended to expose students to research techniques for studying bacterial pathogens. Students will use molecular and classical techniques to isolate, identify, and characterize bacteria and their response to stimuli. Techniques will range from polymerase chain reaction (PCR), gene sequencing, sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) and Immunofluorescence Microscopy. Prerequisites: BIOL 3312, BIOL 3444, BIOL 4317, or permission of instructor.

BIOL 4441. ADVANCED MICROBIOLOGY LAB. 4 Hours.

An overview of advanced microbiology techniques used in microbial genetics and physiology. It will allow students not only to gain an advanced and applicable perspective of techniques used in microbiology, but also to learn current state-of-the-art molecular techniques for genetic manipulation and physiological characterization of microorganisms. Included are molecular, physiological, and biochemical methods as well as metagenomics approaches and basic analysis of sequencing data for studying microbiomes. Enrollment requirements: BIOL 1441, General Microbiology (BIOL 2444), and Microbial Genetics (BIOL 3304). Prerequisite: BIOL 1441, BIOL 2444 or BIOL 3444, BIOL 3304.

BIOL 4459. BIOARCHAEOLOGY. 4 Hours.

The study of human remains in archaeological contexts in order to reconstruct individual identity, life history, and past population characteristics. No formal prerequisites, but familiarity with the human skeleton is helpful. Lab component is required. Offered as BIOL 4459 and ANTH 4459; credit will be granted only in one department.

BIOL 4460. ZOOARCHAEOLOGY. 4 Hours.

The study of faunal remains from archaeological contexts to understand past human economic strategies and ecological circumstances. Topics include skeletal and taxonomic identification, taphonomic processes, mortality profiles, biometric analyses, and human behavioral ecology. Lab component is required. Offered as BIOL 4460 and ANTH 4460; credit will be granted only once.

BIOL 5101. SPECIAL TOPICS IN BIOLOGY. 1 Hour.

Seminar on significant biological research. May be repeated for credit. Prerequisite: consent of the instructor.

BIOL 5102. PROFESSIONAL DEVELOPMENT. 1 Hour.

This course will provide senior graduate students with important information regarding various aspects of their professional development including job searching, interviewing, stress and time management, and professional ethics.

BIOL 5193. RESEARCH IN BIOLOGY. 1 Hour.

Conference course in which the student undertakes intensive investigation of topics under the supervision of a staff member. Prerequisite: consent of the instructor. Graded P/F/R.

BIOL 5291. INDIVIDUAL PROBLEMS IN BIOLOGY. 2 Hours.

Individual research projects supervised by a faculty member. Prerequisite: consent of the instructor.

BIOL 5293. RESEARCH. 2 Hours.**BIOL 5301. LABORATORY ROTATION. 3 Hours.**

This course is an elective designed to enable students to choose a major advisor and laboratory. Rotations among two or three faculty laboratories will familiarize students with faculty research interests, sharpen individual research skills, and expose students to different study systems, instruments, and research methods. May only be taken once for credit by MS students; may be repeated for credit once by Ph.D. students.

BIOL 5302. MICROBIAL GENETICS. 3 Hours.

Consideration of the nature, expression and regulation of the genetic processes in micro-organisms.

BIOL 5303. MICROBIOMES: HEALTH AND THE ENVIRONMENT. 3 Hours.

The development, interactions, and change of polymicrobial communities in both humans and the environment with implications in health, nutrition, disease, research, ecology and agriculture.

BIOL 5304. VIROLOGY. 3 Hours.

The nature, reproduction and host-cell interactions of viruses and animals. Emphasizes molecular aspects of viral replication and the molecular basis of pathogenesis. Prerequisite: consent of the instructor.

BIOL 5307. NEUROBIOLOGY. 3 Hours.

General principles of the function, structure, and organization of the nervous system. Topics include the gross and microscopic anatomy of nervous tissues; physical and chemical basis for action potentials and synaptic transmission; sensory and motor pathways of transduction; molecular, cellular, and systems study of learning and memory; development; and a study of neural diseases and disorders.

BIOL 5309. IMMUNOLOGY. 3 Hours.

This course is designed to acquaint students with the cellular processes involved in the generation of an immune response. It will provide students with detailed knowledge of the cells and organs of the immune system, their organization and diversity and their specialized functions at different anatomical locations. The importance of immune cell receptors and cytokines in cellular interactions and co-ordination of immunological mechanisms is also emphasized.

BIOL 5310. SELECTED TOPICS IN BIOLOGY. 3 Hours.

Topics may vary depending on the needs and interests of the students. May be repeated for credit. Prerequisite: consent of the student's thesis committee and the current course instructor.

BIOL 5311. EVOLUTION. 3 Hours.

Study of the origin of living systems and the mechanism of their evolution. Prerequisite: BIOL 3315 or equivalent or consent of the instructor.

BIOL 5312. ADVANCED GENETICS. 3 Hours.

Mechanisms of transmission and function of genetic material. Covers fundamental concepts in transmission genetics including: genotype/phenotype relationships; inheritance; linkage; genome organization; and gene expression. Experimental and quantitative approaches to genetic analyses are emphasized. Prerequisite: consent of the instructor.

BIOL 5314. BIOMETRY. 3 Hours.

An examination of statistical methods and procedures in relation to the design of biological experiments and the analysis of their results. Prerequisite: consent of the instructor.

BIOL 5315. COMMUNITY ECOLOGY. 3 Hours.

An investigation of the effects of interspecific interactions on the distribution and abundance of organisms. Prerequisite: consent of the instructor.

BIOL 5317. BACTERIAL PATHOGENESIS. 3 Hours.

Host-pathogen relationships in microbial diseases. Topics include bacterium-host interactions, pathogens and pathogenic factors: techniques in pathogenesis research: molecular mechanisms of pathogenesis by major bacterial pathogens; antimicrobial compounds and resistance to antibiotics; and discussion of human genomics and susceptibility to infections.

BIOL 5319. HUMAN GENETICS. 3 Hours.

This course will enable students to comprehend the basic principles of genetics applied to human inheritance and disease, to interpret the research strategies aimed to identify and study the genes responsible for diverse functions and traits, as well as to assess the consequences of the genetic technologies in our society.

BIOL 5325. PLANT ECOLOGY. 3 Hours.

An introduction to plant ecology including physiological, population, community and ecosystem ecology.

BIOL 5335. ESSENTIALS OF GENOMICS. 3 Hours.

An integrative approach to genome science, combining elements of genetics, statistics and bioinformatics. Current technologies used in genomics analysis will be presented.

BIOL 5336. MOLECULAR EVOLUTION. 3 Hours.

An exploration of how genes and genomes evolve at the molecular level. The presentation uses the theoretical framework provided by population genetics to analyze molecular biology data.

BIOL 5340. BIOINFORMATICS. 3 Hours.

This course is an applied introduction to bioinformatics and computational genomics. The course is geared toward the student with a biology background and limited programming experience. The course provides an entrance to commonly used programming/scripting languages and an introduction to numerous aspects of modern genomic data analyses (e.g. identification of coding and regulatory features in novel sequences, expression analysis, and comparative/phylogenetic analyses).

BIOL 5349. COOPERATIVE PROGRAM IN BIOLOGY. 3 Hours.

The purpose of this course is to allow students to earn credit for relevant field work in the areas of biology and microbiology. Students must apply for the program and be cleared for registration during the semester prior to enrollment.

BIOL 5350. CONSERVATION BIOLOGY. 3 Hours.

Theory and practice of conservation biology, with emphasis on applications of modern quantitative and molecular genetic techniques to preservation of organisms and habitats. Includes: identification and prioritization of units for protection; conservation genetics; preserve design; public policy; and current case studies. Prerequisites: BIOL 3315 or equivalent or consent of the instructor.

BIOL 5351. ENVIRONMENTAL MICROBIOLOGY. 3 Hours.

Principles, methodology, and practical applications of environmental microbiology. Topics include: habitat and community approaches to environmental microbiology; measures of microbial populations and activities; interactions among microbial communities; role of microorganisms in the origin of mineral resources and pollution and energy flow through microbial communities. Prerequisite: BIOL 3444 or equivalent or consent of the instructor.

BIOL 5354. LIMNOLOGY. 3 Hours.

The study of biotic and abiotic components of inland waters. Prerequisite: consent of the instructor.

BIOL 5355. TOXICOLOGY. 3 Hours.

An introduction to the general principles of toxicology with an emphasis on certain classes of toxic agents, their sources and toxic effects, as well as their environmental fates. Pollution of various media (air, water and soil) and the differences between them will be discussed.

BIOL 5391. INDIVIDUAL PROBLEMS IN BIOLOGY. 3 Hours.

Individual research projects supervised by a faculty member. Prerequisite: consent of the instructor.

BIOL 5393. RESEARCH IN BIOLOGY. 3 Hours.

Conference course in which the student undertakes intensive investigation of topics under the supervision of a staff member. Prerequisite: consent of the instructor. Graded P/F/R.

BIOL 5398. THESIS. 3 Hours.

Graded R/F only. Prerequisite: consent of faculty.

BIOL 5420. GENETICS METHODS LAB. 4 Hours.

Computational and experimental approach to genomics research. The course theme will be transposable elements.

BIOL 5421. METHODS IN MOLECULAR MICROBIOLOGY. 4 Hours.

This course will provide an overview of different techniques used during manipulation of microorganisms. It will allow students to gain a historical perspective of techniques used in microbiology (Winogradsky column, Koch solid agar plating) as well as learn state of the art molecular characterization of microorganisms and their genetic manipulation. This course introduces current biochemical, physiological and molecular biology methods to assess community diversity and microbial activity in a variety of ecosystems. Other topics discussed include bacterial growth and survival, population biology, and microbial interactions.

BIOL 5440. LABORATORY METHODS IN BACTERIAL PATHOGENESIS. 4 Hours.

This course is intended to expose students to research techniques for studying bacterial pathogens. Students will use molecular and classical techniques to isolate, identify and characterize bacteria and their response to stimuli. Techniques will range from PCR, Gene Sequencing, SDS-PAGE and Immunofluorescence Microscopy. Prerequisites BIOL 3312, BIOL 3444, BIOL 4317.

BIOL 5493. RESEARCH. 4 Hours.**BIOL 5593. RESEARCH. 5 Hours.****BIOL 5693. RESEARCH IN BIOLOGY. 6 Hours.**

Conference course in which the student undertakes intensive investigation of topics under the supervision of a staff member. Prerequisite: consent of the instructor. Graded P/F/R.

BIOL 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: consent of faculty.

BIOL 5998. THESIS. 9 Hours.

Graded P/F/R. Prerequisite: consent of faculty.

BIOL 6191. ADVANCED RESEARCH. 1 Hour.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6291. ADVANCED RESEARCH. 2 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6301. ESSENTIAL TOPICS IN GENOMICS. 3 Hours.

This course will explore diverse aspects of genome biology, including the evolutionary principles that influence how genomes change through time, genome structure, and genome function. Emphasis will be given on how genome technology influences the way we do modern biology and how genomics influences the world around us.

BIOL 6302. MICROBIOLOGY, MOLECULAR AND CELLULAR BIOLOGY. 3 Hours.

Using model microorganisms, this course will investigate their (1)Physiology, biochemistry, and genetics, (2)The hosts innate and adaptive immune responses, (3)The molecular basis for virulence and pathogenesis and (4)The ecological and economic impact of microbial pathogens including epidemics and pandemics.

BIOL 6303. BIODIVERSITY IN A CHANGING WORLD. 3 Hours.

Biodiversity, encompassing 8.7 million species, is the most distinctive feature of Earth. In this class, students will learn about the evolutionary and ecological forces shaping biodiversity, the measures of biodiversity from local to global scales, biogeographical patterns of biodiversity, the benefits of biodiversity to humans and ecosystems, and the major threats to biodiversity due to human activities.

BIOL 6310. SELECTED TOPICS IN BIOLOGY FOR PhD STUDENTS. 3 Hours.

Topics may vary depending on the needs and interests of the students. May be repeated for credit. This course is specific to students in the PhD program.

BIOL 6391. ADVANCED RESEARCH. 3 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6399. DISSERTATION. 3 Hours.

BIOL 6399 and BIOL 6699 graded R/F only; BIOL 6999 graded P/F/R. Prerequisite: admission to candidacy for the degree Doctor of Philosophy in Quantitative Biology.

BIOL 6491. ADVANCED RESEARCH. 4 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6591. ADVANCED RESEARCH. 5 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6691. ADVANCED RESEARCH. 6 Hours.

Faculty supervised individual research. May be repeated for credit. Graded P/F/R.

BIOL 6699. DISSERTATION. 6 Hours.

BIOL 6399 and BIOL 6699 graded R/F only; BIOL 6999 graded P/F/R. Prerequisite: admission to candidacy for the degree Doctor of Philosophy in Quantitative Biology.

BIOL 6999. DISSERTATION. 9 Hours.

BIOL 6399 and BIOL 6699 graded R/F only; BIOL 6999 graded P/F/R. Prerequisite: admission to candidacy for the degree Doctor of Philosophy in Quantitative Biology.

BIOL 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Broadcast Communication (BCM N)

COURSES

BCM N 2347. BROADCAST WRITING AND REPORTING. 3 Hours.

Writing non-dramatic scripts for radio and television. Emphasis is on writing for time and under deadline pressure as well as writing in active voice.

BCM N 2357. RADIO PRODUCTION I. 3 Hours. (TCCN = COMM 2303)

The fundamentals of radio broadcasting. The techniques of announcing, interviewing, script writing, programming, types of radio production, audience analysis, and vocational opportunities. Students participate in typical broadcasting activities.

BCM N 2358. TELEVISION PRODUCTION I. 3 Hours. (TCCN = COMM 1336)

Fundamentals of television broadcasting, including camera operation, video editing, writing, lighting, and switching practices.

BCM N 2360. INTRODUCTION TO BROADCASTING. 3 Hours. (TCCN = COMM 1335)

A survey of historical and contemporary operations and functions of broadcasting. How radio, television and streaming media operate, including understanding of stations, distribution methods and facilities, regulation and the FCC, networks, advertising agencies, audience ratings, and new technologies.

BCM N 2370. MULTIMEDIA PRODUCTION. 3 Hours.

Audio and video production for non-broadcast majors in the Department of Communication. May not be substituted for BCM N 2357 or BCM N 2358.

BCM N 3319. BROADCAST MANAGEMENT. 3 Hours.

Management procedures, policies, and responsibilities in the successful operation of telecommunication industries. Areas covered are planning, problem-solving, personnel, facilities, government, financial resources, and public service. Prerequisite: A grade of C (2.0/4.0 scale) or better in BCM N 3340.

BCM N 3340. ELECTRONIC NEWS. 3 Hours.

News writing and gathering for radio, television, podcasting and streaming media; use of basic audio and video electronic equipment; editing of news stories for analysis and criticism. Prerequisite: Three hours of Math, COMM 2311 (or concurrent enrollment), and a grade of C or better in the following courses: BCM N 2347, BCM N 2357, BCM N 2358, and BCM N 2360.

BCM N 3350. TELEVISION REPORTING I. 3 Hours.

Producing and reporting of news information for the television media. Students will participate in news gathering, writing, and shoot packages for television. Prerequisite: A grade of C (2.0/4.0 scale) or better in BCM N 3340.

BCM N 3355. BROADCAST ANNOUNCING. 3 Hours.

Concentrated study of phrasing, timing, voice modulation, pronunciation and articulation. Analysis and interpretation of all types of broadcast copy. Integration of current industry standard announcing and performance into radio, television, podcasting and other digital productions. Prerequisite: COMM 2311 and a grade of C or better in the following courses: BCM N 2347, BCM N 2357, BCM N 2358, BCM N 2360.

BCM N 3360. SPORTS REPORTING. 3 Hours.

Reporting on sports across multiple platforms. Credit will not be given for both BCM N 3360 and JOUR 3360. Prerequisite: COMM 2311 (previously listed as JOUR 1345) and a grade of C or better (2.0/4.0 scale) in both BCM N 2347 and BCM N 2358.

BCM N 4191. MEDIA WORKSHOP. 1 Hour.

Contemporary activities in broadcasting. Topics will vary. May be repeated up to three times. Prerequisite: Permission of the instructor.

BCM N 4320. CURRENT ISSUES IN TELECOMMUNICATIONS. 3 Hours.

Recent and current literature in radio and television broadcasting, cablecasting, industrial video, satellite distribution, and national and international telecommunications policies. Current problems and possible solutions. Prerequisite: COMM 3315, a grade of C or better in BCM N 3319, and BCM N 3340.

BCM N 4322. CORPORATE VIDEO PRODUCTION. 3 Hours.

Producing video for nonprofit, municipal, and corporate community partners. Includes professional client interaction, project proposals and contracts, team dynamics and leadership, and video distribution guidelines. Prerequisite: COMM 3315, a grade of C or better in BCM N 3340, and a grade of C or better in either BCM N 3319 or BCM N 3350.

BCM N 4350. TELEVISION REPORTING II. 3 Hours.

Production and evaluation of news programs for transmission on electronic media. Students will participate in production of newscasts for airing via broadcast and cable systems. Prerequisite: COMM 3315, a grade of C (2.0/4.0 scale) or better in BCM N 3350.

BCM N 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: BCM N 3340 and 60 hours earned, and permission.

BCM N 4393. SPECIAL TOPICS. 3 Hours.

Special studies in broadcasting. Topic varies from semester to semester. May be repeated when topics change, for a maximum of six credit hours. Prerequisite: BCM N 3340 and 60 hours earned, and permission of department.

BCMN 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research in broadcasting while working with business and industry. Individual conference to be arranged. Prerequisite: 60 or more hours earned and permission of department.

Business Administration (BSAD/BUSA)

COURSES

BSAD 6182. INDEPENDENT STUDIES IN BUSINESS ADMINISTRATION. 1 Hour.

This independent study course is centered on the application of content related to teaching in higher education settings. Students will be expected to design a lesson, present a lecture, and arrange for a final feedback report following an observed teaching demonstration. The focus will be on reflective teaching, sound lesson design, and receiving feedback towards improved teaching practice in higher education.

BSAD 6310. FOUNDATIONS OF SCIENTIFIC INQUIRY. 3 Hours.

The evolution of the modern corporation is briefly addressed. The core topics include the structure of explanation, the structure of scientific laws, theory building, philosophy of science and relativistic/post-relativistic philosophies of science.

BSAD 6311. EXPERIMENTAL DESIGN AND RESEARCH METHODS. 3 Hours.

In-depth coverage of selected topics in the design of research; topics include philosophy of science, theory of measurement, complex experimental and quasi-experimental designs.

BSAD 6312. REGRESSION. 3 Hours.

The theoretical and practical aspects of regression analysis. Topics include simple and multiple linear regression, the matrix formulation of regression models, regression diagnostics and remedial measures, collinearity and ridge regression, normal correlation models, and non-linear least squares, time series including ARIMA models are covered. Practical applications of statistical software packages are emphasized.

BSAD 6313. ANOVA. 3 Hours.

Experimental design and data analysis, especially as related to business and economic research. Topics include completely randomized designs, complete and incomplete blocks, nested designs, estimation and testing of fixed, random and mixed effects, sampling, nonparametric statistics and analysis of variance.

BSAD 6314. MULTIVARIATE STATISTICS. 3 Hours.

Topics include commonly applied multivariate methods such as multiple analysis of variance, factor analytic methods, discriminant analysis, logistic regression, canonical correlations, profile analysis, cluster analysis, and repeated measures. The use available computer packages to conduct data analysis will be stressed.

BSAD 6315. TIME SERIES. 3 Hours.

Univariate and multivariate time series; analysis of economic and financial data; out-of-sample forecasting using computer software. Autoregressive-moving average models, vector autoregression, unit roots, co-integration, ARCH and GARCH.

BSAD 6316. FINANCIAL ECONOMETRICS. 3 Hours.

In-depth study of the econometric tools and techniques used in empirical finance research. Course emphasizes data extraction and analysis of common finance databases, as well as the theoretical basis for current empirical finance techniques and methods.

BSAD 6317. APPLIED BUSINESS & ECONOMICS DATA ANALYSIS I. 3 Hours.

The course develops an understanding of basic statistical and econometric techniques. Participants exploit real data and computational power to uncover patterns/trends and examine relationships. There is a focus on conceptual frameworks and the application of techniques to data sets in various fields. Participants learn how to use statistical packages such as R, SAS, and STATA to apply the tools to real data. Participants will complete an empirical analysis paper. Prerequisite: BSTAT 5325 or consent of instructor.

BSAD 6318. APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS II. 3 Hours.

The course covers cross-section, panel data, and limited dependent variables methods. Topics may include analysis of natural experiments/differences-in-differences, panel data methods, instrumental variable estimation, simultaneous equation models, sample selection corrections, and limited dependent variable and hierarchical models. Participants learn how to use statistical packages such as R and SAS, to apply these methods to data to examine causal relationships. They build an understanding of appropriate methods for different research design. Participants will complete an empirical research paper. Prerequisite: ECON 5336 or BSAD 6317 or consent of the instructor; cross referenced with ECON 5339.

BSAD 6319. BUSINESS & ECONOMIC FORECASTING. 3 Hours.

This applied course provides students the foundation to analyze business, economic, and financial data to develop forecasts using current statistical and computing tools. Emphasis is on methods that allow students to capture trending and seasonal patterns present in the data and other predictable variations hiding in plain sight, including temporal correlation. Once equipped with appropriate models, including ARIMA methods, students learn how to use the extracted information to project into the future. Critical thinking will be strengthened, as students will select an appropriate forecasting model and demonstrate its efficacy against reasonable alternatives. Prerequisite: ECON 5336 or BSAD 6317 or consent of the instructor.

BSAD 6320. CAUSAL INFERENCE FOR BUSINESS DECISIONS. 3 Hours.

Students learn methods to identify and measure the outcomes of business decisions. In particular, students will learn various issues pertaining to the misattribution of causal effects. The course surveys multiple methods to overcome the misidentification problem. Students will engage in empirical analysis. Prerequisite: ECON 5336 or BSAD 6317 and ECON 5339 or BSAD 6318.

BSAD 6321. FOUNDATIONS OF STRUCTURAL EQUATION MODELING. 3 Hours.

The purpose of this course is to provide a foundation into structural equation modeling (SEM) techniques and issues as well as hands-on training with SEM software. Application of basic techniques such as confirmatory factor analysis (CFA), mediation and moderation in SEM, and multi-group analyses will be covered. Students must have taken a graduate course on regression. Prerequisite: Multivariate.

BSAD 6322. MODELING IN BUSINESS RESEARCH. 3 Hours.

A wide range of modeling techniques such as game theory in economics, discrete choice models in marketing and dynamical stochastic models will be discussed. The course focuses on model development to match mathematical framework and features to the underlying research setting and estimation/model selection techniques. Examples drawing from multiple research disciplines will be used to demonstrate relevant techniques and design principles step by step.

BSAD 6323. DATA ANALYTICS SEMINAR. 3 Hours.

The imperative to harness vast amounts of data has spawned a number of tools and techniques that complement traditional statistical approaches. From a research perspective, these tools and techniques afford new ways of collecting and analyzing data. This seminar will introduce students to contemporary data analytic techniques, including social network analysis, text analysis, machine learning and AI, and their applications in research.

BSAD 6330. Nonparametric Statistics. 3 Hours.

A survey of statistical tools which may be used when the normal assumptions of parametric statistics cannot be made; including procedures for categorical data, methods involving ranks, bootstrapping, and Kolmogorov-Smirnov type techniques. Cross listed with BSTAT 5330. Prerequisite: BSTAT 5325 or equivalent.

BSAD 6392. DOCTORAL RESEARCH AND TEACHING COLLOQUIUM. 3 Hours.

Review of the research process and contemporary developments in the methodology and design of empirical research in the major fields of study represented in the doctoral program. Review of teaching methods for effective classroom instruction. May be repeated for credit.

BSAD 6399. DISSERTATION. 3 Hours.**BSAD 6699. DISSERTATION. 6 Hours.****BSAD 6999. DISSERTATION. 9 Hours.****BSAD 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

COURSES

BUSA 2211. BUSINESS DATA LITERACY AND VISUALIZATION. 2 Hours.

This course is designed to introduce business data literacy and business data visualization. The course will cover data fundamentals including both the principles and techniques needed to effectively validate business data, draw insights from business data, and communicate the results. Students will learn the value of visualizations, specific techniques in visualization, and how to best leverage visualization methods to tell engaging business data stories.

BUSA 4344. SAS TOOLS FOR BUSINESS AND ECONOMICS. 3 Hours.

SAS is used by many businesses to generate analysis and reports they rely on to make good decisions. This course teaches students the skills needed to use SAS to clean data, visualize data, conduct basic business and economic analysis, and present that information in business-friendly reports using the tools in SAS for effective communication. Prerequisite: BSTAT 3321.

BUSA 4345. R FOR BUSINESS AND ECONOMIC ANALYSIS. 3 Hours.

This course teaches students how to analyze, visualize, and summarize data analysis using R. It covers the preliminaries of coding, data cleaning and visualization, and report writing using RStudio's markdown package. Students will then use the techniques learned in the course to write a modern, data analysis report using contemporary business or economic data. Prerequisite: BSTAT 3321.

BUSA 5322. DATA ANALYTICS WITH PYTHON AND MACHINE LEARNING. 3 Hours.

This course uses Python to give students hands-on experience with web scraping and machine learning. Web scraping gives students the ability to collect data from webpages that would be difficult to acquire otherwise. Machine learning techniques covered in this class include linear regression and classification, trees and tree-based methods such as random forests, neural networks, support vector machines, clustering, and dimension reduction methods. This class will help students learn to use Python in a professional context, and students will add supervised and unsupervised machine learning techniques to their economic analysis toolkit. Prerequisite: ECON 5336 or BSTAT 5325 or consent of instructor.

BUSA 5344. SAS TOOLS FOR BUSINESS AND ECONOMICS. 3 Hours.

SAS is used by many businesses to generate analysis and reports they rely on to make good decisions. This course teaches students the skills needed to use SAS to clean data, visualize data, conduct basic business and economic analysis, and present that information in business-friendly reports using the tools in SAS for effective communication. Prerequisite: BSTAT 3321.

BUSA 5345. R FOR BUSINESS AND ECONOMIC ANALYSIS. 3 Hours.

This course teaches students how to analyze, visualize, and summarize data analysis using R. It covers the preliminaries of coding, data cleaning and visualization, and report writing using RStudios markdown package. Students will use the techniques learned in the course to write a modern, data analysis report using contemporary business or economic data. Prerequisite: BSTAT 3321.

Business Analytics (BANA)

COURSES

BANA 3308. INTRODUCTION TO BUSINESS ANALYTICS. 3 Hours.

This course introduces students to data mining and business analytics techniques that will enable them to draw actionable insights from data. In addition to tracing the evolution of ideas in Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL), the course provides hands-on exposure to state-of-the-art machine learning algorithms-such as linear, ensemble, and neural network models-that organizations rely on to derive business value. Prerequisite: BSTAT 3321 and INSY 3300.

BANA 3309. DATA VISUALIZATION AND BUSINESS INTELLIGENCE. 3 Hours.

This course introduces students to cutting-edge techniques for visualizing data and creating dashboards to facilitate data-driven decision making. Topics include fundamentals of SQL, preprocessing of data, examining principles and concepts underlying visual characteristics of data, exploring graphs and charts to draw insight from data, assessing the quality of datasets, and performing exploratory analysis. Creating dashboards and storytelling to communicate business insight will also be emphasized. Prerequisite: BSTAT 3321 and INSY 3300.

BANA 4308. ADVANCED DATA SCIENCE. 3 Hours.

This course provides an in-depth understanding of machine learning concepts and algorithms using Python. Students will receive hands-on training on supervised learning algorithms such as KNN, Naïve Bayes, Linear and Logistic Regression, Support Vector Machines, Decision Trees and Ensembles, and Artificial Neural Networks (ANNs). The course will also cover foundations of Natural Language Processing (NLP) and unsupervised learning algorithms such as K-Means, Hierarchical Clustering, and DBSCAN. Prerequisite: BANA 3308 and BANA 3309.

BANA 4311. ETHICAL AND SOCIAL ISSUES IN DATA SCIENCE. 3 Hours.

This course discusses ethical concerns and social issues related to the creation, storage, analysis, use, and dissemination of data arising from business applications of machine learning, artificial intelligence, predictive analytics and data science. Topics include fairness, validity, anonymity, privacy, ownership, human subject research and societal consequences of data analysis and use by business organizations. Prerequisite: BANA 3308.

BANA 4326. CAPSTONE IN BUSINESS ANALYTICS. 3 Hours.

This course covers advanced analytics techniques, such as Natural Language Processing, Deep Learning, and Reinforcement Learning. It also provides students an opportunity to apply their analytics skills to solve a real-world problem and present the efficacy of their solution from a business perspective. Communication and presentation skills will be emphasized. Prerequisite: BANA 4308.

Business Communication (BCOM)

COURSES

BCOM 3360. EFFECTIVE BUSINESS COMMUNICATION. 3 Hours.

Principles and practice of effective communication with business organizations. Students will be exposed to theories of persuasion, argumentation and advocacy. Techniques to achieve group compromise and conflict resolution are also emphasized. A business professionalism lab is required. The grade for this course requires the completion of both the lecture component and the professionalism lab. Prerequisite: 30 credit hours.

BCOM 4380. ADVANCED COMMUNICATIONS FOR BUSINESS. 3 Hours.

Students develop written and oral communication skills. Multiple individual professional writing projects will be produced and critiqued. Grammar, sentence structure, and word choice in the business setting will be developed. Students will deliver multiple oral presentations and learn their strategy, techniques, and tips for succinct communications. Non-verbal communication will be reviewed. Prerequisite: BCOM 3360.

BCOM 5175. BUSINESS COMMUNICATIONS. 1 Hour.

Course focuses on effective oral and written communication skills for business leaders. Discusses advanced techniques for improved business writing and presentation skills. Also stresses presentation media and computer graphics for reports and presentations.

BCOM 5375. ADVANCED BUSINESS COMMUNICATION THEORY & PRACTICE. 3 Hours.

Examines theories of effective oral and written communication for managers, including conflict resolution, emotional intelligence, and others. Discusses techniques for improved research, report writing and presentation. Integrates presentation media and computer graphics for reports and presentations.

Business Decisions (BDEC)

COURSES

BDEC 3311. BUSINESS DECISION MAKING - PLANNING, ETHICS, SUSTAINABILITY, & AGILITY. 3 Hours.

Students are exposed to broad and integrative business knowledge as they learn to lead and manage teams while creating a business plan. The business decisions they make focus on value added offerings and are crafted in a culture of ethical, sustainable, and agile business activity. Ethics are discussed as a critical staple of decision making during times of fundamental and less predictable change. Sustainability is discussed as a touchstone for innovative decision making. Agility is discussed as a decision making trait needed in times of evolving marketplace needs. Written business plans are evaluated by business professionals. Student teams also compete for various awards by presenting their business plans to those business professionals in a business exhibition format called the Sustainable Business Challenge. Prerequisite: Junior standing, 60 completed hours.

Business Honors (BHNR)

COURSES

BHNR 4330. RESEARCH METHODOLOGY AND PRACTICE. 3 Hours.

Designed for undergraduate students from a variety of disciplines. Goals: to understand the commonalities of research across disciplinary boundaries, to develop research skills. Topics: framing a research question, literature review, introductory statistical skills, organization and presentation of results. Using a computer for bibliographic searches, word processing, and statistical analysis.

BHNR 4393. BUSINESS HONORS INTERNSHIP. 3 Hours.

Supervised practical training in the student's major or concentration in business. May be used as an advanced business elective only and is letter graded. No credit will be given for previous experience or activities. Prerequisites: Honors College student, declared business major with junior standing, and approval of their respective department internship coordinator and Honors College advisor.

BHNR 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all undergraduate Business Administration students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department.

Business Law (BLAW)

COURSES

BLAW 3310. LEGAL AND ETHICAL ENVIRONMENT OF BUSINESS. 3 Hours.

The basic structure and processes of the legal system are reviewed followed by coverage of key common law areas and major regulatory rules that impact business. The focus is on a working knowledge of the law that has the greatest impact on business today and the social and ethical issues that may be related to legal issues. Prerequisite: 30 credit hours.

BLAW 3311. LAW I. 3 Hours.

The law relevant to business transactions of large and small business firms and individuals. The history and development of our legal system, (e.g. increased government regulation of business) reviewed to help the student understand political and social influences on law. Topics covered include common law and Uniform Commercial Code, and contractual relationships (contracts, assignments, commercial papers, sales, and bailments). Prerequisite: 30 credit hours.

BLAW 3312. LAW II. 3 Hours.

The law of property (real and personal), business associations (agency, partnership, corporation, bankruptcy), wills and trusts. Prerequisite: 30 credit hours.

BLAW 3314. REAL ESTATE LAW. 3 Hours.

Development of real estate law and the legal constraints within which real estate decisions are made. Prerequisite: 60 credit hours.

BLAW 4310. BASIC INTERNATIONAL LAW FOR BUSINESS. 3 Hours.

The basic principles of law related to international transactions and relations as may be applicable to business dealings. Laws related to persons and property in the foreign environment. Prerequisite: 60 credit hours.

BLAW 5330. LEGAL ENVIRONMENT OF BUSINESS. 3 Hours.

The basic structure and processes of the legal system are reviewed followed by coverage of key common law areas and major regulatory rules that impact business. The focus is on a working knowledge of the law that has the greatest impact on business today and the social and ethical issues that may be related to legal issues.

BLAW 5331. LAW OF INTERNATIONAL BUSINESS. 3 Hours.

General principles of law applicable to international business including case law, statutory law, treaties, administrative law, and international agreements.

BLAW 5332. BUSINESS LAW. 3 Hours.

This course provides the basic legal principles of business organizations and operations, with coverage including the law of contracts (both common law and the law of sales of goods), commercial paper, property (including bailments, documents of title, patents and copyrights), employment law, agency, business organizations, selected topics of government regulation of business (securities regulation, antitrust, and bankruptcy), money laundering, suretyship and creditors' rights, the Dodd-Frank Act of 2010, the Sarbanes-Oxley Act of 2002, and CPA professional responsibility and liability.

Business Statistics (BSTAT)

COURSES

BSTAT 2305. INTRODUCTORY STATISTICS FOR BUSINESS ANALYTICS. 3 Hours.

Guiding business and economic decision-making with the use of descriptive and inferential statistical techniques. Topics include the collection, description and summarization of business and economic data; probability as a foundation of business intelligence; discrete and continuous random variables, their probability and sampling distributions, and their application in business analytics; estimation and confidence intervals for (and tests of hypotheses regarding) the population mean in business settings; and correlation and linear regression analysis as business decision-making tools. Software is used to conduct analyses throughout the course.

BSTAT 3321. INTERMEDIATE STATISTICS FOR BUSINESS ANALYTICS. 3 Hours.

Informing business and economic decision-making with intermediate-level tools of business analytics. Topics can include the quality and representativeness of data; conditional probability; statistical independence; business applications of discrete and continuous probability distributions at the intermediate level; multiple-population inference; non-parametric methods; and intermediate regression analysis. Both spreadsheet and statistical software are used to conduct analyses throughout the course. Prerequisite: MATH 1308 or BSTAT 2305.

BSTAT 3322. ADVANCED STATISTICS FOR BUSINESS ANALYTICS. 3 Hours.

Advanced statistical methods oriented toward predictive analytics and multivariate methods in business settings. Topics can include experimental design; regression cross-validation; logistic regression; classification and regression trees; cluster analysis; factor analysis and multi-dimensional scaling; and time series analysis and forecasting. Prerequisite: BSTAT 3321.

BSTAT 5301. FOUNDATIONS OF ANALYTICS. 3 Hours.

Introduction to statistical learning for business analytics, designed to prepare graduate students to become competent consumers of data analytics and statistical information that they will encounter in their professional and personal lives. Students should be able to perform basic statistical analyses and to think critically when interpreting statistical results. Topics include data visualization, spreadsheet analytics, descriptive statistics, probability, estimations, hypothesis testing, and simple regression.

BSTAT 5303. QUANTITATIVE ANALYSIS. 3 Hours.

Study of the methods of quantitative analysis used in business administration. Topics include matrix algebra, systems of linear equations, differential and integral calculus, linear programming, classical optimization, and a survey of management science models. Prerequisite: MATH 1315.

BSTAT 5325. ADVANCED METHODS FOR ANALYTICS. 3 Hours.

Advanced statistical learning for business analytics designed to prepare graduate students to become competent producers and consumers of predictive analytics and statistical information and to use evidenced based managerial decision making in their careers. They should be able to recognize the strengths and weaknesses of applicable techniques and when additional expertise is required. Topics include multiple regression, correlation, logistic regression, discriminant analysis, clustering, and classification and regression trees. It is strongly recommended that students who have no recent courses in statistics take BSTAT 5301 prior to BSTAT 5325.

BSTAT 5330. Nonparametric Statistics. 3 Hours.

A survey of statistical tools which may be used when the normal assumptions of parametric statistics cannot be made; including procedures for categorical data, methods involving ranks, bootstrapping, and Kolmogorov-Smirnov type techniques. Cross-listed with BSAD 6330. Prerequisite: BSTAT 5325 or equivalent.

BSTAT 5360. COMPUTATIONAL TECHNIQUES FOR BUSINESS ANALYTICS. 3 Hours.

Computer software is the primary analytical tool for business analytics and modern research methods. Data analysts, statisticians, and researchers need technologies and skills using the computer as a tool for structuring and cleaning data sets, creating validation samples, conducting analyses, fitting models, simulating stochastic systems, model validation, and model presentation. Emphasis is placed on the use of data analytic software. Cross-listed with INSY 5360. Prerequisite: BSTAT 5325 or equivalent.

BSTAT 5392. SELECTED TOPICS IN BUSINESS STATISTICS. 3 Hours.

In-depth study of selected topics in business statistics. May be repeated when topics vary.

BSTAT 5399. GRADUATE BUSINESS ANALYTICS INTERNSHIP. 3 Hours.

Practical training in business statistics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

BSTAT 6382. INDEPENDENT STUDIES IN BUSINESS STATISTICS. 3 Hours.

Extensive analysis of a business statistics topic.

Chemistry & Biochemistry (CHEM)

COURSES

CHEM 1181. GENERAL CHEMISTRY I LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES. 1 Hour.

General, analytical, and synthetic chemistry concepts will be reinforced through problem- and inquiry-based laboratory activities. The Advanced Chemical Technologies track for majors will introduce research and scientific methods in the context of instructor and student-selected research problems. Hand-on experience in the laboratory will be supplemented with mini-lectures, modules, and web resources to increase student readiness for scientific discovery. Students will also learn about contemporary challenges and advances in chemistry and biochemistry. If a student withdraws from CHEM 1181, the student must also withdraw from CHEM 1341. Prerequisite: Concurrent enrollment in CHEM 1341.

CHEM 1182. GENERAL CHEMISTRY II LABORATORY FOR ADVANCED CHEMICAL TECHNOLOGIES. 1 Hour.

General, analytical, and synthetic chemistry concepts will be reinforced through problem- and inquiry-based laboratory activities. Research and scientific methods will be reinforced through the investigation of student-selected research problems and modules on scientific communication. Increased exposure to state-of-the-art analytical techniques and instruments, as well as synthetic methods will culminate in the preparation of a proposal related to the synthesis of new materials and the analysis of their structure and function. If a student withdraws from CHEM 1182, the student must also withdraw from CHEM 1342. Prerequisite: (CHEM 1341 with a grade of C or better) and (CHEM 1181 with a grade of C or better) and (concurrent enrollment in CHEM 1342).

CHEM 1185. CHEMISTRY FOR ENGINEERS LABORATORY. 1 Hour.

This course is intended to provide laboratory credit in chemistry for engineering-majors who transfer into UT-Arlington with credit in Chemistry for Engineers lecture only. Students may register for this course only with specific approval of a Chemistry advisor. Prerequisite: 3 hours of Chemistry for Engineers lecture. Credit cannot be earned for both CHEM 1465 and CHEM 1185.

CHEM 1188. GENERAL CHEMISTRY I LABORATORY. 1 Hour.

This course is intended to provide laboratory credit in freshman chemistry for students who transfer into UT-Arlington with credit in General Chemistry I lecture only. Experiments include: measurement and scientific equipment use, physical properties, separations, synthesis, qualitative analysis, spectroscopy. Students may register for this course only with specific approval of a Chemistry advisor. Prerequisite: 3 hours of General Chemistry I lecture. Credit cannot be earned for both CHEM 1441 and CHEM 1188.

CHEM 1189. GENERAL CHEMISTRY II LABORATORY. 1 Hour.

This course is intended to provide laboratory credit in freshman chemistry for students who transfer into UT-Arlington with credit for General Chemistry lecture only. Experiments include: thermodynamics, electrochemistry, synthesis, quantitative analysis, spectroscopy, stoichiometry, and acid-base chemistry. Students may register for this course only with specific approval of a Chemistry advisor. Prerequisite: CHEM 1188 and 6 hours of General Chemistry II lecture. Credit cannot be earned for both CHEM 1442 and CHEM 1189.

CHEM 1341. GENERAL CHEMISTRY I. 3 Hours.

The lecture covers the fundamentals of atomic structure, chemical bonding, the periodic table, nomenclature, kinetic theory, gas laws, chemical equations, and solutions. Only chemistry majors in the Advanced Chemical Technologies program may take this course. When combined with CHEM 1181, this course will satisfy completion of CHEM 1441 for Chemistry, Biochemistry, and Biological Chemistry majors. Prerequisite: (MATH 1302 or MATH 1303 or MATH 1322 or MATH 1323 or MATH 1402 or MATH 1421 or MATH 1426 or MPT Algebra score \geq 17) and (concurrent enrollment in CHEM 1181). Students must pass the departmental placement assignment. ACT program only.

CHEM 1342. GENERAL CHEMISTRY II. 3 Hours.

The lecture covers study of advanced atomic structure and bonding concepts, acid-base theory, kinetics and equilibria, thermodynamics, electrochemistry, and the chemistry of some elements. Only chemistry majors in the Advanced Chemical Technologies program may take this course. When combined with CHEM 1182, this course will satisfy completion of CHEM 1442 for Chemistry, Biochemistry, and Biological Chemistry majors. Prerequisite: (CHEM 1341 or CHEM 1441 with a grade of C or better) and (CHEM 1181 with a grade of C or better) and (concurrent enrollment in CHEM 1182). ACT program only.

CHEM 1345. CHEMISTRY IN THE WORLD AROUND US. 3 Hours.

This course looks at current issues in society and uses chemical principles to understand them. Topics include sustainability, air pollution, the ozone layer, global climate change, fuels, and water. CHEM 1345/1346 cannot be used to fulfill the CHEM 1441/1442/1451/1465 requirement in any degree program.

CHEM 1346. CHEMISTRY IN THE WORLD AROUND US II. 3 Hours.

This course is a continuation of the study of current issues in society using chemical principles to understand them. Topics include polymers, drug design, nutrition, and genetic engineering. CHEM 1345/1346 cannot be used to fulfill the CHEM 1441/1442/1451/1465 requirement in any degree program. Prerequisite: CHEM 1345 or equivalent with a grade of C or better.

CHEM 1400. INTRODUCTORY CHEMICAL PRINCIPLES. 4 Hours.

Provides a background in fundamental chemical mathematics, in writing and understanding chemical formulas and equations, and in the application of scientific laws to the behavior of matter. Students will learn problem solving skills necessary in general chemistry I by hands-on and interactive approach. This course is designed for the student with little or no previous chemical training who intends to take the CHEM 1441/CHEM 1442 sequence or CHEM 1465 at a later date. CHEM 1400 cannot replace CHEM 1441/CHEM 1442/CHEM 1451/CHEM 1465. Prerequisite: MATH 1302 or equivalent or MPT Algebra score \geq 17.

CHEM 1441. GENERAL CHEMISTRY I. 4 Hours. (TCCN = CHEM 1411)

The lecture covers the fundamentals of atomic structure, chemical bonding, the periodic table, nomenclature, kinetic theory, gas laws, chemical equations, and solutions. The laboratory introduces the scientific method, experiment design, data collection and analysis, as well as illustrates fundamental principles presented in the lecture. Students who have not had high school chemistry are advised to take an introductory chemistry course first. Prerequisite: MATH 1302 or MATH 1303 or MATH 1322 or MATH 1323 or MATH 1402 or MATH 1421 or MATH 1426 or MPT Algebra score ≥ 17 or Student Group CHEM 1441. Students must pass the departmental placement assignment.

CHEM 1442. GENERAL CHEMISTRY II. 4 Hours. (TCCN = CHEM 1412)

Study of advanced atomic structure and bonding concepts, acid-base theory, kinetics and equilibria, thermodynamics, electrochemistry, the chemistry of some elements. The laboratory focuses on experimental design, data collection and analyses as well as chemical syntheses to illustrate fundamental principles presented in the lecture. Prerequisite: CHEM 1441 or equivalent with a grade of C or better or (CHEM 1341 with a grade C or better) or Student Group CHEM 1442.

CHEM 1445. CHEMISTRY FOR NON-SCIENCE MAJORS. 4 Hours. (TCCN = CHEM 1405)

Chemistry of things of everyday life: energy, radioactivity, petroleum products, pollution, the nature of matter, and the applications of chemistry to things we use. CHEM 1445, 1446 cannot be used to fulfill the 1441/1442 requirement in any degree program.

CHEM 1446. CHEMISTRY II FOR NON-SCIENCE MAJORS. 4 Hours. (TCCN = CHEM 1407)

Continuation of the chemistry of things of everyday life. Vitamins, minerals, chemical additives, plastics, cosmetics, proteins, carbohydrates, poisons, fats, and oils. Prerequisite: CHEM 1445 or equivalent with a grade of C or better. CHEM 1445, CHEM 1446 cannot be used to fulfill the CHEM 1441/ CHEM 1442 requirement in any degree program.

CHEM 1451. CHEMISTRY FOR HEALTH SCIENCES. 4 Hours.

Survey of general, organic, and biochemistry with emphasis on applications to the human body. Measurement, atomic theory and structure, bonding, quantitative relationships in chemical reactions, gases, solutions, electrolytes, organic functional groups and nomenclature, organic reactions, carbohydrates, lipids, proteins, enzymes, metabolism, and nucleic acids. CHEM 1451 cannot count for major credit toward a degree in chemistry. Prerequisite: MATH 1301 or MATH 1302 or MATH 1303 or MATH 1315 or MATH 1316 or MATH 1322 or MATH 1323 or MATH 1324 or MATH 1421 or MATH 1426 or equivalent.

CHEM 1465. CHEMISTRY FOR ENGINEERS. 4 Hours.

An introduction to important concepts and principles of chemistry with emphasis on areas considered most relevant in an engineering context. Topics include chemical stoichiometry, bonding, chemical thermodynamics, equilibria, electrochemistry, and kinetics. Engineering students may substitute the eight hour sequence CHEM 1441 and CHEM 1442 for this class, but not either CHEM 1441 or CHEM 1442 alone. Students who complete CHEM 1465 and subsequently change majors to curricula that require both CHEM 1441 and CHEM 1442 may substitute CHEM 1465 for CHEM 1441. Prerequisite: C or better in MATH 1322 or C or better in MATH 1323 or C or better in MATH 1324 or C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment) or HONR-SC 1426 (or concurrent enrollment) or MATH 2425 (or concurrent enrollment) or HONR-SC 2425 (or concurrent enrollment) or Student Group CHEM 1465.

CHEM 2101. CHEMICAL INFORMATICS I. 1 Hour.

Developing quantitative understanding in chemistry relies heavily on models, from very crude and simple ideas to complex theoretical frameworks. This class aims to introduce students into models and modeling chemical phenomena that develop understanding of chemical processes. Working with observations and data, we develop the art of developing qualitative relations and explore their limitations. The class is delivered as a practical tour with hands-on practice. Good number skills, basic knowledge of coding and handling of computers is required. Prerequisite: (CHEM 1442 with a grade of C or better) and (MATH 1426 with a grade of C or better or Concurrent enrollment in MATH 1426 or Instructor's permission).

CHEM 2180. RESEARCH IN CHEMISTRY. 1 Hour.

Research for undergraduate students supervised by faculty of the department. May be repeated. Graded pass/fail only. Prerequisite: written permission of the instructor. Students may take a maximum of 12 hours credit on a pass/fail basis.

CHEM 2181. ORGANIC CHEMISTRY I LABORATORY. 1 Hour. (TCCN = CHEM 2123)

Experiments which illustrate laboratory techniques, theoretical concepts, and synthesis. Prerequisite: CHEM 1442 with a grade of C or better or ((CHEM 1342 with a grade C or better) and (CHEM 1343 with a grade C or better)) or Student Group CHEM 2181. Corequisite: CHEM 2321. If student withdraws from CHEM 2321 prior to midsemester date, student must also withdraw from CHEM 2181.

CHEM 2182. ORGANIC CHEMISTRY II LABORATORY. 1 Hour. (TCCN = CHEM 2125)

Experiments which will include syntheses, characterization of unknown substances, and use of the chemical literature. Prerequisite: (CHEM 2181 with a grade of C or better) and (CHEM 2321 with a grade of C or better). Corequisite: CHEM 2322. If student withdraws from CHEM 2322 prior to the midsemester date, student must also withdraw from CHEM 2182.

CHEM 2283. SYNTHESIS AND ANALYSIS LABORATORY I. 2 Hours.

Students will perform experiments that build mastery in standard laboratory techniques and illustrate theoretical concepts related to organic synthesis and quantitative analysis methods. Students will continue to develop their mastery of analysis through an introduction to the acquisition and statistical analysis of quantitative and qualitative data, acquired in the context of a series of guided inquiry design and synthesis projects. Syntheses may involve small molecules, polymers, and materials designed to perform specific functions. Students will continue to develop their communication and group work skills by sharing independent data and critical feedback with peers. Additionally, laboratory exercises will involve basic titrimetric, spectrophotometric, and chromatographic methods. Prerequisite: CHEM 1442/CHEM 1342 and CHEM 1182 or equivalent with a grade of C or better. Corequisites: Concurrent enrollment or previous credit in CHEM 2321 and CHEM 2335. Students must remain enrolled in at least one of CHEM 2321 and CHEM 2335 beyond the mid-semester date to remain enrolled in CHEM 2283.

CHEM 2284. SYNTHESIS AND ANALYSIS LABORATORY II. 2 Hours.

Experiments will include syntheses and analysis, characterization of unknown substances, and use of the chemical literature. A focus will be placed on advancing the use of modern chemical technologies for both synthetic and analytical work in a guided inquiry format. Prerequisite: CHEM 2283 and CHEM 2321 with a grade of C or better. Corequisite: CHEM 2322.

CHEM 2285. QUANTITATIVE CHEMISTRY LABORATORY. 2 Hours.

An introduction to computers for the acquisition and statistical analysis of data. Laboratory exercises involving basic titrimetric, spectrophotometric and chromatographic methods. Prerequisite: CHEM 1442 or equivalent with a grade of C or better, and concurrent enrollment/previous credit in CHEM 2335.

CHEM 2321. ORGANIC CHEMISTRY I. 3 Hours. (TCCN = CHEM 2323)

The fundamentals of molecular structure, stereochemistry, and the reactions of aliphatic hydrocarbons. Electronic theory, synthetic methods, and mechanisms. Prerequisite: CHEM 1442 with a grade of C or better or ((CHEM 1342 with a grade C or better) and (CHEM 1182 with a grade C or better)) or Student Group CHEM 2321.

CHEM 2322. ORGANIC CHEMISTRY II. 3 Hours. (TCCN = CHEM 2325)

Organic spectroscopic analysis. The chemistry of aromatic hydrocarbons, alcohols and ethers, aldehydes, ketones, carboxylic acids and derivatives, amines, amino acid, carbohydrates, and other functional groups. Mechanisms and synthesis. Prerequisite: CHEM 2321 with a grade of C or better.

CHEM 2335. QUANTITATIVE CHEMISTRY. 3 Hours.

Basic methods of error analysis, simple and advanced methods for the solution of complex equilibria, fundamentals of titrimetric, spectrophotometric and chromatographic instrumental analysis. Prerequisite: (CHEM 1442 or CHEM 1342 or equivalent) and (MATH 1324 or MATH 1325 or MATH 1421 or MATH 1426 or equivalent or higher) and (CHEM 2285 or CHEM 2283 concurrent enrollment or previous credit).

CHEM 2380. UNDERGRADUATE RESEARCH. 3 Hours.

Research in chemistry supervised by a faculty member of the department. May be repeated. Graded pass/fail only. Prerequisite: written permission of the instructor. Students may take a maximum of 12 hours credit on a pass/fail basis.

CHEM 3101. CHEMICAL INFORMATICS II. 1 Hour.

This course provides a succinct overview of the emerging discipline of Chemical Informatics at the intersection of chemistry, computational science, and information science. Efficient and reliable analysis of chemical analytical data is a great challenge due to the increase in data size, variety and velocity. Attention in this class is drawn to specific opportunities afforded by this new field in accelerating discovery and understanding of cause and effect. The class is delivered as a practical tour with hands-on practice. Good number skills, basic knowledge of coding and handling of computers is required. Prerequisite: (CHEM 2101 with a grade C or better) or (Instructor's permission).

CHEM 3131. CHEMISTRY COMMUNITY SERVICE LEARNING. 1 Hour.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

CHEM 3175. BIOPHYSICAL CHEMISTRY LABORATORY. 1 Hour.

Introduction to the physical experimental techniques used in quantitative biochemical practice. Prerequisite: CHEM 3315 or concurrent enrollment.

CHEM 3181. PHYSICAL CHEMISTRY I LABORATORY. 1 Hour.

The physical and thermodynamic properties of substances, experimentally determined. Prerequisite: Grade of C or better in CHEM 2285 or CHEM 2343, CHEM 2335, and CHEM 3321 or concurrent enrollment.

CHEM 3182. PHYSICAL CHEMISTRY II LABORATORY. 1 Hour.

Experiments in kinetics, equilibria, spectroscopy, and electrochemistry. Modern instrumental techniques. Prerequisite: Grade C or better in CHEM 2285 or CHEM 2343, CHEM 2335, and CHEM 3322 or concurrent enrollment.

CHEM 3231. CHEMISTRY/BIOCHEMISTRY COMMUNITY SERVICE LEARNING. 2 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

CHEM 3307. INTRODUCTION TO POLYMER CHEMISTRY. 3 Hours.

The chemistry and technology of polymeric systems. The chemistry of natural systems such as proteins as well as the synthesis of fibers, films, plastics, and elastomers. Discussion of the characterization of polymers by modern techniques using instrumental analysis is followed by a summary of end-use and processing techniques. Prerequisite: CHEM 2322 with a grade of C or better or permission of instructor.

CHEM 3315. INTRODUCTION TO BIOPHYSICAL CHEMISTRY. 3 Hours.

A basic course introducing the physical principles that govern biological systems and processes, and the methods used for their investigation.

Topics include solution thermodynamics, biomolecular interactions, enzyme kinetics, transport processes (diffusion, sedimentation, electrophoresis, viscous flow), and the applications of spectroscopic methods (absorption, emission and scattering of radiation, and the utilization of polarized light).

Prerequisites, a grade of C or better in each of the following: CHEM 2335, MATH 2425, and 8 hours of college level physics.

CHEM 3317. INORGANIC CHEMISTRY. 3 Hours.

An overview of descriptive main group chemistry, solid state structures and the energetics of ionic, metallic, and covalent solids, acid-base chemistry and the coordination chemistry of the transition metals. The course is intended to explore and describe the role of inorganic chemistry in other natural sciences with an emphasis on the biological and geological sciences. Important compounds and reactions in industrial chemistry are also covered.

Intended for both chemistry and non-chemistry majors. Prerequisite: Grade of C or better in CHEM 2322 or concurrent enrollment.

CHEM 3321. PHYSICAL CHEMISTRY I. 3 Hours.

Thermodynamics, gases, First and Second Law, pure substances, mixtures and solutions, equilibrium; Statistical Thermodynamics; Kinetics, rates, mechanisms, transition state theory. In this class you will learn to understand the basic principles of Chemistry as the Science of Transformation and Change. We emphasize conceptual understanding and will become skilled in a quantitative description of the phenomena we study. The goal is that at the end of the course every student can outline the basic principles of Thermodynamics, has a sound understanding of ideal and approximate systems, and can apply the tools to engage in self-driven investigations. Prerequisites: CHEM 2335, MATH 2326, both with a grade of C or better and PHYS 1443 and PHYS 1444. MATH 3318 concurrent enrollment recommended.

CHEM 3322. PHYSICAL CHEMISTRY II. 3 Hours.

Quantum theory, introduction, principles. Schrödinger Equation, wavefunction; particle in a box, uncertainty; postulates of quantum mechanics; hydrogen atom, orbitals, structure of multi-electron atoms, atomic spectra and selection rules; molecular structure of diatomic molecules; introduction to molecular spectroscopy; materials and structure: lattices, diffraction methods, properties of solids. In this class you will learn to understand the principles of Quantum Chemistry and how it applies to atoms, molecules, and solids. We emphasize conceptual understanding and will become skilled in quantitative descriptions. The goal is that at the end of the course every student can outline the basic principles of Quantum Chemistry, both qualitatively and quantitatively. Students will obtain a sound understanding of probability, wavefunctions, orbitals, and spectroscopy, and can apply the learned concepts and tools to engage in self-driven investigations. This course is designated as the capstone course. Prerequisite: CHEM 2335, MATH 2326, both with a grade of C or better and PHYS 1443 and PHYS 1444. MATH 3318 concurrent enrollment recommended.

CHEM 3331. CHEMISTRY/BIOCHEMISTRY COMMUNITY SERVICE LEARNING. 3 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

CHEM 4080. UNDERGRADUATE RESEARCH. 0 Hours.

Research problems on an individual basis, conducted on a selected topic under the direction of a member of the chemistry and biochemistry faculty.

May be repeated. This is a non-credit course and cannot be used to meet degree requirements. Prerequisite: Permission of the instructor.

CHEM 4101. SEMINAR IN CHEMISTRY. 1 Hour.

Oral and written communication of chemical information. Seminars will be presented by students on topics from the current chemical literature. A term paper is required. The use of the library for researching the chemical literature will be emphasized. May be repeated for a total of two semester hours of credit. Students must be within 12 credits hours from the degree completion. Departmental permission required.

CHEM 4180. UNDERGRADUATE RESEARCH. 1 Hour.

Research under the direction of a member of the department. No more than six hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: Written permission of the instructor and a minimum grade point average of 2.5.

CHEM 4181. COMPUTATIONAL CHEMISTRY LABORATORY. 1 Hour.

Molecular modeling. Application of various computational techniques to chemical problems, including determination of molecular geometry, conformational analysis, and molecular energetics. Prerequisite: CHEM 3321 or CHEM 3322 with a grade C or better.

CHEM 4191. READINGS IN CHEMISTRY. 1 Hour.

May be repeated for a maximum of six hours credit. Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper. Prerequisite: permission of department chair. Graded pass/fail only.

CHEM 4203. COMPUTATIONAL CHEMISTRY. 2 Hours.

A course emphasizing molecular quantum mechanics. Topics include the basic postulates of quantum mechanics, many electron wave functions, the variation method, and molecular orbital theory at various levels of approximation (Hückel, Extended Hückel, semi-empirical, ab initio, etc.). Related methods, such as force-field approaches and molecular dynamics, will be discussed. Prerequisite: CHEM 3322, with a grade of "C" or better.

CHEM 4242. LABORATORY TECHNIQUES IN BIOCHEMISTRY. 2 Hours.

Designed to introduce the student to biochemical laboratory methods; a practical approach to the properties of carbohydrates, proteins, enzymes, and nucleotides. Prerequisite CHEM 4311, with a grade of "C" or better.

CHEM 4280. UNDERGRADUATE RESEARCH. 2 Hours.

Research under the direction of a member of the department. No more than six hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: Written permission of the instructor and a minimum grade point average of 2.5.

CHEM 4291. READINGS IN CHEMISTRY. 2 Hours.

May be repeated for a maximum of six hours credit. Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper. Prerequisite: permission of department chair. Graded pass/fail only.

CHEM 4311. BIOCHEMISTRY I. 3 Hours.

The chemistry of the sugars, amino acids, proteins, and nucleic acids, followed by an introduction to enzyme chemistry. The major metabolic pathways of the cell, glycolysis, TCA cycle, and pentose phosphate pathway. Auditing of this class is NOT permitted. Prerequisite: CHEM 2322, with a grade of "C" or better.

CHEM 4312. BIOCHEMISTRY II. 3 Hours.

A continuation of CHEM 4311. The breakdown and biosynthesis of fats and the synthesis of carbohydrates, including photosynthesis. Metabolic utilization of proteins and amino acids together with an introduction to protein synthesis. Prerequisite: CHEM 4311, with a grade of "C" or better, or equivalent.

CHEM 4313. METABOLISM AND REGULATION. 3 Hours.

Selected topics in advanced metabolism including biosynthesis of phospholipids, steroids, porphyrins and related molecules, and prostaglandins. Membranes and transport phenomena, regulation of glycogen and glucose metabolism in muscle and lipid metabolism in adipose tissue. Prerequisite: CHEM 4312 with a grade of C or better.

CHEM 4314. ENZYMOLOGY. 3 Hours.

A comprehensive study of enzymes including structures, reaction mechanisms, regulation, and kinetics. Prerequisite: CHEM 4311 with a grade of C or better.

CHEM 4316. BIOCHEMICAL GENETICS. 3 Hours.

Aspects of the biochemistry of gene expression in prokaryotic and eukaryotic organisms and its regulation, together with genetic manipulations and the methodology of recombinant DNA technology. Prerequisite: CHEM 4312 with a grade of C or better.

CHEM 4318. INORGANIC CHEMISTRY. 3 Hours.

An overview of the chemistry of the transition metals. Topics include symmetry and applications, bonding models, magnetism, synthesis of metal complexes, modern characterization techniques including IR, NMR, and electronic spectroscopy, organometallic compounds, reaction mechanisms, catalysis, and bioinorganic chemistry. Prerequisite: CHEM 2322 with a grade of C or better.

CHEM 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with four independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment; junior or senior standing.

CHEM 4346. ADVANCED SYNTHETIC METHODS. 3 Hours.

Methods and techniques for the synthesis and characterization of organic, inorganic, and organometallic compounds. Prerequisite: Grade of C or better in CHEM 2182, CHEM 2322, and CHEM 3317 or CHEM 4318.

CHEM 4380. UNDERGRADUATE RESEARCH. 3 Hours.

Research under the direction of a member of the department. No more than six hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: Written permission of the instructor and a minimum grade point average of 2.5.

CHEM 4381. HONORS RESEARCH. 3 Hours.

Research in chemistry under the direction of a member of the department, resulting in a written honors thesis. No more than 6 hours of CHEM 4180, CHEM 4280, CHEM 4380 and CHEM 4381 may be taken for a letter grade. Prerequisite: CHEM 2322, CHEM 2182, and admission to the University Honors College.

CHEM 4385. INSTRUCTIONAL TECHNIQUES IN CHEMISTRY. 3 Hours.

Students participate in undergraduate laboratory instruction or recitation sessions under the supervision of a faculty member. No more than 6 hours of CHEM 4385 may be taken for a letter grade. Enrollment by departmental permission only.

CHEM 4387. UNIVERSITY-INDUSTRY CHEMISTRY COOPERATIVE. 3 Hours.

By special arrangement only. Cooperative study assignment doing chemical research in a local industrial chemical laboratory. Enrollment by departmental permission only. Graded pass/fail only.

CHEM 4391. READINGS IN CHEMISTRY. 3 Hours.

May be repeated for a maximum of six hours credit. Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper. Prerequisite: permission of department chair. Graded pass/fail only.

CHEM 4392. ADVANCED TOPICS IN CHEMISTRY. 3 Hours.

Topics arranged on an individual basis. May be repeated for credit as the topic varies. Prerequisite: permission of instructor.

CHEM 4461. INSTRUMENTAL ANALYSIS. 4 Hours.

The principles involved in the operation of modern analytical instruments and the laboratory use of such instruments. Students must be within 30 hours of completing their bachelor degrees. Prerequisite: Grades of C or better in CHEM 2285 or CHEM 2343 and CHEM 2335.

CHEM 5011. SEMINAR IN CHEMISTRY. 0 Hours.

Students will present a talk, prepare a poster, and engage in scientific writing and communication. Includes learning how to prepare, present, and defend an oral presentation. May not be counted for credit toward the degree requirements.

CHEM 5168. QUANTUM CHEMISTRY LABORATORY. 1 Hour.

Molecular modeling. Application of various computational techniques to chemical problems, including determination of molecular geometry, conformational analysis, and molecular energetics. Prerequisite: concurrent enrollment in CHEM 5262.

CHEM 5191. READINGS IN CHEMISTRY. 1 Hour.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5192. RESEARCH IN CHEMISTRY. 1 Hour.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5262. COMPUTATIONAL CHEMISTRY. 2 Hours.

Molecular quantum mechanics. Fundamental principles of quantum mechanics, with a special emphasis on molecular electronic structure theory. Topics covered include molecular mechanics, semi-empirical and ab initio molecular orbital theory, density functional theory, calculation of thermodynamic properties and molecular dynamics. Prerequisite: CHEM 5301 or permission of instructor. concurrent enrollment in CHEM 5168 required.

CHEM 5291. READINGS IN CHEMISTRY. 2 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5292. RESEARCH IN CHEMISTRY. 2 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5300. SELECTED TOPICS IN ADVANCED CHEMISTRY. 3 Hours.

The area may vary (typically analytical, applied, biological, colloid, environmental, inorganic, organic, physical, polymer, materials, theoretical, etc.) and will be announced in advance. More than one area may be covered simultaneously, in parallel courses offered under different section numbers. May be repeated for credit when area or topics vary. Prerequisite: permission of instructor.

CHEM 5324. ANALYTICAL MASS SPECTROMETRY AND SPECTROSCOPY. 3 Hours.

This course covers modern aspects of atomic and molecular mass spectrometry, as well as spectrochemical analysis. Upon completion of this course, the student will be able to: describe the basic setup and operation of mass spectrometric and spectroscopic instrumentation; interpret spectra from various instruments as a means for qualitative and quantitative analysis; apply basic knowledge of mass spectrometry and spectroscopy for practical problem solving; relate the use of mass spectrometry and spectroscopy to his or her own research interests; and compile, present, and explain modern techniques for analytical research. Written and oral presentations, as well as traditional classroom examinations, homework, and quizzes will be used to assess student performance. Prerequisite includes CHEM 4461 or equivalent; or permission of instructor.

CHEM 5325. SEPARATION SCIENCE. 3 Hours.

A comprehensive examination of most areas involving the separation of molecules and ions. Theoretical, practical and historical aspects of: distillation, sublimation, liquid-liquid extraction, solid phase extraction, chromatography, electrophoresis, field flow fractionation, membrane/barrier processes, and crystallization will be considered. Students taking this course must have a good basic background in organic chemistry and physical chemistry.

CHEM 5326. ANALYTICAL CHEMISTRY - CONCEPTS AND IMPLEMENTATION. 3 Hours.

This course familiarizes students with basic electronic design in analytical instrumentation. Familiarization with active and passive components, operational amplifiers, timers, logic gates, and designing analytical instrumentation based on such components, especially in Wet Chemistry. The course covers ionic equilibria and acid-base equilibria and solving complex problems by iterative numerical methods and nonlinear curve fitting using programming in BASIC and MS Excel Solver™. The course covers present day applications of wet chemical analysis, specific methods and instrumentation, practical aspects of automated liquid phase analytical methods including component availability and cost. A design problem, chosen by lottery, will be given to each student early in the semester. The newly acquired knowledge of chemistry and electronics will be used to design a new instrument and present it. Prerequisite: CHEM 4461 or equivalent undergraduate instrumental analysis course.

CHEM 5327. ANALYTICAL ELECTROCHEMISTRY. 3 Hours.

This course covers modern aspects of electroanalytical chemistry. Upon completion of this course, the student will be able to: understand the concepts of redox potentials and their role in electron transfer, the thermodynamic aspects of electrochemical cells, mass transport in electrochemical systems, and the principles underlying various electroanalytical techniques such as potentiometry, amperometry, coulometry and voltammetry. The instrumental aspects of these techniques will also be addressed, including specialized approaches such as spectroelectrochemistry. The student will be able to relate the use of these analytical techniques to his or her own research needs and interests. Written and oral examinations, as well as traditional classroom examinations, will be used to assess student performance. Prerequisite includes CHEM 4461 or equivalent; or permission of instructor.

CHEM 5328. ANALYTICAL SPECTROSCOPY. 3 Hours.

This course covers many of the methods of spectrochemical analysis used in the analytical laboratory. At the end of this course, students should be able to: explain the fundamental theory of many spectroscopy methods, including atomic spectroscopy, molecular spectroscopy, UV/Vis spectroscopy, molecular luminescence, and infrared spectrometry, among others; describe basic instrumental components; apply basic statistics (e.g., measurement errors, and calibration methods) for data analysis; and understand the fundamental use and applications of spectroscopy methods for basic research and laboratory measurements. Student performance will be evaluated based on homework assignments, exams, quizzes, and presentations. Prerequisite includes CHEM 4461 or equivalent, or permission of instructor.

CHEM 5331. ADVANCED BIOCHEMISTRY I. 3 Hours.

Vocabulary and conceptual understanding of biochemical processes by which cells break down organic molecules and trap some of the released energy in the form of reactive nucleotides; use these reactive nucleotides to drive the synthesis of organic building blocks such as sugars, lipids, amino acids and nucleic acids from simpler molecules that serve as precursors; critical review of primary research articles in biochemistry related to proteins, expression and purification, kinetics, and metabolism; preparing and presenting an NIH R15 proposal/paper; understanding structures and functions of biological molecules, of intermediary metabolism and its control, and of molecular genetics.

CHEM 5332. ADVANCED BIOCHEMISTRY II. 3 Hours.

The course will cover various aspects of advanced studies in Biochemistry, Metabolism, and Cell Signaling. Selected topics may include gene expression regulation in prokaryotes and eukaryotes, epigenetics, cancer biology, lipid metabolism, cofactors, enzyme kinetics, cell signaling, redox signaling, nitric oxide signaling, metallo-enzyme mechanism and function, unnatural amino acids, protein engineering, and proteomics.

CHEM 5334. GENES, GENOME, AND REACTION MECHANISM. 3 Hours.

Concepts of Gene and genome in prokaryotes and eukaryotes; Gene regulation and epigenetics; Promoter architecture, transcription, mRNA processing and translation Histone modification, chromatin organization and non-coding RNA; Vitamins, hormones and Cell signaling; Transition states/Steady state; Pre-steady state kinetics; Mechanisms (ping-pong, bi-bi). Discuss current literature. Prerequisite: passing of ACS-test in Biochemistry.

CHEM 5335. METHODS AND ENZYMOLOGY. 3 Hours.

A variety of spectroscopic, physical methods and microscopy techniques are employed to solve biological problems at the atomic and molecular level. The focus of this module is to present the basic theory behind the use and interpretation of such methods. Topics include electronic, infrared and fluorescence absorption spectroscopy, circular dichroism, x-ray diffraction (XRD), multidimensional nuclear magnetic resonance, and electron paramagnetic resonance. Exploration of enzyme properties that include enzyme kinetics, structure, and their function. Evaluation of enzyme functions associated with others, and their significance with respect to human health and diseases; A scope of emerging scientific advances and challenges associated with enzyme actions will also be discoursed through lecture and students' paper presentation and their term paper proposal. Prerequisite: passed ACS-test in Biochemistry.

CHEM 5336. BIOINORGANIC CHEMISTRY, COFACTORS & COENZYMES. 3 Hours.

Many fundamental life processes (respiration, nitrogen fixation, photosynthesis, and replication) require transition metal ions and/or specialized cofactors to facilitate unique chemical transformations. In this course, all aspects of the bioinorganic chemistry will be covered, including the biosynthesis of complex metal clusters (as far as is known), the biochemical reactions they catalyze, their chemical and spectroscopic properties, and the mechanisms by which they facilitate biochemical reactions.

CHEM 5337. MEDICINAL CHEMISTRY AND DRUG Discovery. 3 Hours.

This course will provide students with an understanding of the history of the modern drug discovery process, drugs and drug ionization states, biological targets, lead molecule discovery and optimization, cell signaling and metabolism, the investigation of structure activity relationships, translation with preclinical models, intellectual property and commercialization, and the regulatory process from target/lead discovery to clinical use. History and introduction to Discovery; Foundations: predicting structural ionization states using concepts from pH/pKa/acids and bases/buffers; Biological Targets: Enzymes, Receptors, Oligonucleotides; Drug-Target Structures and Interactions, Lead identification and optimization, Structure Activity Relationships: Computational Approaches (ligand based; structure based); Cell signaling and Metabolism, cardiovascular diseases, diabetes, obesity, neurological disorders, and cancer; and current therapies; Translation and intellectual property; FDA regulations and clinical trials. To enroll students must have completed or be concurrently enrolled in CHEM 4311 or receive special permission of the instructor. Prerequisite: CHEM 4311 or permission of the instructor.

CHEM 5341. INORGANIC CHEMISTRY. 3 Hours.

Structures, bonding, and properties of main group and transition element compounds including: symmetry, coordination chemistry, reaction mechanisms, organometallic chemistry, and modern characterization techniques. Prerequisite: CHEM 4318 or permission of instructor.

CHEM 5342. SOLID STATE CHEMISTRY. 3 Hours.

Chemical synthesis and characterization methods of extended structures. Principles of solid-state synthesis, classical equilibrium approaches, diffusion and chemical transport, non-equilibrium and deposition methods; high temperature and high pressure synthesis; basic characterization techniques using X-rays, electrons, and neutrons; basic structure types and symmetry; optical, electrical and magnetic properties; examples will relate to materials used for energy harvesting, sensors, and catalysis.

CHEM 5344. X-RAY DIFFRACTION, SCATTERING AND ABSORPTION. 3 Hours.

The class will focus on modern applications of X-ray diffraction and absorption techniques in crystal and molecular structure determination. A practical component will address aspects of state of the art methods, including how to solve structures using data collected on powder and single-crystal diffractometers, X-ray photoelectron spectroscopy (XPS), etc.

CHEM 5351. ORGANIC CHEMISTRY I. 3 Hours.

Bonding, structure, stereochemistry, substituent effects, isotope effects, solvent effects, kinetics, and linear free-energy relationships in determining reaction mechanisms. Acids and bases, orbital symmetry, pericyclic reactions, photochemistry, and nucleophilic substitution reactions. Prerequisites: CHEM 2322 and CHEM 3322 or equivalent.

CHEM 5354. ORGANIC CHEMISTRY II. 3 Hours.

A survey of organic reaction mechanisms including addition and elimination reactions, nucleophilic carbon species, carbonyl reactions, electrophilic substitution reactions, rearrangement reactions, electron deficient species, and free radical reactions. Prerequisite: CHEM 5309 or permission.

CHEM 5355. ADVANCED ORGANIC SYNTHESIS. 3 Hours.

Synthetically important reactions, strategy in organic synthesis using retrosynthetic analysis and mechanistic understanding of reactions, synthons, asymmetric synthesis. Prerequisite: CHEM 5310 or permission of instructor.

CHEM 5356. ADVANCED POLYMER CHEMISTRY. 3 Hours.

Polymer synthesis and reactions including condensation, free-radical, ionic, and coordination polymerizations; principles of polymerization including thermodynamics and kinetic considerations; physical characterizations including determinations of absolute molecular weights, relative molecular weights, morphology, glass transitions, and polymer crystallinity; relationships between macromolecular structure, properties, and uses of polymeric materials. Also offered as MSE 5346. Prerequisite: CHEM 2321 and CHEM 2322 or permission of instructor.

CHEM 5358. DETERMINATION OF MOLECULAR STRUCTURE BY PHYSICAL METHODS. 3 Hours.

The use of modern instrumental techniques to determine structure: infrared, ultraviolet, and magnetic resonance spectroscopy, mass spectrometry, optical rotatory dispersion. Emphasis on interpretation of spectra.

CHEM 5361. INTRODUCTION TO GRADUATE PHYSICAL CHEMISTRY. 3 Hours.

Classical thermodynamics and statistical thermodynamics. Equilibrium and kinetic processes. Reaction dynamics. Principles of quantum chemistry and its application to spectroscopy. Introduction to bonding in molecules and solids.

CHEM 5364. ADVANCED GRADUATE PHYSICAL CHEMISTRY. 3 Hours.

Statistical thermodynamics and its application to kinetics and spectroscopy. Quantum theory, ab initio methods and density functional theory. Advanced spectroscopic methods to investigate bonding in molecules and solids. Prerequisite: CHEM 5301 or permission of the instructor.

CHEM 5365. THERMODYNAMICS OF MATERIALS. 3 Hours.

Applications of thermodynamics to the study of materials, thermodynamic properties of liquid and solid solutions and their relationship to surface and crystalline defects.

CHEM 5366. CHEMICAL KINETICS. 3 Hours.

Experimental and theoretical aspects of chemical reaction kinetics. Classical and modern techniques for mechanistic characterization, methods for approximation, analysis and interpretation. Simple and complex reaction matrices are considered (gas, liquid, solid state). Specific topics include microscopic reversibility, transition state theory, homo/heterogenous catalysis, and quantum/statistical mechanical estimation of rate constants and chemical activation. Relevant examples relating to atmospheric and environmental, biological, organic, and inorganic reactions will be discussed.

CHEM 5381. ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY I. 3 Hours.

The course will introduce to advanced laboratory techniques used in research laboratories in the Chemistry department. Handling of chemicals, synthesis procedures, characterization methods, data analysis, and safety regulations. Student will engage in reading primary literature and detailed process descriptions. Goal is to prepare students for successful work on their initial research project.

CHEM 5382. ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY II. 3 Hours.

The course will continue to provide up-to-date laboratory techniques used in research laboratories in the Chemistry department. Synthesis procedures, analytical instrumentation, characterization methods, and data analysis. Free literature studies and assignments by instructor will prepare student for research and development. Goal is to support the research progress of students towards their comprehensive exam. Prerequisite: CHEM 5381.

CHEM 5383. ADVANCED LABORATORY TECHNIQUES IN CHEMISTRY III. 3 Hours.

The course will complete exposure to advanced laboratory techniques used in research laboratories in the Chemistry department and will make students ready for developing their own project proposal. Synthesis procedures, analytical instrumentation, characterization methods, and data analysis. Literature studies and explicit writing of scientific notes will prepare students for their comprehensive exam. Prerequisite: CHEM 5381, CHEM 5382.

CHEM 5391. READINGS IN CHEMISTRY. 3 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5392. RESEARCH IN CHEMISTRY. 3 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5398. THESIS. 3 Hours.

Graded R/F only. Prerequisite: permission of instructor.

CHEM 5421. ANALYTICAL INSTRUMENTATION. 4 Hours.

Theory of instrumentation and chemical signal source. Practical experiments utilizing atomic and molecular absorption and emission spectroscopy, chromatographic analysis, and electrochemical techniques.

CHEM 5491. READINGS IN CHEMISTRY. 4 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5492. RESEARCH IN CHEMISTRY. 4 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5591. READINGS IN CHEMISTRY. 5 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5592. RESEARCH IN CHEMISTRY. 5 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5691. READINGS IN CHEMISTRY. 6 Hours.

Conference course which may be repeated for credit, with credit granted according to work performed. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5692. RESEARCH IN CHEMISTRY. 6 Hours.

Conference course with laboratory with credit granted according to work performed. May be repeated for credit. Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5698. THESIS. 6 Hours.

Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 5998. THESIS. 9 Hours.

Graded P/F/R only. Prerequisite: permission of instructor.

CHEM 6011. TOPICS IN GRADUATE RESEARCH. 0 Hours.

Lectures by departmental and university faculty on current chemical research at U.T. Arlington. All graduate students are required to take this course once. May not be counted toward degree requirements. Graded P/F only.

CHEM 6012. ISSUES IN MODERN CHEMICAL RESEARCH. 0 Hours.

Topics to be discussed include the use of the library, maintenance of a research notebook, ethics in research, aspects of technical writing and presentations, and how research is funded. May not be counted toward degree requirements.

CHEM 6104. CHEMISTRY CAREER DEVELOPMENT. 1 Hour.

Every PhD-bound student is required to spend time for professional development outside his UTA laboratory. Possible opportunities include traditional internships in an industrial setting, working at a national laboratory, international exchange programs, extended collaborative visits, teaching engagements and other educational projects outside UTA. The career advancement may consist of one or multiple portions, in total time no less than three and not more than six months. Prerequisite: Permission of research supervisor and graduate advisor.

CHEM 6202. PRINCIPLES OF INDUSTRIAL CHEMISTRY. 2 Hours.

Survey of industrial inorganic and organic chemical processes. Prerequisite: permission of instructor.

CHEM 6203. REGULATORY ASPECTS OF THE CHEMICAL INDUSTRY. 2 Hours.

Survey of chemical toxicology, regulatory aspects involved in the chemical industry, industrial safety, patents and patent law.

CHEM 6304. CHEMISTRY CAREER DEVELOPMENT. 3 Hours.

Every PhD-bound student is required to spend time for professional development outside his UTA laboratory. Possible opportunities include traditional internships in an industrial setting, working at a national laboratory, international exchange programs, extended collaborative visits, teaching engagements and other educational projects outside UTA. The career advancement may consist of one or multiple portions, in total time no less than three and not more than six months. Prerequisite: Permission of the research supervisor and Graduate Advisor.

CHEM 6399. DISSERTATION. 3 Hours.

Graded R/F only. Prerequisite: admission to candidacy for the degree of Ph.D. in Applied Chemistry.

CHEM 6699. DISSERTATION. 6 Hours.

Graded R/F/P/W. Prerequisite: admission to candidacy for the degree of Ph.D. in Applied Chemistry.

CHEM 6904. CHEMISTRY CAREER DEVELOPMENT. 9 Hours.

Every PhD-bound student is required to spend time for professional development outside his UTA laboratory. Possible opportunities include traditional internships in an industrial setting, working at a national laboratory, international exchange programs, extended collaborative visits, teaching engagements and other educational projects outside UTA. The career advancement may consist of one or multiple portions, in total time no less than three and not more than six months. Prerequisite: Permission of Graduate Advisor and research supervisor.

CHEM 6999. DISSERTATION. 9 Hours.

Graded P/F/R only. Prerequisite: admission to candidacy for the degree of Ph.D. in Applied Chemistry.

CHEM 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Chinese (CHIN)

COURSES

CHIN 1441. BEGINNING CHINESE I. 4 Hours. (TCCN = CHIN 1411)

Multimedia immersion in the culture and language of China. Designed to enable students to understand and communicate effectively in Chinese at the beginning level. No prerequisites.

CHIN 1442. BEGINNING CHINESE II. 4 Hours. (TCCN = CHIN 1412)

Continuation of beginning Chinese. Prerequisite: CHIN 1441 with a grade of C or better.

CHIN 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

CHIN 2301. LITERATURE IN TRANSLATION. 3 Hours.

The works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. CHIN 2301 may be taken to fulfill the foreign language requirement. Prerequisite: ENGL 1301 and ENGL 1302.

CHIN 2310. CHINESE CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Chinese-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

CHIN 2313. INTERMEDIATE CHINESE I. 3 Hours. (TCCN = CHIN 2311)

Continued immersion in the culture and language of China. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: CHIN 1442 with a grade of C or better.

CHIN 2314. INTERMEDIATE CHINESE II. 3 Hours. (TCCN = CHIN 2312)

Continuation of intermediate Chinese. Prerequisite: CHIN 2313 with a grade of C or better.

CHIN 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

CHIN 3303. CHINESE CONVERSATION. 3 Hours.

Practice in oral expression with an emphasis on vocabulary building, listening comprehension, and speaking skills. Of special interest to students who wish to improve their skills in pronunciation, comprehension, and oral expression. Credit will not be granted to native speakers of Mandarin Chinese. However, heritage students may register for this course when they pass the Chinese CLEP test administered by the instructor. Prerequisite: CHIN 2314 with a grade of C or better.

CHIN 3304. CHINESE CONVERSATION AND CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge through the use of readings, film, and other media. Extensive conversation practice allows students to develop advanced-intermediate level oral skills in a broad range of communicative and cultural contexts. Students learn to express abstract ideas through description, comparison, and narration. Credit will not be granted to native speakers of Mandarin Chinese. Heritage speakers may register for the course with consent of the department. Prerequisite: CHIN 2314 with a grade of C or better.

CHIN 3305. CHINESE READING AND COMPOSITION. 3 Hours.

Analysis of Chinese texts and composition with emphasis on reading comprehension, grammar and vocabulary, and writing techniques. Readings may include newspaper/website articles and short stories, online postings, text messages, comic books, print advertisements, and essays on various topics of Chinese culture. Prerequisite: CHIN 2314 with a grade of C or better.

CHIN 3310. CHINESE LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Chinese language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: CHIN 2314 or the equivalent with a grade of B or better. May not be repeated for credit.

CHIN 3311. CHINESE LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Chinese and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated. Prerequisite: CHIN 3310 with a grade of B or better.

CHIN 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Chinese. CHIN 3310 is strongly recommended before CHIN 3345.

CHIN 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Chinese. Prerequisite: CHIN 3310.

CHIN 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Chinese. Prerequisite: CHIN 3310 or CHIN 3311.

CHIN 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

CHIN 3393. CHINESE INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

CHIN 4334. CONTEMPORARY CHINESE CULTURE. 3 Hours.

Examination of contemporary Chinese culture, with a focus on current events relevant to the Chinese-speaking world. Topics may include: language and culture, literature, film, business culture, and traditions. Students may take the course in English or in Chinese.

CHIN 4335. BUSINESS CHINESE. 3 Hours.

Study of skills and etiquette vital to functioning in business environments using Chinese. Emphasis is placed on Chinese cultural traditions including traditions of Chinese philosophy and major differences in ideological perspectives between the East and West. Business etiquette and terminology for use in business environments are introduced and practiced. Vocabulary and cultural knowledge are reinforced through lecture, translation, peer discussion, readings, and digital media. Taught in English. No prior Chinese language background is required.

CHIN 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper or a translation on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

CHIN 4393. CHINESE INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Chinese, outside readings, and formal presentations. Prerequisite: Two CHIN 3000 level courses and permission of the instructor.

City and Regional Planning

COURSES

PLAN 1301. INTRODUCTION TO URBAN LIFE. 3 Hours.

An examination of major urban problems, opportunities, and policy issues including crime, transportation, housing, education, welfare, and the environment with emphasis on racial, ethnic, and cultural diversity issues and alternative future possibilities; and an examination of the major political, social, and economic challenges facing contemporary urban planners and administrators - with emphasis on the interrelations among the national, state, and local governments.

PLAN 3301. THE METROPLEX. 3 Hours.

An in-depth orientation to urban dynamics, using as a case study the Dallas/Fort Worth metroplex - with its hundreds of cities, governmental units, neighborhoods, and business enterprises as well as its major concentrations of racial minorities and ethnic groups. Special attention is paid to the changing patterns of growth and demography occurring in the Dallas/Fort Worth metropolitan area and the impact of these on emerging social, political, and economic issues of this area. Emphasis also placed on career specializations and professional opportunities in the urban context.

PLAN 4305. FOUNDATIONS OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY. 3 Hours.

The organization, structure and practice of environmental protection at the federal, state and local levels of government. Course will develop a full understanding of how the goals of protecting human health and the environment are achieved through the implementation of environmental law, policy, practice, enforcement and collaboration among governmental entities, industry, environmental groups and the general public. Wide ranging use of case studies will be made and full engagement in new developments in the era of climate change will be achieved.

PLAN 4310. PLANNING THE AMERICAN CITY. 3 Hours.

Students in this course will develop an understanding of the role of the private and public sectors in the development and management of the American city. It will consider such topics as the organization of city government, demographic, economic, and physical conditions analysis, land use planning, the quality of the urban environment, urban redevelopment, urban design, and regional planning. An off-campus service learning component is a key required element of this course.

PLAN 4320. SUSTAINABLE COMMUNITIES. 3 Hours.

This course course explores broad environmental and social issues in sustainable communities. Potential topics include urban water management, food and resources, wildlife conservation, native landscaping, waste management, green building, housing diversity, public transportation and community participation. The course serves as a laboratory for working with governmental and non-governmental organizations in the DFW area and developing issue-based, action research projects to solve real-world problems in our communities. This hands-on course combines lecture, student-led discussion, site visits and collaborative team work for service learning projects.

PLAN 4356. INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Introduction to GIS and the application of computer graphics systems in the storage, processing, and retrieval of geographic urban and regional information; case examples and related projects and issues of system management.

PLAN 4357. INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Applications of GIS to typical urban and regional geographic information problems and projects. Prerequisite: PLAN 4356.

PLAN 4391. INDEPENDENT STUDY. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: permission of the instructor.

PLAN 4394. COMMUNITY RESEARCH & APPLICATION. 3 Hours.

Exposes students to research methods typically employed in planning and to their application to a community-based research project.

PLAN 4395. STUDIES IN PLANNING. 3 Hours.

Advanced studies in various subjects of city and regional planning. May be repeated for credit as topic varies. Prerequisite: Consent of the instructor.

PLAN 5160. URBAN MANAGEMENT/PLANNING INTERNSHIP. 1 Hour.

Intended to enhance readiness for professional work through exposure to planning practice in a one semester log internship (100 hrs in the spring or fall semester or 75 hrs in the summer). Integrates work experience and coursework through journaling and reflective practice. Requirements: (1) student secures an internship from a planning related employer and approval from the student's major professor prior to enrolling in the course; (2) the intern must provide performance evaluation by the job supervisor and the intern's evaluation of the internship experience. Enrollment open to students with no previous formal planning experience. Credit not available for previous internship or planning experience. P/F grade.

PLAN 5191. CONFERENCE COURSE. 1 Hour.

Special subjects and issues as arranged by individual students and faculty members. May be repeated for credit.

PLAN 5193. MASTER'S COMPREHENSIVE EXAMINATION. 1 Hour.

Directed study, consultation and comprehensive examination over coursework leading to thesis substitute for MCRP degree. Required of all thesis substitute students who were admitted to the MCRP program prior to Fall 2009 and who are not enrolled in thesis or other thesis substitute courses during semester in which they plan to graduate. Students beginning the MCRP program in Fall 2009 or after may not choose the Master's Comprehensive Examination as a thesis substitute option and may not enroll in this course.

PLAN 5197. PROFESSIONAL REPORT. 1 Hour.

Preparation of final professional report as a thesis substitute for MCRP degree. Required of all thesis substitute students not enrolled in PLAN 5193.

PLAN 5297. PROFESSIONAL REPORT. 2 Hours.

Preparation of final professional report as a thesis substitute for MCRP degree. Required of all thesis substitute students not enrolled in PLAN 5193.

PLAN 5300. FOUNDATIONS OF URBAN THEORY. 3 Hours.

Spatial development of human settlements, their life cycles, expansion, and decay. Covers key theories of social, spatial, and economic structures of cities, nineteenth century to present. Considers influences of urban form and development on class, race, gender, and community.

PLAN 5303. PLANNING HISTORY, THEORY AND ETHICS. 3 Hours.

Various theories of planning including rational comprehensive, communicative action, social learning, and radical planning. Sets theories within their historical contexts, and examines the social and political details of each era to show the development of diverse planning practices and theories of planning. Evaluates the values embodied in different theories and their relationship to practice and social justice, including planning ethics as contained in the AICP Code of Ethics and Professional Conduct.

PLAN 5304. PLAN IMPLEMENTATION, ZONING, AND REGULATIONS. 3 Hours.

Introduction to plan preparation and implementation. Topics include zoning, subdivision regulations, form-based codes, site planning, strategic planning, and comprehensive planning.

PLAN 5305. LAND USE, MANAGEMENT AND DEVELOPMENT. 3 Hours.

Assesses land use, management and development and considers new directions. Relates comprehensive planning, environmental management, and land use.

PLAN 5306. URBAN REVITALIZATION. 3 Hours.

Examines various urban revitalization projects from coordinated, large-scale ventures to grassroots and informal neighborhood initiatives. Emphasis on the history, logic, politics, and implementation of these projects as well as their physical, social, and economic outcomes.

PLAN 5307. URBANIZATION IN THE DEVELOPING WORLD. 3 Hours.

Explores the social, political and spatial dimensions of urbanization processes in developing countries. Covers urban, social, and cultural movements as well as development, processes of urban-rural migration, and globalization. The course will cover all developing regions of the world with an emphasis on Latin American countries.

PLAN 5308. METROPOLITAN SUSTAINABILITY AND PLAN MAKING. 3 Hours.

Provides the background for sustainability planning at the city and metropolitan levels including plan making (e.g., comprehensive plans, small area plans, functional plans, etc.). Explores the relationship of environmental sustainability to economic vitality and social equity including planning ethics.

PLAN 5309. TRANSPORTATION/LAND USE MODELING AND POLICY ANALYSIS. 3 Hours.

Overview of transportation/land use with specific transportation models and simulation methods; topics include economic theory of travel demand, land use models, UTPS framework for travel demand estimation, disaggregated travel demand models and abstract mode models.

PLAN 5310. PLANNING, URBAN DEVELOPMENT AND STRUCTURE. 3 Hours.

Overview of functional areas of planning (e.g., urban design, housing, transportation, etc.); fundamentals of urban structure and development of cities and regions including environmental, social, economic, and political factors and issues affecting urban settlements; global dimensions of planning.

PLAN 5311. ELEMENTS OF URBAN DESIGN. 3 Hours.

Study of contemporary urban form and environmental design, emphasizing visual-spatial qualities, social needs and economic linkages. Examination of processes, methods and techniques for solving urban design problems.

PLAN 5312. STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Readings and case studies of strategic planning and management in the public and non-profit sectors; application of principles to an actual situation, involving stakeholder identification, environmental scanning, and formulation of mission statements, goals, and strategies. Offered as PLAN 5312 and PAPP 5357. Credit will be granted only once.

PLAN 5313. URBAN GROWTH POLICIES. 3 Hours.

Study of the political, societal and physical policies involved in urban growth management.

PLAN 5315. TRANSPORTATION POLICIES, PROGRAMS AND HISTORY. 3 Hours.

Transportation and related programs and policies in relation to city development and housing patterns. Interdependencies of land use, building development, and social change are explained as transportation-related.

PLAN 5316. LAND USE PLANNING AND THE LAW. 3 Hours.

Explores the law of land use in the context of the American legal, economic, and political systems. Examines leading court decisions and precedents for their background, content, and applicability to contemporary land use. Offered as PLAN 5316 and PAPP 5331. Credit will be granted only once.

PLAN 5317. INTERMEDIATE DATA ANALYSIS. 3 Hours.

An intermediate level examination of statistical and research techniques appropriate to urban and social analysis. Presuming a basic understanding of descriptive and inferential statistics, the course covers multivariate regression, including error analysis and non-linear models, path analysis, Analysis Of Variance (ANOVA), logit and probit models, and techniques for data reduction (e.g., factor analysis). Offered as PAPP 5342 and PLAN 5317; credit will be granted only once. Prerequisite: PAPP 5302.

PLAN 5318. TECHNIQUES OF PLANNING ANALYSIS I. 3 Hours.

Introduction to analytical techniques used in urban and regional planning. Topics include: census data and geography and introduction to GIS, demographic analysis, cost-benefit analysis, economic base analysis, gravity models, and displaying and communicating data analysis and results in graphic, written, and oral forms.

PLAN 5319. AGENCIES OF PLANNING AND ADMINISTRATION. 3 Hours.

Contemporary managerial functions involved in running public, private, or non-profit organizations: goal setting, planning, organizing, delegating and motivating others, personal productivity and motivation, time and stress management, controlling, and project management.

PLAN 5320. DATABASE MANAGEMENT FOR URBAN PLANNING AND ADMINISTRATION. 3 Hours.

Concepts and computer applications of data management. Topics include data sources, data models, database design, data query, data analysis, and database management techniques for urban planning, management and administration. Credit will be given only once.

PLAN 5321. VISUAL BASIC AND GIS. 3 Hours.

Provides an introduction to the techniques and applications of computer graphics and mapping for presenting socioeconomic information in graphic and spatial form.

PLAN 5322. ECONOMIC DEVELOPMENT PLANNING AND POLICY. 3 Hours.

Introductory seminar in subnational economic development programs in the U.S. Covers basics of location theory, economic planning, budgeting, incentives, public and private revenue sources, analysis methods such as central place and economic base, intergovernmental efforts, redevelopment, high tech, trade and/or tourism.

PLAN 5323. HISTORIC PRESERVATION. 3 Hours.

Covers elements of historic designation, rehabilitation, financial incentives, district regulations, and preservation impacts.

PLAN 5324. COMMUNITY DEVELOPMENT. 3 Hours.

Focuses on current problems of community development and neighborhood revitalization. Housing, community assets, the roles of community development corporations and social capital in cities, and community economic development will be analyzed. Federal, state, and local policies, with grassroots initiatives evaluated for effectiveness on promoting alternatives for community building and organizing. Also offered as URPA 5313; credit will be granted only once.

PLAN 5325. PHYSICAL PLANNING AND URBAN DESIGN. 3 Hours.

Introduction to basic concepts in urban design and physical planning. Provides an understanding of how built environments evolve, and how they can be creatively planned and designed so as to meet social and ecological goals. Special attention to principles and analyses related to the physical planning of neighborhoods and streets, as well as patterns of urban form and public places.

PLAN 5326. CULTURAL PLANNING AND URBAN DEVELOPMENT. 3 Hours.

This course examines 1) the composition of the creative economy in cities around the world, 2) arts, culture, and creative economy planning and policy efforts at the neighborhood, city, and regional levels, and 3) the social, spatial and political ramifications of these efforts and of the creative economy broadly.

PLAN 5327. GREEN CITIES AND TRANSPORTATION. 3 Hours.

Concepts of green cities and transportation, environmental and transportation challenges, and schools of thought on causes of environmental and transportation problems, with emphasis on planning practices and policies in relation to environmental and transportation issues and roles of planners in shaping urban landscape and infrastructure.

PLAN 5328. PUBLIC BUDGETING. 3 Hours.

This course introduces students to the principles and practices used by federal, state, and local governments to acquire and spend revenues within the context of American democracy, capitalism, federalism, and economics. The primary objective of this course is to provide students with the practical skills and theoretical knowledge to enable them to be effective participants in the budgeting process and critical consumers and producers of research relevant to public budgeting. Offered as PLAN 5328 and PAPP 5326. Credit will be granted only once.

PLAN 5329. PUBLIC CAPITAL BUDGETING. 3 Hours.

Examines governmental capital budgeting processes with a focus on understanding the significance of capital improvement planning, public facility investment, and project evaluation to sound infrastructure financing and regional economic growth. Governments purchase or construct long-lasting physical assets or facilities financed mostly through borrowing. This course aims to understand the rationale for public capital budgeting and debt instruments used to finance capital investment in the political context of public budgeting in America. Offered as PAPP 5332 and PLAN 5329; credit will be granted only once.

PLAN 5330. TECHNIQUES OF PLANNING ANALYSIS II. 3 Hours.

Introduction to research methods, both quantitative and qualitative and mixed methods. Relating planning problem identification and definition with appropriate method of data gathering and analysis. Analysis and interpretation of qualitative and quantitative data including interview and small group techniques, and basic statistical analysis. Communication of analysis results in graphic, written, and oral forms.

PLAN 5331. GIS WORKSHOP. 3 Hours.

Skills, practical experience, problem-solving methods and techniques in geographic information systems. Capstone course for GIS Certificate Program; substitutes for one Project Planning Course. Prerequisite: PLAN 5357.

PLAN 5332. PROJECT STUDIO. 3 Hours.

Studio course working on applied city and regional planning projects within the Dallas-Fort Worth area or elsewhere. Provides students with practical experience in collaborative teamwork and the application of skills, methods, and techniques in city and regional planning, including citizen participation, problem analysis, mapping, design, presentation, working with clients, and applied planning process. Should be taken in the second half of the student's program of study, with exceptions for those with applied planning experience. May be repeated as topic changes.

PLAN 5333. GRAPHICS AND MULTIMEDIA COMMUNICATION IN PLANNING. 3 Hours.

Builds skills in the use and application of contemporary graphic techniques that enable planners to visually communicate and display data, design concepts and ideas as solutions to planning problems. Training in the use of various graphic communication and multimedia software, including online web media and print media.

PLAN 5335. PROFESSIONAL WRITING. 3 Hours.

Builds student writing skills in professional communication of ideas and information. Includes review of basic writing skills, grammatical construction, report and memo writing based on current standardized formats; considering the role of audience, writing in a clear, concise and professional style; emphasizes revising writing assignments for effective communication. Also offered as PAPP 5341; credit will be granted for only one.

PLAN 5340. GIS AND SUITABILITY ANALYSIS. 3 Hours.

Acquaints students with theoretical and practical aspects of suitability analysis process or activity allocation on land use/environmental policies. Uses Geographic Information System (GIS) and computer models for overlaying map analysis, buffering, market demand and activity locations, etc. to incorporate environmental and ecological factors into the determination of land development potential including soils, slope, drainage, vegetation, and related factors.

PLAN 5341. ENVIRONMENTAL REGULATIONS: LAWS AND PLANNING. 3 Hours.

Federal, state, and local environmental regulations which have effect on the practice of city and regional planning. Specific articles, laws, and directives contrasted and compared to local city design and development controls. Subjects include CERCLA, RCRA, SARA, TSCA, OSH Act, among others.

PLAN 5342. ENVIRONMENTAL POLICY. 3 Hours.

Focuses on the physical environmental dimensions of urbanization including such factors as pollution, waste disposal, and land use; stresses the role of economic, social, and political institutions as these affect environmental quality of the city. Offered as PLAN 5342 and PAPP 5317; credit will be granted only once.

PLAN 5343. FOUNDATIONS OF ENVIRONMENTAL POLICY. 3 Hours.

Explores how environmental controversy is rooted in conflict between a number of schools of environmental policy thought with divergent perspectives on issues such as how to define progress, how to balance the needs of economy and ecosystem, how to cope with environmental complexity, and what role science should play in environment affairs. Also offered as URPA 5365; credit will be granted only once.

PLAN 5344. HUMAN SERVICES PLANNING. 3 Hours.

Social welfare institutions: private and public; needs assessment, resource allocation, procedures, city/state/federal/private policy review; highlights of current system demands and changes. Also offered as URPA 5316.

PLAN 5345. PLANNING AND REAL ESTATE DEVELOPMENT. 3 Hours.

The goals, strategies, methods, and achievements of major participants in the urban land and building markets are examined. Land owners, speculators, real estate brokers, developers, bankers, lawyers, non-profit builders, and government agencies are studied, as well as such business tools as: market and feasibility analysis, appraisal techniques, proforma analysis, and others.

PLAN 5346. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PLAN 5346 and PAPP 5344; credit will be given only once.

PLAN 5347. URBAN PROBLEMS. 3 Hours.

Specific urban problems examined in depth, traced to their historical origins to see how they or similar problems have been dealt with in other times and places. Students will then propose possible solutions to the problems in their contemporary form. Offered as PLAN 5347 and PAPP 5319.

PLAN 5350. ENVIRONMENTAL PLANNING. 3 Hours.

Overview of environmental planning issues and problems, including basic ecological principles; development and effects of the chemical industry; policies on international issues; environmental justice and ethics; environmental economics, including externalities and public goods; sustainable development; overviews of planning for air quality, water quality, solid waste, pollution prevention, habitat conservation, etc.; and plan implementation, including enforcement, regulation and funding.

PLAN 5351. TECHNIQUES OF ENVIRONMENTAL ASSESSMENT. 3 Hours.

Analysis of impact assessment documents from a variety of projects; study of federal laws and regulations governing the process; state impact assessment laws and regulations; and procedures used in other nations. Students will prepare an environmental assessment for a real-world project. Overviews of environmental site assessment, MIS documents, and environmental auditing will also be given.

PLAN 5352. ENVIRONMENT ASSESSMENT POLICY & PRACTICE. 3 Hours.

Review and analysis of the development of the environmental assessment process with focus on expectations of how environmental assessment will be transformed in the era of climate change. Students evaluate the effects of new laws and regulations and the accelerated growth of environmental policy development at all levels of government, especially among urban areas. The course includes review of selected environmental assessment documents and project case studies.

PLAN 5353. ENVIRONMENTAL LAW. 3 Hours.

This seminar examines the role of environmental law within the political-institutional framework of the American system. Emphasis is on the legal-judicial aspects of environmental regulation. Analyzes the decision of U.S. courts as these affect and interpret environmental laws and regulations for their legality and constitutionality.

PLAN 5354. HOUSING PLANNING, POLICY AND FINANCE. 3 Hours.

Evaluation of the effect of state, local, and federal housing policy on the urban arena. Topics will be selected from federal subsidy programs, tax subsidies, operations of financial intermediaries, and related areas.

PLAN 5356. INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Introduction to GIS and the application of computer graphics systems in the storage, processing, and retrieval of geographic urban and regional information; case examples and related projects and issues of system management.

PLAN 5357. INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

Applications of GIS to typical urban and regional geographic information problems and projects. Prerequisite: PLAN 5356.

PLAN 5358. INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND PLANNING. 3 Hours.

Concepts, components, deployments, and implementations of ITS; methods for ITS evaluations; linkage between ITS and traditional transportation planning; and issues related to ITS planning and deployment.

PLAN 5360. COMPUTER METHODS FOR TRANSPORTATION PLANNING. 3 Hours.

Applications of computer software (for example, TransCad, Tranplan) in transportation planning modeling. Theories of residential location choice and travel behavior. Topics may include land-use and travel demand models, trip distribution models, mode choice models, and network equilibrium.

PLAN 5361. PLANNING INTERNSHIP. 3 Hours.

Intended to enhance readiness for professional work through exposure to planning practice in a one semester log internship (300 hrs in the spring or fall semester or 275 hrs in the summer). Integrates work experience and coursework through journaling and reflective practice. Requirements: (1) student secures an internship from a planning related employer and approval from the student's major professor prior to enrolling in the course; (2) the intern must provide performance evaluation by the job supervisor and the intern's evaluation of the internship experience. Enrollment open to students with no previous formal planning experience. Credit not available for previous internship or planning experience. P/F grade.

PLAN 5362. URBAN DIVERSITY. 3 Hours.

Examines the growing spatial and social diversity of cities; how physical as well as socioeconomic urban structures have fostered race, class, and gender inequalities; how urban policies have addressed and can address these issues. Offered as PLAN 5362 and PAPP 5362.

PLAN 5363. LEADERSHIP AND COMMUNICATION SKILLS IN THE PLANNING PROCESS. 3 Hours.

Governance and participation, comprehensive planning and the community planning process, participatory planning, and practical communication skills for planners and administrators: leadership and public meetings, participative decision making, interpersonal communications and conflict management, effective writing and presentations.

PLAN 5364. ECONOMIC BASE AND INDUSTRIAL DEVELOPMENT POLICY. 3 Hours.

Theories and methods of local and regional economic base analyses; techniques for inventorying strengths, weaknesses, opportunities and threats of local capital, labor and land resources; alternative policy responses to industrial development issues arising from economic base analysis.

PLAN 5380. RESEARCH QUESTIONS IN PLANNING. 3 Hours.

Application of research issues, writing, and communication skills in planning. Designed to assist students in preparing their research for master's thesis or professional report.

PLAN 5391. CONFERENCE COURSE. 3 Hours.

Special subjects and issues as arranged by individual students and faculty members. May be repeated for credit.

PLAN 5395. SPECIAL TOPICS IN PLANNING. 3 Hours.

Selected topics in City and Regional Planning. May be repeated for credit.

PLAN 5397. PROFESSIONAL REPORT. 3 Hours.

Preparation of final professional report as a thesis substitute for MCRP degree. Required of all thesis substitute students not enrolled in PLAN 5193. Prerequisite: PLAN 5380.

PLAN 5398. PLANNING THESIS. 3 Hours.

Graded F/R.

PLAN 5695. TOPICS IN PLANNING. 6 Hours.

Studio, lecture or seminar course to explore and present special topics in city and regional planning. May be repeated for credit as topics change. Prerequisite: Permission of Graduate Advisor or Program Director.

PLAN 5698. PLANNING THESIS. 6 Hours.

Graded F/R.

PLAN 5998. PLANNING THESIS. 9 Hours.

Graded P/F/R.

PLAN 6161. TEACHING INTERNSHIP. 1 Hour.

Provides exposure to all aspects of course preparation and delivery including, course and syllabus design, student performance assessment, exam preparation, maintaining class records, and grading. Also, lecture and other forms of delivery of instruction. Interns co-teach with a faculty mentor, who provides feedback.

PLAN 6300. ADVANCED URBAN THEORY. 3 Hours.

Covers key theories of urbanization and socioeconomic relations. Emphasis is placed on the development of paradigms in urban theory, from classic texts to important shifts and debates in the late 20th-early 21st centuries. Considers principal theorists from urban disciplines of planning, geography, economics, sociology, and how they structure their arguments about urban form and social relations. Aimed at doctoral students, as well as advanced master's students, both from urban planning/urban affairs as well as from graduate programs outside School of Urban and Public Affairs.

PLAN 6301. RESEARCH FOUNDATIONS AND Ph.D. WORKSHOP. 3 Hours.

Examines fundamentals of research design for linking research questions to evidence, analysis, and research conclusions in urban planning, public administration, and public policy. Designed to assist doctoral students in preparing their research for dissertation. Opportunities to present work in progress, share ideas, and interact with faculty. Also offered as PAPP 6301; credit will be granted only once. Prerequisite: PLAN 5317 or PAPP 5342, PLAN 5346 or PAPP 5344 and PLAN 6346 or PAPP 6346.

PLAN 6303. PLANNING HISTORY, THEORY AND ETHICS. 3 Hours.

Various theories of planning including rational comprehensive, communicative action, social learning, and radical planning. Sets theories within their historical contexts, and examines the social and political details of each era to show the development of diverse planning practices and theories of planning. Evaluates the values embodied in different theories and their relationship to practice and social justice, including planning ethics.

PLAN 6305. SEMINAR IN URBAN PLANNING PROCESSES. 3 Hours.

Final course in urban planning field. Focus on the various political, economic, and social institutions and theoretical approaches in the planning process, and application of these multidisciplinary perspectives in the analysis of specific planning issues.

PLAN 6306. URBAN REVITALIZATION. 3 Hours.

Emphasizes the history, logic, politics, and implementation of urban revitalization projects as well as their physical, social, and economic outcomes. Examines various urban revitalization projects from coordinated, large-scale ventures to grassroots and informal neighborhood initiatives.

PLAN 6307. THE URBAN ECONOMY. 3 Hours.

Students explore theories that explain local, state, national and international economies in a predominantly urbanized country and world. The course provides an understanding of agglomeration economies that are the foundation of urban genesis, growth and stability or decline. Individual topic areas include transportation, housing, environment, education and employment. An overarching theme is understanding human behavior and decisions in the urban context drawing on the economic theories new urban economics, new economic geography, new institutional economics and others. Offered as PAPP 6307 and PLAN 6307; credit will only be granted for one.

PLAN 6308. METROPOLITAN SUSTAINABILITY AND PLAN MAKING. 3 Hours.

Provides the background for sustainability planning at the city and metropolitan levels including plan making (e.g., comprehensive plans, small area plans, functional plans, etc.). Explores the relationship of environmental sustainability to economic vitality and social equity including planning ethics.

PLAN 6309. TRANSPORTATION/LAND USE MODELING AND POLICY ANALYSIS. 3 Hours.

Overview of transportation/land use with specific transportation models and simulation methods; topics include economic theory of travel demand, land use models, UTPS framework for travel demand estimation, disaggregated travel demand models and abstract mode models.

PLAN 6310. PLANNING, URBAN DEVELOPMENT AND STRUCTURE. 3 Hours.

Planning functional domains from transportation to comprehensive planning and fundamental theories explaining urban structure and development of cities and regions.

PLAN 6311. SPATIAL THEORY AND POLICY: URBAN FORM AND STRUCTURE. 3 Hours.

Examines factors shaping urban form. Includes economic and spatial structures of cities and their implications for planning and policy issues. Outlines location theory, urban growth, density and land price, land use and spatial pattern, multi-centering and sprawl, as well as new traditional and transit oriented developments (NTD & TOD) among others. Broadens understanding of different aspects of cities and urban areas (housing, employment and commercial centers). Reflects on the connections between emergent patterns of growth and evolving transportation network.

PLAN 6313. URBAN GROWTH POLICIES. 3 Hours.

Study of the political, societal and physical policies involved in urban growth management.

PLAN 6315. LAND USE, MANAGEMENT AND DEVELOPMENT. 3 Hours.

Fundamentals of real estate development and land use planning and its intersection with the planning process. Assesses land use, management and development and considers new directions.

PLAN 6317. INTERMEDIATE DATA ANALYSIS. 3 Hours.

Intermediate statistical and research techniques appropriate to Ph.D. level urban and social analysis. Presuming a basic understanding of descriptive and inferential statistics, the course covers multivariate regression, including error analysis and non-linear models, path analysis, Analysis of Variance (ANOVA), logit and probit models, and techniques for data reduction (e.g., factor analysis). Prerequisite: PAPP 5302.

PLAN 6318. TECHNIQUES OF PLANNING ANALYSIS I. 3 Hours.

Analytical techniques used in urban and regional planning. Topics include: census data and geography, introduction to GIS, demographic analysis, cost-benefit analysis, economic base analysis, gravity models, and displaying and communicating data analysis and results in graphic, written, and oral forms.

PLAN 6321. ELEMENTS OF URBAN DESIGN. 3 Hours.

Study of contemporary urban form and environmental design, emphasizing visual-spatial qualities, social needs and economic linkages. Examination of theories, processes, methods and techniques of urban design.

PLAN 6322. ECONOMIC DEVELOPMENT PLANNING AND POLICY. 3 Hours.

A seminar on subnational economic development programs in the U.S. Covers location theory, economic planning, budgeting, incentives, public and private revenue sources, analysis methods such as central place and economic base, intergovernmental efforts, redevelopment, high tech, trade and/or tourism.

PLAN 6324. COMMUNITY DEVELOPMENT. 3 Hours.

Focuses on current problems of community development and neighborhood revitalization. Housing, community assets, the roles of community development corporations and social capital in cities, and community economic development. Federal, state, and local policies vs. grassroots initiatives evaluated for effectiveness on promoting alternatives for community building and organizing. Ph.D. level critical assessment of the central theories and rationales driving community development.

PLAN 6325. TRANSPORTATION POLICIES, PROGRAMS AND HISTORY. 3 Hours.

Transportation and related programs and policies in relation to city development and housing patterns. Interdependencies of land use, building development, and social change are explained as transportation-related.

PLAN 6326. PHYSICAL PLANNING AND URBAN DESIGN. 3 Hours.

Concepts in urban design and physical planning. Provides an understanding of how built environments evolve, and how they can be creatively planned and designed so as to meet social and ecological goals. Special attention to principles and analyses related to the physical planning of neighborhoods and streets, as well as patterns of urban form and public places.

PLAN 6327. GREEN CITIES AND TRANSPORTATION. 3 Hours.

Schools of thought on causes of environmental and transportation problems and 'green cities' as potential solution with emphasis on the planning approaches and public policies tackling environmental and transportation issues. Critical assessment of the roles of planners in shaping the urban landscape and infrastructure.

PLAN 6330. TECHNIQUES OF PLANNING ANALYSIS II. 3 Hours.

Quantitative and qualitative and mixed methods research. Relating planning problem identification and definition with appropriate methods of data gathering and analysis. Analysis and interpretation of qualitative and quantitative data including interview and small group techniques, and basic statistical analysis. Communication of analysis results in graphic, written, and oral forms.

PLAN 6331. GIS WORKSHOP. 3 Hours.

Application of methods and techniques in geographic information systems to the analysis of spatial urban phenomena and spatial decision-making in regional planning and public policy. Research and project-based planning course. Prerequisite: PLAN 6357.

PLAN 6340. GIS AND SUITABILITY ANALYSIS. 3 Hours.

Presents theoretical and practical aspects of the suitability analysis process. Uses Geographic Information System (GIS) analysis and computer models for incorporating environmental and ecological factors in determining land development potential.

PLAN 6345. PLANNING AND REAL ESTATE DEVELOPMENT. 3 Hours.

The goals, strategies, methods, and achievements of major participants in the urban land and building markets are examined. Land owners, speculators, real estate brokers, developers, bankers, lawyers, non-profit builders, and government agencies are studied, as well as such business tools as: market and feasibility analysis, appraisal techniques, proforma analysis, and others.

PLAN 6346. ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS. 3 Hours.

An introduction to selected advanced techniques related to planning analysis. Subjects include advanced applied regression analysis, multivariate logit analysis, and multinomial logistic regression. Applications of projection techniques, land use and transportation models, and methods of regional analysis. Offered as PLAN 6346 and PAPP 6346. Credit will be given only once.

PLAN 6347. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PAPP 6344 and PLAN 6347; credit will be given only once.

PLAN 6350. ENVIRONMENTAL PLANNING. 3 Hours.

Reviews environmental planning and its ecological principles; environmental effects of industrial development; policies on international issues; environmental justice and ethics; environmental economics, including externalities and public goods; sustainable development; overview of planning for air quality, water quality, solid waste, pollution prevention, habitat conservation, etc.; and issues of plan implementation, including enforcement, regulation and funding.

PLAN 6357. INTERMEDIATE GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

GIS applications to typical urban and regional geographic information problems and projects. Prerequisite: PLAN 5356.

PLAN 6358. INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND PLANNING. 3 Hours.

Concepts, components, deployments, and implementations of ITS; methods for ITS evaluations; linkage between ITS and traditional transportation planning; and issues related to ITS planning and deployment.

PLAN 6361. TEACHING INTERNSHIP. 3 Hours.

Provides exposure to all aspects of course preparation and delivery including, course and syllabus design, student performance assessment, exam preparation, maintaining class records, and grading. Also, lecture and other forms of delivery of instruction. Interns co-teach with a faculty mentor, who provides feedback.

PLAN 6399. DISSERTATION. 3 Hours.

Graded R/F only.

PLAN 6691. CONFERENCE COURSE. 6 Hours.

Special subjects and issues as arranged by individual students and faculty members. May be repeated for credit.

PLAN 6699. DISSERTATION. 6 Hours.

Graded R/F/P/W only.

PLAN 6999. DISSERTATION. 9 Hours.

Graded P/F/R.

PLAN 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Civil Engineering (CE)

COURSES

CE 1000. FRESHMAN UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 1105. INTRODUCTION TO CIVIL ENGINEERING. 1 Hour.

Introduction to basic civil engineering practice. There are several writing assignments and an oral presentation. Use of spreadsheet and word processor software in solving civil engineering problems and presenting solutions. Professional engineering licensure and the various specializations within civil engineering are covered.

CE 1252. COMPUTER TOOLS - AUTOCAD. 2 Hours.

Introduction to computer aided design, using AutoCAD. Creation of precise two-and/or three- dimensional engineering drawings and solid models. Prerequisite: Grade of C or better in MATH 1421; or concurrent enrollment in:(1) MATH 1426 or 2) HONR-SC 1426.

CE 1353. INTRODUCTION TO COMPUTER AIDED DESIGN TOOLS IN CIVIL ENGINEERING. 3 Hours.

An introduction to computer aided design using AutoCAD interface built in Civil 3D. Students will be taught CAD commands, tools, 2D drawing objects, multi-view drawing, layer management, linetypes, object snap, polar tracking, and annotation. Civil 3D concepts and essential functions for creating, designing, and analyzing civil engineering drawings will be covered. Prerequisite: Grade of C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment).

CE 2000. SOPHOMORE UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 2152. COMPUTER TOOLS - MATHCAD. 1 Hour.

Introduction to computer aided mathematics, using Mathcad. Solution of engineering problems involving systems of simultaneous linear and nonlinear equations and elementary calculus, use of the tools for visualization. Prerequisite: Grade of C or better in PHYS 1443.

CE 2153. COMPUTER TOOLS - CIVIL 3D. 1 Hour.

Introduction to civil engineering construction documentation and building information modeling (BIM) using AutoCAD Civil 3D. Prerequisite: CE 1252.

CE 2191. PROBLEMS IN CIVIL ENGINEERING. 1 Hour.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore classification in civil engineering.

CE 2221. DYNAMICS. 2 Hours.

Planar and spatial kinematics and kinetics of particles and rigid bodies utilizing Newton's Laws of Motion, the principle of work and energy, and the principle of impulse and momentum; introduction to single degree of freedom vibration. Prerequisite: Grade of C or better in CE 2311; grade of C or better in MATH 2425.

CE 2291. PROBLEMS IN CIVIL ENGINEERING. 2 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore classification in civil engineering.

CE 2300. INTRODUCTION TO SUSTAINABLE ENGINEERING. 3 Hours.

Introduction to key sustainability concepts and challenges. The engineering design process and consideration of sustainability. Techniques for generating creative and innovative alternative solutions to sustainability problems. Use of life cycle assessment to quantify environmental, economic, and social impacts of various alternatives. Methods to incorporate life cycle assessment into alternatives evaluation. Case study project.

CE 2311. STATICS. 3 Hours.

Vector algebra; composition and resolution of forces; equivalence of force couple systems; equilibrium of force systems acting on particles, and force - couple systems acting on rigid bodies, and systems of rigid bodies; internal forces in rigid bodies; shear and moment diagrams; centroids and moments of inertia; frictional forces. Prerequisite: Grade of C or better in PHYS 1443.

CE 2312. STATICS AND DYNAMICS FOR NON-CE MAJORS. 3 Hours.

Principles of forces and force systems, resultants and components of force systems, forces due to friction, condition of equilibrium, forces acting on members of trusses and frame structures, centroids and moments of inertia, review of kinematics and kinetics of particle motion, and two-dimensional motion of rigid bodies. CE 2312 cannot be substituted for CE 2221 and CE 2311. Prerequisite: PHYS 1443 and MATH 2425 or concurrent enrollment.

CE 2313. MECHANICS OF MATERIALS I. 3 Hours.

Concepts of stress and strain; stress-strain relationships. Behavior of members subjected to tension, compression, shear, bending, torsion, and combined loading. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: Grade of C or better in CE 2311; Grade of C or better in MATH 2425.

CE 2331. ENGINEERING MEASUREMENT AND COMPUTER MODELING. 3 Hours.

Principles and theories of physical measurements of spatial quantities; the use of surveying instruments; introduction to engineering using computer modeling programs; and organization and programming for computer solutions. Prerequisite: Grade of C or better in CE 1252.

CE 2391. PROBLEMS IN CIVIL ENGINEERING. 3 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CE 3000. JUNIOR UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 3131. ENVIRONMENTAL ANALYSIS. 1 Hour.

Laboratory examinations of water, wastewater, and air. Water and air quality parameters and their significance. Sources and types of pollutants and their effects. Prerequisite: Concurrent enrollment in CE 3334 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3142. APPLIED FLUID MECHANICS LAB. 1 Hour.

Fluid flow measurements studied by means of performed laboratory experiments and/or digital computer programming of relevant equations.

Prerequisite: Concurrent enrollment in CE 3342 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3143. PROPERTIES AND BEHAVIOR OF SOILS. 1 Hour.

An introduction to determination of civil engineering properties of soil and their behavior, identification, grain size analysis, Atterberg limits, compaction, permeability, consolidation, and shear strength. Also an introduction to sampling of soil materials. Prerequisite: Concurrent enrollment in CE 3343 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3161. CIVIL ENGINEERING MATERIALS LABORATORY. 1 Hour.

Various properties and behavior of civil engineering materials are investigated by laboratory experimentation. Prerequisite: Concurrent enrollment in CE 3261 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3210. CIVIL ENGINEERING COMMUNICATIONS. 2 Hours.

Technical writing, oral communication, professional presentations, and other related topics. Prerequisite: Grade of C or better in COMS 2302 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3253. APPLICATIONS OF COMPUTER-BASED DESIGN PROGRAMS IN CIVIL ENGINEERING. 2 Hours.

Applications of computer-based design programs including AutoCAD Civil 3D in civil engineering projects. Prerequisite: Grade of C or better in CE 1353 and CE 2331, and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3261. PROPERTIES AND BEHAVIOR OF CIVIL ENGINEERING MATERIALS. 2 Hours.

The nature and properties of materials used in civil engineering such as structural metals, concrete, timber, and bituminous materials. The engineering application and performance of materials are emphasized. Prerequisite: Grade of C or better in either CHEM 1465 or CHEM 1442; Grade of C or better in CE 2313; concurrent enrollment in CE 3161 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3301. STOCHASTIC MODELS FOR CIVIL ENGINEERING. 3 Hours.

Basic theory of probability and statistics with practical applications to civil and environmental engineering problems. Emphasis on sampling, distribution functions, tests of significance, and regression modeling. Prerequisite: Grade of C or better in MATH 2425; Permission of the CE Chair or Admission to the CE Professional Program.

CE 3302. TRANSPORTATION ENGINEERING. 3 Hours.

Planning, design, and operation of transportation facilities. Characteristics of vehicle movement; basic geometric design of highways; traffic flow relations in traffic streams; highway capacity; traffic engineering; and procedures for transportation planning. Prerequisite: Grade of C or better in CE 2331; and Grade of C or better in either CE 3301 or IE 3301 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3305. BASIC FLUID MECHANICS. 3 Hours.

Fundamentals of fluid statics, kinematics of fluid flow, fluid energy, fluid forces, similitude, and dimensional analysis. Related to steady flow of incompressible fluids in confined and free surface systems. Prerequisite: Grade of C or better in CE 2311; Grade of C or better in MATH 3319 or concurrent enrollment; Permission of the CE Chair or Admission to the CE Professional Program.

CE 3311. CONSTRUCTION ENGINEERING. 3 Hours.

Principles of construction engineering and the project management process, value engineering, specifications, different construction contracts and delivery methods, estimating and scheduling fundamentals and project control, and management of construction process. Prerequisite: Grade of C or better in IE 2308 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3328. WATER SYSTEM DESIGN. 3 Hours.

Hydraulic/hydrologic analysis and design of municipal water distribution, stormwater collection, and wastewater collection systems. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 3334. PRINCIPLES OF ENVIRONMENTAL ENGINEERING. 3 Hours.

Physical, chemical, and biological unit operations and processes in an air, water, and land environment. Prerequisites: Grade of C or better in CHEM 1465 or CHEM 1442; Grade of C or better in CE 3305; concurrent enrollment in CE 3131 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3341. STRUCTURAL ANALYSIS. 3 Hours.

Structural analysis/design process, structural forms, and basic structural elements. Analysis of statically determinate structures including beams, trusses, frames, and composite structures, shear and moment diagrams, influence lines, and moving loads. Methods to compute deflections including double integration, moment area, and virtual work. Methods of analysis for statically indeterminate structures including consistent deformation, slope deflection and moment distribution. Use of structural analysis programs. Prerequisite: Grade of C or better in CE 2313 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3342. WATER RESOURCES ENGINEERING. 3 Hours.

Hydrologic cycle, precipitation, evapotranspiration, water budget, rainfall-runoff, hydrograph, reservoir and streamflow routing, groundwater flow, catchment hydrology, probability concepts in design, hydrologic modeling, open channel and pipe network hydraulics, pumps, urban stormwater drainage. Prerequisite: Grade of C or better in CE 3301; grade of C or better in CE 3305; concurrent enrollment in CE 3142 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3343. SOIL MECHANICS. 3 Hours.

An introduction to the significant geophysical and soil science properties and behavior of materials making up the earth's crust as they apply to civil engineering, sources of materials, classification, plasticity, permeability, stress distribution, consolidation, shear strength, and settlement. Also an introduction to basic foundation engineering concepts. Prerequisite: Grade of C or better in CE 2313; concurrent enrollment in CE 3143 and Permission of the CE Chair or Admission to the CE Professional Program.

CE 3347. REINFORCED CONCRETE DESIGN. 3 Hours.

An analysis, design and synthesis course for concrete structures, emphasizing strength design method. Topics include strength and serviceability requirements, design of one way slabs, rectangular beams, flanged sections and columns, for strength, shear, bond, bearing, and serviceability. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in CE 3341 and admission to the CE Professional Program.

CE 3361. PROPERTIES & BEHAVIOR OF CIVIL ENGINEERING MATERIALS. 3 Hours.

The nature and properties of materials used in civil engineering such as structural metals, concrete, timber, and bituminous materials. The engineering application and performance of materials are emphasized. Laboratory experimentation is also used to investigate properties and behavior of civil engineering materials. Prerequisite: Grade of C or better in CE 2313; Grade of C or better in either CHEM 1465 or CHEM 1442; Permission of the CE Chair or Admission to the CE Professional Program.

CE 4000. SENIOR UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CE 4191. PROBLEMS IN CIVIL ENGINEERING. 1 Hour.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the chair of the department and sophomore standing in civil engineering.

CE 4291. PROBLEMS IN CIVIL ENGINEERING. 2 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: permission of the department chairperson and sophomore standing in civil engineering.

CE 4300. ADVANCED TOPICS IN CIVIL ENGINEERING. 3 Hours.

Advanced topics of current interest in any one of the various fields of civil engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: changes with topic; consent of instructor required and Admission to the CE Professional Program.

CE 4301. ADVANCED TOPICS IN CIVIL ENGINEERING WITH LAB. 3 Hours.

Advanced topics of current interest in any one of the various fields of civil engineering. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Changes with topic; Consent of instructor required and Admission to the CE Professional Program.

CE 4302. ADVANCED CONCRETE MATERIALS. 3 Hours.

Providing a practical understanding of design and characterization of advanced concrete materials, this course is intended for graduate and senior undergraduate students who want to advance their knowledge in new concepts of materials in construction. Topics include the study of properties at the nanoscale and how they affect the material's properties at the macro level. Lectures will focus on the advances in the design and technology of cement based materials, with particular emphasis on the evolution of nanotechnology in construction. Prerequisite: Grade of C or better in CE 3361 and admission to the CE Professional Program.

CE 4303. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CE 5342. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4304. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both CE 4304 and CE 5378. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4305. TRENCHLESS TECHNOLOGY METHODS. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4306. INFRASTRUCTURE ASSET MANAGEMENT. 3 Hours.

Infrastructure inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations and case studies. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4307. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for both CE 4307 and CE 5382. Prerequisite: Grade of C or better in CE 3311 and admission to the CE Professional Program.

CE 4308. TEMPORARY STRUCTURES. 3 Hours.

Analysis and design of temporary structures. Topics include loads on temporary structures, shoring, formwork, falsework, scaffolding, bracing, soldier beam and lagging, sheet piling, equipment bridges, and support of existing structures. Prerequisite: Grade of C or better in CE 3341 and CE 3343; Admission to the CE Professional Program.

CE 4310. SYSTEM EVALUATION IN CIVIL ENGINEERING. 3 Hours.

Techniques necessary to perform economic and multi-criteria evaluations of civil engineering projects. These will be used to assess the strengths and weaknesses of different decision-making strategies and analyze contemporary topics and case studies in making civil engineering decisions. Prerequisite: Grade of C or better in IE 2308; Grade of C or better in CE 3301.

CE 4311. URBAN TRANSPORTATION INFRASTRUCTURE PLANNING. 3 Hours.

Urban transportation system design, planning, transportation modeling, economic theory, travel demand and travel estimation techniques. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4312. STREET AND HIGHWAY DESIGN. 3 Hours.

The geometric design concepts for urban and rural roadways. Consideration of vehicle and road user characteristics in roadway design, including horizontal and vertical alignments, intersections, interchanges, and roadway cross-section and right-of-way considerations. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4313. TRAFFIC ENGINEERING. 3 Hours.

Design and control of fixed-time, actuated, and computer-controlled traffic signals; optimization of traffic flow at intersections; capacity analysis of intersections, legal requirements and traffic studies for installation of traffic control devices; characteristics of signs, signals, and markings; traffic laws. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4314. INTRODUCTION TO RAILROAD ENGINEERING. 3 Hours.

Overview of the railroad industry in the United States; structure of track, base, and foundation; drainage, railroad structures (bridges and retaining walls); geometric design; communications and signaling; maintenance. Credit not granted for both CE 4314 and CE 5334. Prerequisite: Grade of C or better in CE 3302 and Admission to the CE Professional Program.

CE 4320. EARTH STRUCTURES DESIGN. 3 Hours.

Study of the states of stress and analysis/design techniques associated with cuts, fills, and retaining structures. Includes slope stability, conventional and reinforced earth retaining walls, excavation bracing, and sheet pile wharf structures. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4321. FOUNDATION ENGINEERING. 3 Hours.

Aspects of design and construction considerations for all types of foundation systems in most soil/rock support conditions, interactions between soils and structures, bearing capacity theories, consolidation, shrink-swell, and settlement. Numerical analyses of design are applied to most of the situations. Prerequisite: Grade of C or better in both CE 3341 and CE 3343 and Admission to the CE Professional Program.

CE 4322. APPLICATIONS WITH GEOSYNTHETICS. 3 Hours.

Definitions and properties of geotextiles, geogrids, geonets, geocomposites and geomembranes; reinforcement design applications in rigid and flexible pavements, foundations, embankments, slopes and retaining walls; drainage and filtration application designs, AASHTO design criteria; construction methods. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4323. LANDFILL DESIGN. 3 Hours.

Introduction and types of landfills, landfill site selection, siting and configuration, compacted and geosynthetic clay liners, final cover design, landfill settlement and slope stability, post closure uses of landfills, leachate and gas generation, collection and removal system, bioreactor landfills and future trends. Prerequisite: Grade of C or better in CE 3343 and Admission to the CE Professional Program.

CE 4324. MECHANICS OF MATERIALS II. 3 Hours.

Theories of stress and deformation, stress-strain tensors, stress and strain relationships, stresses due to various loading conditions, theories of failure, energy methods, shear-center, unsymmetrical bending, curved beams, torsion in closed and open cell cross-sections and buckling analysis. Prerequisite: Grade of C or better in CE 2313 and Admission to the CE Professional Program.

CE 4325. FUNDAMENTALS OF FINITE ELEMENT METHOD. 3 Hours.

Stiffness method using basic equations and virtual work; element equations using shape functions for axial, beam, frame, two dimensional elements; stiffness methods for three dimensional structures. Flexibility method; finite elements modeling and optimization of idealized structures. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4326. GIS/HYDROLOGIC AND HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS-developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, and the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4327. SITE REMEDIATION ENGINEERING. 3 Hours.

This course provides practical understanding of the engineering principles and practices associated with the characterization and remediation of contaminated sites. Methods for site characterization and risk assessment will be highlighted while the emphasis will be on remedial action screening processes and technology principles and conceptual design. In-situ and ex-situ treatment processes will be covered, including unit operations, coupled processes, and complete systems within the context of community implementation. Case studies with focus on developing communities will be used and computerized tools for process selection and design will be presented. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4330. HYDRAULIC DESIGN. 3 Hours.

Design methods for appurtenances of water conveyance systems under open channel and pressure flow conditions. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4332. CONSTRUCTION EQUIPMENT, METHODS, & MANAGEMENT. 3 Hours.

Introduction to the construction industry and the methods, equipment, and management techniques used. Topics include equipment operating characteristics, underground construction, job site safety, and field management. Credit not granted for both CE 4332 and CE 5344. Prerequisite: Grade of C or better in CE 3311 and Admission to the CE Professional Program.

CE 4335. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics; interpretation of geotechnical reports; site preparation; ground improvement; excavation including supports and dewatering; foundations including consideration of deep foundations and expansive soils; tunneling in soils and rock. Prerequisite: Grade of C or better in CE 3343 and admission to the CE Professional Program.

CE 4336. HOT MIX ASPHALT DESIGN & CONSTRUCTION. 3 Hours.

An in-depth study of the properties of constituent materials for asphalt concrete mixtures. Design methods for Hot-Mixes Asphalt (HMA) and Stone Matrix Asphalt (SMA). Theory and practice of asphalt concrete mix for pavements, including specifications and construction methods for hot-mix asphalt and surface treatments. Maintenance and rehabilitation of flexible pavements. Relationships of material engineering properties to pavement design and performance. Prerequisites: Grade of C or better in CE 3361 and Admission to the CE Professional Program.

CE 4337. PORTLAND CEMENT CONCRETE PAVEMENTS. 3 Hours.

Portland cement concrete mix design and production. Paving operations. Saw and seal operations. Subgrade preparation. Base selection. Drainage selection, design and construction. Bonded and unbonded concrete overlays. Whitetopping and Ultra-Thin Whitetopping. Concrete pavement restoration; Quality Assurance and Quality Control in Concrete Pavement Construction. Prerequisite: Grade of C or better in CE 3361 and Admission to the CE Professional Program.

CE 4348. STRUCTURAL DESIGN IN STEEL. 3 Hours.

A design synthesis course for structural steel structures using Allowable Strength Design and Load Resistance Factor Design. Topics include tension members, compression members, flexural members and simple connections. Building codes, American Institute of Steel Construction (AISC) specs, material specs, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4350. INTRODUCTION TO AIR POLLUTION. 3 Hours.

An introduction to the air pollution field, including: pollutant types, sources, effects; atmosphere and basic calculations; emission estimates; Clean Air Act; dispersion modeling; air pollution reduction strategies. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4351. PHYSICAL UNIT PROCESSES. 3 Hours.

Principles of unit process modeling using reactor and kinetic theory, and theory and design of mixing, mass transfer, flocculation, sedimentation, filtration, and gas transfer. Prerequisite: Grade of C or better in both CE 3131 and CE 3334 and Admission to the CE Professional Program.

CE 4352. PROFESSIONAL PRACTICE. 3 Hours.

Professional practice issues in the private and public sector are addressed by visiting practitioners. Topics include project management, teamwork, obtaining work, regulatory requirements, specifications, issues in design/build, design alternatives, cost estimation, design and construction drawings, contract and construction law, legal issues, ethics and professionalism, design reports, licensure, lifelong learning, ethical and engineering practice organizations. Learning principles of engineering practice by working as a team is emphasized. Oral and written presentations are required. Prerequisites: Grade of C or better in CE 3210 and CE 3311 and Admission to the CE Professional Program.

CE 4353. WATER CHEMISTRY. 3 Hours.

Principles of water chemistry applied to the theory and design of unit processes including coagulation, precipitation, corrosion, oxidation-reduction, and membrane processes. Prerequisites: Grade of C or better in both CE 3334 and CE 3131 and Admission to the CE Professional Program.

CE 4354. INTRODUCTION TO SOLID WASTE ENGINEERING. 3 Hours.

This course provides an overview of the various aspects of integrated municipal solid waste management (with the exception of landfilling, covered in CE 4323). Topics covered include waste generation, characterization, and collection; source reduction; waste processing; design of facilities for materials recovery (recycling centers) and energy recovery (combustors and anaerobic digesters); life cycle analysis of solid waste management facilities; case study project. Prerequisite: Grade of C or better in CE 3334 and Admission to the CE Professional Program.

CE 4355. DESIGN OF WATER AND WASTEWATER TREATMENT FACILITIES. 3 Hours.

Design of facilities commonly used in water and wastewater treatment plants including pumps, pipelines, channels, flow measurement and control devices, screens, grit removal, mixing, sludge removal, aeration equipment, and chemical feed and storage. Materials of construction, process control interface, and operation and maintenance factors are also discussed. Prerequisite: Grade of C or better in both CE 3334 and CE 3142 and Admission to the CE Professional Program.

CE 4356. ADVANCED STEEL DESIGN. 3 Hours.

Covers torsional design of beams, beams with web holes, composite design of beams, lateral-torsional buckling of beams, plate buckling, column design and behavior, frame stability, bracing requirements for compression members. Prerequisite: CE 4348 and Admission to the CE Professional Program.

CE 4357. INTRODUCTION TO BIOLOGICAL WASTEWATER TREATMENT SYSTEMS. 3 Hours.

Basic understanding of biological processes used in water quality control and to show how theoretical concepts can be applied in a practical design. The course will include a discussion of the theory, design, and operation of biological systems used for water and wastewater treatment. Credit is not granted for both CE 4357 and CE 5325. Prerequisite: Grade of C or better in CE 3334 and CE 3131; Admission to the CE Professional Program.

CE 4358. OPEN CONDUIT SYSTEM. 3 Hours.

Non-pressure conduit and channel flow, surface profiles, steady and gradually varied flow, hydraulic jumps, and specific energy. Prerequisite: Grade of C or better in CE 3342 and Admission to the CE Professional Program.

CE 4360. DESIGN OF STRUCTURAL MASONRY. 3 Hours.

Covers masonry unit types and mortar types, reinforcing and connections. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building Codes, Masonry Standards Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4361. ADVANCED REINFORCED CONCRETE DESIGN. 3 Hours.

Advanced topics on structural design of concrete structures. Topics include slender columns, shear walls, torsion, deep beams, brackets, retaining walls, strut and tie model for shear torsion, two-way slabs, and shear friction. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Prerequisite: Grade of C or better in CE 4347 and Admission to the CE Professional Program.

CE 4363. FUNDAMENTALS OF PRESTRESSED CONCRETE. 3 Hours.

Introduction to pre-tensioned and post-tensioned concrete structures, bonded and unbonded constructions, hardware, stress calculations, section proportioning, flexural design, shear design, prestress losses, deflections, allowable stress, load-balancing, and ultimate strength, design/analysis methods, including: partially prestressed systems shear design, analysis and design of composite beams, design of prestressed concrete bridges. Both American Concrete Institute (ACI-318) and American Association of State Highway and Transportation Officials (AASHTO-LRFD) provisions will be discussed. Prerequisite: Grade of C or better in CE 4347 and Admission to the CE Professional Program.

CE 4365. STRUCTURAL WOOD DESIGN. 3 Hours.

Covers material grade and properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and diaphragms. Building codes, National Design Specification for Wood Construction (NDS) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4366. FUNDAMENTALS OF FIBER REINFORCED COMPOSITES. 3 Hours.

Introduction to basic analysis, design and manufacture of composite materials for engineered structures. Fiber materials, tapes, cloths, resin system, elastic constants, matrix formulation, theory of failure. The course will also cover an introduction to design with composites, preliminary design, optimization, processing variables, product design. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4368. ADVANCED STRUCTURAL ANALYSIS. 3 Hours.

Advanced analysis of indeterminate beams, frames, trusses, arches, and cables. Credit will not be granted for both CE 5351 and CE 4368. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4369. LOADS ON STRUCTURES. 3 Hours.

Structural analysis of structures under gravity and lateral loads, emphasizing the logical reasoning process of analysis, synthesis and design. Use of recommended practice documents and commercial structural and mathematical software will assist in providing insight and understanding of load requirements, structural behavior and analysis tools. Prerequisite: Grade of C or better in CE 3341 and Admission to the CE Professional Program.

CE 4383. SENIOR PROJECT. 3 Hours.

Planning, analysis of alternatives, and designs of selected projects that cross various civil engineering disciplines, and include engineering standards and multiple realistic constraints. Application of computer-aided engineering in analysis and design. A final oral presentation and written report that presents pros and cons of alternative solutions, application of engineering standards and multiple realistic constraints are required. A team approach is emphasized. Prerequisite: Grade of C or better in CE 4352; Completion of all required 3000 level courses.

CE 4391. PROBLEMS IN CIVIL ENGINEERING. 3 Hours.

Selected problems in civil engineering on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CE 4393. INDUSTRIAL INTERNSHIP. 3 Hours.

Student to experience industrial internship under supervision of an industrial mentor and internship committee. May not be repeated for credit. Credit not granted for both CE 4393 and CE 4394. Prerequisite: Completion of all required 3000 level courses and admission to the CE Professional Program.

CE 4394. RESEARCH INTERNSHIP. 3 Hours.

Student to experience research internship under supervision of a CE faculty. May not be repeated for credit. Credit not granted for both CE 4393 and CE 4394. Prerequisite: Completion of all required 3000 level courses and admission to the CE Professional Program.

CE 5191. ADVANCED STUDIES IN CIVIL ENGINEERING. 1 Hour.

Individual studies of advanced topics under the supervision of a professor or professors. Prerequisite: consent of instructor.

CE 5300. TOPICS IN CIVIL ENGINEERING. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: consent of instructor.

CE 5301. TOPICS IN CIVIL ENGINEERING WITH LAB. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: Consent of instructor.

CE 5302. ADVANCED CONCRETE MATERIALS. 3 Hours.

Providing a practical understanding of design and characterization of advanced concrete materials, this course is intended for graduate and senior undergraduate students who want to advance their knowledge in new concepts of materials in construction. Topics include the study of properties at the nanoscale and how they affect the material's properties at the macro level. Lectures will focus on the advances in the design and technology of cement based materials, with particular emphasis on the evolution of nanotechnology in construction. Prerequisite: CE 3361.

CE 5303. INTRODUCTION TO FINITE ELEMENT. 3 Hours.

Stiffness method using basic equations and virtual work; element equations using shape functions for axial, beam, frame, two dimensional elements; stiffness method for three dimensional structures. Flexibility method; finite element modeling and optimization of idealized structures. Credit not granted for both CE 4325 and CE 5303. Prerequisite: CE 3341.

CE 5304. LIGHT GAGE STEEL DESIGN. 3 Hours.

Covers structural design issues for cold formed steel structures. Includes initial buckling and post buckling, stiffened and unstiffened plate behavior, braced and unbraced beams, columns, connectors and shear diaphragms. Building codes, American Iron and Steel Institute (AISI) specifications, material specifications, test methods, and recommended practice documents. Prerequisite: CE 4348 or CE 5306.

CE 5305. FIBER REINFORCED COMPOSITE DESIGN. 3 Hours.

Introduction to basic analysis, design and manufacture of composite materials for engineered structures. Fiber materials, tapes, cloths, resin systems, elastic constants, matrix formulation, theory of failure. The course will also cover an introduction to design with composites, preliminary design, optimization, processing variables, product design. Credit not granted for both CE 4366 and CE 5305. Prerequisite: CE 3341.

CE 5306. STRUCTURAL STEEL DESIGN. 3 Hours.

The basic design course for steel structures emphasizing Load Resistant Factor Design Method. Topics include tension members, compression members, flexural members, and simple connections. Building codes, American Institute of Steel Construction (AISC) specifications, material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4348 and CE 5306. Prerequisite: CE 3341.

CE 5307. STRUCTURAL TIMBER DESIGN. 3 Hours.

Covers material grade, properties of wood, design criteria using structural lumber, glue laminated lumber and structural panels. Design of bending and compression members, trusses and shear diaphragms. Building codes, National Design Specifications (NDS) , material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4365 and CE 5307. Prerequisite: CE 3341.

CE 5308. STRUCTURAL MASONRY DESIGN. 3 Hours.

Covers masonry unit type and grades of mortar types, reinforcing and connectors. Design of beams, columns, pilasters, and walls. Structural behavior and construction practices. Includes plain and reinforced masonry. Building codes, Masonry Standard Joint Committee (MSJC) specifications, material specifications, test methods, and recommended practice documents. Credit not granted for both CE 4360 and CE 5308. Prerequisite: CE 3341.

CE 5309. PRESTRESSED CONCRETE. 3 Hours.

Introduction to pre-tensioned and post-tensioned concrete structures, bonded and unbonded construction, hardware, stress calculations, section proportioning, flexural design, shear design, prestress losses, deflections, allowable stress, load-balancing, and ultimate strength design/analysis methods, including: partially prestressed systems shear design, analysis and design of composite beams, design of prestressed concrete bridges. Both American Concrete Institute (ACI 318-318) and American Association of State Highway and Transportation Officials Load and Resistance Factor Design (AASHTO LRFD) provisions will be discussed. Credit not granted for both CE 4363 and CE 5309. Prerequisite: CE 4347.

CE 5310. PLASTIC ANALYSIS AND DESIGN OF STRUCTURES. 3 Hours.

Behavior of structural members beyond elastic range; plastic analysis of steel and concrete members and framed structures; stepwise incremental load and mechanism methods; yield/failure mechanisms for various types of frames. Use of nonlinear structural analysis programs and design code provisions. Application to earthquake resistant design. Prerequisite: CE 4347 and CE 4348; or equivalent.

CE 5311. ADVANCED STEEL DESIGN I. 3 Hours.

Covers torsional design of beams, beams with web holes, composite design of beams, lateral-torsional buckling of beams, plate buckling, column design and behavior, frame stability, bracing requirements for compression members. Prerequisite: CE 4348 or CE 5306.

CE 5312. ADVANCED CONCRETE DESIGN I. 3 Hours.

Advanced topics on structural design of concrete structures. Topics include slender columns, shear walls, torsion, deep beams, brackets, retaining walls, strut and tie model for shear torsion, two-way slabs, and shear friction. Building codes, American Concrete Institute (ACI) specifications, material specifications, test methods, and recommended practice documents are involved. Credit not granted for both CE 4361 and CE 5312. Prerequisite: CE 4347.

CE 5313. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics and teaching of the foundation and underground excavation construction solely to graduate students specializing in construction engineering & management. Topics include interpretation of geotechnical reports, embankment construction, foundations on expansive soils, excavation supports, excavation dewatering, deep foundation construction, tunneling in soft ground as well as in soft/hard rock, and trenchless technology piping. Credit not granted for both CE 4335 and CE 5313. Prerequisite: CE 5379 and CE 5386.

CE 5314. ADVANCED STEEL DESIGN II. 3 Hours.

Covers structural design of beam columns and building connections. Rigid frame and multi-story building design issues. Building codes, American Institute of Steel Construction (AISC) specifications, and recommended practice documents. Prerequisite: CE 4348 or CE 5306.

CE 5315. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

Analysis of stresses and strains at a point, stress-strain relationships, stresses due to various loading conditions, theories of failure, energy methods, shear center, unsymmetrical bending, curved beams, torsion in closed and open cell cross-sections, principles of plastic analysis, and buckling analysis. Credit not granted for both CE 4324 and CE 5315. Prerequisite: CE 2313.

CE 5317. ENVIRONMENTAL ENGINEERING PROCESS AND ANALYSIS LAB. 3 Hours.

The course meets for 2 hours of lecture and 3 hours of lab each week. Lectures will cover advanced analytical procedures for the analyses of air, liquid, and other wastes, including optical, Chromatographic, electrical, and other instrumental methods of analysis. Lectures will also review the basics of physical/chemical processes. In the laboratory, students will demonstrate and analyze basic reactor types (CSTR, plug flow, and reactors in series) and treatment of contaminants, including gas transfer, adsorption, advanced oxidation processes, and membrane separation.

CE 5318. PHYSICAL-CHEMICAL PROCESSES I. 3 Hours.

Principles of unit process modeling using reactor and kinetic theory, theory and design of mixing, mass transfer, flocculation, sedimentation, filtration and gas transfer. Credit not granted for both CE 4351 and CE 5318. Prerequisite: CE 3131 and CE 3334; or consent of instructor.

CE 5319. PHYSICAL-CHEMICAL PROCESSES II. 3 Hours.

Principles of water chemistry applied to the theory and design of unit processes including coagulation, precipitation, corrosion, oxidation-reduction, and membrane processes. Credit not granted for both CE 4353 and CE 5319 Prerequisite: CE 3131 and CE 3334; or consent of instructor.

CE 5320. TEMPORARY STRUCTURES. 3 Hours.

Analysis and design of temporary structures. Topics include loads on temporary structures, shoring, formwork, falsework, scaffolding, bracing, soldier beam and lagging, sheet piling, equipment bridges, and support of existing structures. Prerequisite: CE 3341 and CE 3343.

CE 5321. ENGINEERING FOR ENVIRONMENTAL SCIENTISTS. 3 Hours.

Fundamental principles of engineering science applicable to the comprehension and design of engineered environmental systems. Includes water and air quality indices; kinetic and reactor theory; mass and energy balances; fluid system theory; and applications of physical, chemical and biological processes in the design of engineered environmental systems. May not be used to satisfy any of the requirements for a graduate degree in Civil Engineering. Prerequisite: PHYS 1441, CHEM 1442, and MATH 2425.

CE 5322. ADVANCED PHYSICAL-CHEMICAL PROCESSES. 3 Hours.

The course represents the fundamentals and applications of various advanced physical and chemical unit operations and processes for controlling drinking water quality. The course will cover 1) general overview on the standard, regulations, and goals of drinking water quality, 2) detailed discussion of the theory, design, and operation of advanced physical and chemical unit processes, including but not limited to, sorption, centrifugation, osmotic pressure, membrane separation, chemical oxidation and advanced oxidation, UV technology, and disinfection, and 3) post treatment issues. Prerequisites: CE 5318.

CE 5323. SUSTAINABLE ENGINEERING. 3 Hours.

Introduction to sustainability concepts and challenges through evaluation of case studies. The engineering design process and consideration of sustainability. Techniques for generating creative and innovative alternative solutions to sustainability problems. Training on Simapro software for life cycle assessment of environmental impacts. Evaluation of economic and social impacts of alternatives and decision-making.

CE 5324. INFRASTRUCTURE RELIABILITY & MONITORING. 3 Hours.

Durability and total cost of ownership for infrastructure; the physical, mechanical and chemical characteristics of deterioration and degradation for steel and other metals, Portland cement concrete, and organic materials; practical aspects of identification and remediation; a research literature review related to material durability.

CE 5325. BIOLOGICAL PROCESSES FOR WASTEWATER TREATMENT. 3 Hours.

Biological processes used in water quality control. Includes principles from microbiology and biochemistry applied to suspended and attached growth systems. Prerequisite: CE 5318.

CE 5326. WATER AND WASTEWATER TREATMENT FACILITIES DESIGN. 3 Hours.

Design of facilities commonly used in water and wastewater treatment plants including pumps, pipelines, channels, flow measurement and control devices, screens, grit removal, mixing, sludge removal, aeration equipment, and chemical feed and storage. Materials of construction, process control interface, and operation and maintenance factors are also discussed. Credit not granted for both CE 4355 and CE 5326. Prerequisite: CE 3131, CE 3142, and CE 3334.

CE 5327. ADVANCED PROJECT CONTROL. 3 Hours.

Fundamentals of construction estimating and scheduling, earned value, value engineering, risk allocations, jobsite management, safety and closeout.

CE 5328. FUNDAMENTALS OF AIR POLLUTION. 3 Hours.

An introduction to the air pollution field including: pollutant types, sources, effects; atmosphere and basic calculations; emission estimates; Clean Air Act; dispersion modeling; air pollution reduction strategies. Credit not granted for both CE 4350 and CE 5328. Prerequisite: concurrent enrollment in CE 3334 or CE 5321 or consent of instructor.

CE 5329. ENVIRONMENTAL RISK BASED CORRECTIVE ACTION. 3 Hours.

Process for the assessment and response to contamination; integrating risk and exposure practices to ensure protection of human health and environment. Includes characterization, EPA tier approach, general aspects of toxicology, dose exposure, pathways, receptors, migration and risk assessment. Prerequisite: consent of instructor.

CE 5330. CHARACTERISTICS OF TRAFFIC. 3 Hours.

The fundamental elements of traffic - the driver, the vehicle, and the roadway - are considered and then extended into studies of streams of traffic flow. Techniques of conducting traffic engineering studies, including methods of measuring speed, volume, and density, are covered along with methods for the determination of capacity on freeways and rural highways (uninterrupted flow facilities). Parking and accident studies are also included. Prerequisite: CE 3302; and CE 3301 or concurrent registration therein.

CE 5331. TRAFFIC ENGINEERING OPERATIONS. 3 Hours.

Methods of traffic regulation and control optimization. Traffic laws, motorist communication by means of traffic control devices, and the design and operation of both fixed time and actuated traffic signals at intersections. Analysis and design techniques for intersections using capacity and level of service concepts. Credit will not be granted for both CE 4313 and CE 5331. Prerequisite: CE 3302; and CE 3301 or concurrent registration therein.

CE 5332. HIGHWAY DESIGN. 3 Hours.

Geometric considerations necessary for the design of city streets, highways, and freeways such as the cross sections, vertical and horizontal alignment, sight distances and stopping distances. Includes the design of maneuver areas, channelization, ramps, intersections, and interchanges. Credit will not be granted for both CE 4312 and CE 5332. Prerequisite: CE 3302.

CE 5333. TRAFFIC CONTROL SYSTEMS. 3 Hours.

Control algorithms and optimization of splits, offsets, and cycle lengths for arterial progression and traffic signals in networks; computer simulation techniques; problem solving with computer simulation and optimization packages; freeway control using ramp meters and dynamic motorist communications. Prerequisite: CE 4313 or CE 5331 or Equivalent or Consent of Instructor.

CE 5334. INTRODUCTION TO RAILROAD ENGINEERING. 3 Hours.

Overview of railroad industry in the United States; structure of track, base, and foundation; drainage; railroad structures (bridges and retaining walls); geometric design; communications and signaling; maintenance. Credit not granted for CE 4314 and CE 5334. Prerequisite: CE 3302.

CE 5335. AIRPORT ENGINEERING. 3 Hours.

Airport master planning, for forecasting air travel demand, airside capacity, passenger terminal design, air traffic control, land access planning and design, landside operations, air cargo facility design. Prerequisite: CE 3302.

CE 5336. PAVEMENT DESIGN. 3 Hours.

Principles and theoretical concepts of rigid and flexible pavements for highways and airfields; effects of traffic loads, natural forces, and material quality; current design practices; and life cycle cost analysis. Prerequisite: CE 3302 and CE 3343.

CE 5337. URBAN TRANSPORTATION PLANNING. 3 Hours.

Theory and application of a comprehensive urban transportation planning methodology. Basic studies of population dynamics, urban growth, land use, forecasting trip generation and distribution, traffic assignment, mode split, evaluation, simulation models, characteristics of mass transit and other non-auto modes, and system design and evaluation. Credit will not be granted for both CE 4311 and CE 5337. Prerequisite: CE 3301 and CE 3302; or consent of instructor.

CE 5338. SYSTEM EVALUATION. 3 Hours.

Techniques necessary to perform economic and multi-criteria evaluations of civil engineering projects. These will be used to assess the strengths and weaknesses of different decision-making strategies and analyze contemporary topics and case studies in making civil engineering decisions. Prerequisite: IE 2308 and CE 3301 or IE 3301 or equivalents, or consent of instructor.

CE 5339. STATISTICS FOR CONSTRUCTION. 3 Hours.

Point estimation, interval estimation, sample size determination, tests of hypothesis, analysis of variance, linear regression, matrix methods for multiple linear regression, polynomial regression, transformations, non-linear regression. Prerequisite: CE 3301.

CE 5340. CONSTRUCTION PROJECT ACQUISITION. 3 Hours.

Fundamentals of acquiring the required goods and services necessary to fulfill the obligations of the construction contract. Service and subcontractor contracts, negotiating tactics and strategies, material pricing; and dispute resolution. The course includes negotiation practice based on typical construction acquisition situations to help prepare the student with experience of negotiating in the real world of construction and business. Prerequisite: consent of instructor.

CE 5341. PAVEMENT EVALUATION, REHABILITATION AND MANAGEMENT SYSTEMS. 3 Hours.

Pavement inventory; condition and structural evaluation techniques; serviceability concepts; deterioration modeling; maintenance vs. rehabilitation vs. reconstruction; economic considerations, selection of project alternatives and life cycle cost analysis. Prerequisite: CE 5336 or equivalent.

CE 5342. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CE 5342.

CE 5343. BUILDING INFORMATION MODELING. 3 Hours.

Introduction to current Building Information Modeling (BIM); Discussion of the role of BIM in the Construction Engineering and Management; Revit Architecture, Structure, and MEP; Creating sets, building elements, structural systems, and MEP systems; BIM and clash detection; BIM and Construction Cost Estimating and Scheduling.

CE 5344. CONSTRUCTION METHODS: FIELD OPERATIONS. 3 Hours.

Introduction to the methods, equipment, and management techniques used in the construction industry. Topics include equipment operating characteristics, job site safety, and field management. Credit not granted for CE 4332 and CE 5344.

CE 5345. INFRASTRUCTURE EVALUATION, MAINTENANCE, AND RENEWAL. 3 Hours.

This course is designed for engineers and managers involved in infrastructure development, sustainability, and replacement. Topics include asset management, inspection, evaluation, maintenance, and renewal alternatives for waste collection and water distribution systems, surface and subsurface drainage, pavements, bridges, culverts, buildings, and other structures. Prerequisite: Consent of instructor.

CE 5346. OPEN CHANNEL FLOW. 3 Hours.

Open channel hydraulic principles, flow classification, backwater curves, transitions, obstructions, bends, flood flow computations, and urban watershed applications. Credit not granted for both CE 4358 and CE 5346. Prerequisite: CE 3305 and CE 4328; or consent of instructor.

CE 5347. ADVANCED HYDROLOGY. 3 Hours.

Elements of hydrometeorology, infiltration, soil moisture, hydrographs, rainfall runoff relationships, and effects of these factors with regard to water resources, urban watersheds, flood control, and environmental issues. Prerequisite: CE 3342 and CE 4328 or equivalent.

CE 5348. GROUNDWATER HYDROLOGY. 3 Hours.

Hydrology and hydrogeology of groundwater to include aquifer and vadose properties and measurements, basic flow systems and solutions, well systems, elementary contaminate transport, water quality, recharge, subsidence, flow system analysis, flow nets, and leaky aquifers. Prerequisite: CE 3342 or consent of instructor.

CE 5349. ADVANCED GIS AND HYDROLOGIC AND HYDRAULIC MODELING. 3 Hours.

Use of Geographic Information Systems (GIS) and design of GIS developed hydrologic/hydraulic models commonly applied in the water resources field. The course will have three main areas of emphasis including: principles and operations of ArcGIS, design and implementation of standard hydrologic and hydraulic models, the linkage of these models to engineering analysis of current water resources problems including flooding, water quality and water supply.

CE 5350. RISK MANAGEMENT. 3 Hours.

The risk management process including risk identification, monitoring, and control; integrated quantitative cost and schedule risk analysis.

CE 5351. ADVANCED STRUCTURAL ANALYSIS I. 3 Hours.

Advanced analysis of indeterminate beams, frames, trusses, arches, and cables. Credit will not be given for both CE 5351 and CE 4368. Prerequisite: CE 3341.

CE 5352. REMOTE SENSING-HYDROMETEOROLOGY. 3 Hours.

Atmospheric composition, radiative fluxes, thermodynamics, water vapor, stability, circulation, precipitation processes, fronts, thunderstorms and tropical storms; basics of remote sensing; observing precipitation using weather radar and satellite-borne sensors; prediction of precipitation by numerical weather models. The class will be a combination of lectures and in-class computer-based laboratory exercises. Prerequisite: CE 3342 and CE 4328.

CE 5353. ADVANCED HYDRAULICS. 3 Hours.

Flow resistance, St. Venant equations, solution of St. Venant by finite difference methods, dam break problem, water hammer intro to finite elements to open channel flow. Credit will not be granted for both CE 4330 and CE 5353. Prerequisite: CE 5346 and CE 5347; or consent of instructor.

CE 5354. WATER RESOURCES PLANNING. 3 Hours.

Historical and current water development concepts. Administrative and allocation concerns. General principles and procedures of water resource planning includes regional, multipurpose, economic and systems considerations. Prerequisites: CE 3301, CE 3342, and IE 2308; or consent of instructor.

CE 5355. CONSTRUCTION MATERIALS. 3 Hours.

Principles of construction related to construction regulations and standards, loads, fire safety, acoustics, joints and sealants. Systems of construction involving concrete, steel, wood, masonry, sealants, and soil, and including excavations, below grade construction, formwork, cladding, joints, windows, doors, roofing, and ceilings.

CE 5356. SURFACE WATER QUALITY MODELING. 3 Hours.

Contaminant transport and fate in surface water. Engineering methods assessing surface water and transport for water and sediment quality. Modeling dissolved oxygen, chemicals and waterborne substances. Prerequisite: CE 5346.

CE 5357. HYDROLOGIC TECHNIQUES. 3 Hours.

A study of current hydrologic techniques and methods for the analysis of hydrologic variables necessary in the design of projects such as bridges, culverts, reservoirs. Techniques involve extreme value statistics, model hydrographs, deterministic and stochastic methods for data analysis. Prerequisite: CE 5347 or consent of instructor.

CE 5358. SOLID WASTE ENGINEERING. 3 Hours.

This course provides an overview of the various aspects of integrated municipal solid waste management (with the exception of landfilling, covered in CE 5375). Topics covered include waste generation, characterization, and collection; source reduction; waste processing; design of facilities for materials recovery (recycling centers) and energy recovery (combustors and anaerobic digesters); life cycle analysis of solid waste management facilities; case study project. Credit not granted for both CE 4354 and CE 5358. Prerequisite: CE 3334 or CE 5321 or consent of instructor.

CE 5359. GROUNDWATER CONTAMINANT MODELING. 3 Hours.

Study of sources and fates of contamination in groundwater. Mathematical modeling of reactive and nonreactive pollutant movement. Aquifer restoration strategies. Prerequisite: CE 5348.

CE 5360. PROBABILITY, STATISTICS AND DECISIONS FOR CIVIL ENGINEERS. 3 Hours.

Topics include elements of probability theory, random variables and distributions, derived distributions, moments and expectation, common distribution models, introduction to statistics, estimation of model parameters, model verification, elementary Bayesian analysis and decision theory. No previous experience with probability is assumed. Prerequisite: CE 3301.

CE 5361. DESIGN AND CONSTRUCTION OF ASPHALT CONCRETE. 3 Hours.

An in-depth study of the properties of constituent materials for asphalt concrete mixtures. Design methods for Hot-Mixes Asphalt (HMA) and Stone Matrix Asphalt (SMA). Theory and practice of asphalt concrete mix for pavements, including specifications and construction methods for hot-mix asphalt and surface treatments. Maintenance and rehabilitation of flexible pavements. Relationships of material engineering properties to pavement design and performance. Credit not granted for both CE 4336 and CE 5361. Prerequisite: CE 3361 or equivalent.

CE 5362. RIGID PAVEMENTS. 3 Hours.

Portland cement concrete mix design and production. Paving operations. Saw and seal operations. Subgrade preparation. Base selection. Drainage selection, design and construction. Bonded and unbonded concrete overlays. Whitetopping and ultra-thin whitetopping. Concrete pavement restoration; quality assurance and quality control in concrete pavement construction. Credit not granted for both CE 4337 and CE 5362. Prerequisite: CE 3361 or equivalent.

CE 5363. CONSTITUTIVE MODELING OF SOILS. 3 Hours.

Fundamental aspects of elasto-plastic behavior of soils along axisymmetric stress paths, shear strength of soils in light of critical state soil mechanics, and constitutive models to predict soil response under saturated conditions, including Cam Clay and modified Cam Clay models. Prerequisite: CE 3343 or consent of instructor.

CE 5364. FOUNDATION ANALYSIS AND DESIGN. 3 Hours.

The design, construction, and performance of footings, rafts, and piles founded on or in sands, clays, silts, stratified soils, and weak rock. Includes the influence of various geologic terrain on selecting foundation type and constructability, in-situ investigations to determine material design parameters, bearing capacity, and settlement of foundations. Credit not granted for both CE 4321 and CE 5364. Prerequisite: CE 3343.

CE 5365. THEORETICAL SOIL MECHANICS. 3 Hours.

Theory of consolidation, magnitude, time rate, pore pressure dissipation with variable construction rate and layered soils. Secondary compression, preconsolidation, and preloading. Shear strength of soil. Critical state soil mechanics, dilation and strain-softening in drained shear, pore pressure response in undrained shear, including static liquefaction. Prerequisite: CE 3343 or consent of instructor.

CE 5366. SOIL DYNAMICS. 3 Hours.

Fundamental aspects of mechanical behavior and characterization of soils and earth structures subjected to dynamic loads, including wave propagation in soils, dynamic soil properties, liquefaction of soils, dynamic bearing capacity of shallow foundations, seismic design of retaining walls, and seismic slope stability. Prerequisites: CE 2221 and CE 3343; or consent of instructor.

CE 5367. DESIGN OF EARTH STRUCTURES. 3 Hours.

Study of the states of stress and analysis techniques associated with cuts, fills, and retaining structures. Includes slope stability, embankment reinforcement, conventional and reinforced earth retaining walls, excavation bracing, and sheet pile wharf structures. Credit not granted for both CE 4320 and CE 5367. Prerequisite: CE 3343 or consent of instructor.

CE 5368. UNSATURATED SOIL MECHANICS. 3 Hours.

Fundamental aspects of the mechanical behavior of unsaturated soils, including stress and volumetric state variables, matrix suction measurements and soil-water characteristic curves, shear-strain-strength and volume change responses, suction-controlled laboratory testing techniques and constitutive modeling. Prerequisite: CE 3343; or consent of instructor.

CE 5369. COMPUTATIONAL GEOTECHNICS. 3 Hours.

Introduction to analytical, finite differences, and finite element modeling, analyses of embankments, earth dams, slopes, excavation support systems including soldier pile and diaphragm walls, shallow and deep foundation systems, and other geotechnical structures using different geotechnical software. Prerequisite: CE 3343 or consent of instructor.

CE 5370. EXPERIMENTAL SOIL MECHANICS. 3 Hours.

Fundamentals of experimental studies of soil behavior, soil properties and their laboratory test methods which include consolidation, direct shear, static triaxial, cyclic triaxial, resonant column, bender elements and other advanced geotechnical laboratory tests, instrumentation and measurement techniques. Prerequisite: CE 3343 or consent of instructor.

CE 5371. SOIL BEHAVIOR. 3 Hours.

Fundamental aspects of soil behavior, bonding, crystal structure, surface characteristics, clay mineralogy, soil-water movement, fabric, effective stress concepts, conduction phenomena, consolidation, and shear strength. Prerequisite: CE 3343 or consent of instructor.

CE 5372. GEOSYNTHETICS. 3 Hours.

Geosynthetics properties and testing, design of geotextiles, geogrids, geonets, and geomembranes for applications in separation, pavement, embankment and retaining wall reinforcement, soil stabilization, filtration, drainage and liquid barrier, construction guidelines and case histories. Credit not granted for both CE 4322 and CE 5372. Prerequisite: CE 3343 or consent of instructor.

CE 5373. ENVIRONMENTAL GEOTECHNOLOGY. 3 Hours.

Physical and chemical principles of clays, clay mineralogy, coupled flow, hydraulic conductivity, in situ and laboratory tests, chemical transport, adsorption of chemicals, risk assessment and soil remediation technologies, bioremediation, phytoremediation, electrokinetics and soil washing, waste containment. Prerequisite: CE 5371 or consent of instructor.

CE 5374. GROUND IMPROVEMENT. 3 Hours.

Introduction and types of ground improvement for different problem soils including soft and expansive soils, shallow and deep soil densification, sand drains and wick drains, chemical modification, chemical binders and mechanisms of ground improvement, different types of grouting, deep mixing, stone columns, soil nailing, ground anchors, geosynthetics, MSE walls, reinforced slopes. Prerequisite: CE 3343 or consent of instructor.

CE 5375. GEOTECHNICAL ASPECTS OF LANDFILLS. 3 Hours.

Introduction and types of landfills, landfill site selection, siting and configuration, compacted and geosynthetic clay liners, final cover design, landfill settlement and slope stability, post closure uses of landfills, leachate and gas generation, collection and removal system, bioreactor landfills and future trends. Credit not granted for both CE 4323 and CE 5375. Prerequisite: CE 3343 or consent of instructor.

CE 5376. GIS IN GEOTECHNICS. 3 Hours.

Introduction to (GIS, Geographical Information Systems, ArcInfo/ArcView) based applications in geotechnical engineering, including bore-log database management and profiling, spatial analyses and assessment of liquefaction, ground motion amplification, landslide, and groundwater contamination hazard potentials. Prerequisite: CE 3343 or consent of instructor.

CE 5377. CONSTRUCTION FINANCE. 3 Hours.

Financial aspects and job costing of a construction project. Includes project management principles, budgets, cost codes, cost-to-complete, and financial reports specific to the management of a construction company and project control.

CE 5378. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for CE 4304 and CE 5378. Prerequisite: Consent of instructor.

CE 5380. MANAGEMENT OF INFRASTRUCTURE ASSETS. 3 Hours.

Overview of an infrastructure management system. Infrastructure asset development and management. Optimization of infrastructure asset procurement and preservation through good data input and the use of economic models, benefit cost studies, and good maintenance and rehabilitation practices to protect assets investments.

CE 5381. PUBLIC PRIVATE PARTNERSHIP FOR INFRASTRUCTURE PROJECTS. 3 Hours.

Public-private partnership (P3) arrangements as an innovative approach to deliver public infrastructure projects. Topics include P3 benefits, limitations, contracting and implementation strategies. Prerequisite: CE 3311 or IE 2308; or consent of instructor.

CE 5382. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Introduction to International Code Council's 2012 International Building Code and USGBC's LEED® New Construction Guidelines v.3 for constructing sustainable/green buildings. Review of building occupancy categories, construction types, allowable height and area, life safety requirements, rated building assemblies, and egress. Site selection, energy and water efficiency, material reuse and indoor air quality. Credit not granted for CE 4307 and CE 5382.

CE 5383. EXPERIMENTAL STRESS ANALYSIS. 3 Hours.

Introduction to experimental stress-analysis techniques. Theory and application of mechanical strain gages, electrical strain gages, introduction to photoelastic and thermal techniques, and brittle coatings. Prerequisite: CE 2313.

CE 5384. CONCRETE BRIDGE DESIGN AND EVALUATION. 3 Hours.

Analysis, design and evaluation of concrete highway bridges using AASHTO specifications. Analysis and design topics include bridge type selection, preliminary design, AASHTO LRFD bridge design philosophy, design loads, deck design, shear design, barrier design and substructure design. Evaluation topics include bridge inspection, non-destructive evaluation (NDE), load testing and load rating, using the AASHTO procedures. Prerequisite: CE 4363 or CE 5309.

CE 5385. STRUCTURAL DYNAMICS. 3 Hours.

Equation of motion for single degree of freedom systems including: free vibration; harmonic and periodic excitations; arbitrary, step and pulse excitations. Dynamic response of multi degree of freedom systems including: free vibration; computation of vibration properties of structures; damping in structures; modal analysis; and response history analysis. Dynamic analysis of systems with distributed mass. Prerequisite: CE 5303 or concurrent registration.

CE 5387. CONSTRUCTION PRODUCTIVITY. 3 Hours.

Evaluation of construction project management's effectiveness. An investigation of the advanced techniques required for improvement of construction projects including time, cost, quality management, preplanning, field evaluation techniques, time-lapse photograph, safety, human factors, and communications. Prerequisite: CE 5327.

CE 5388. PIPELINE CONSTRUCTION AND TRENCHLESS TECHNOLOGY. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Credit not granted for both CE 4305 and CE 5388. Prerequisite: graduate standing and consent of instructor.

CE 5389. PIPELINE SYSTEMS ASSET MANAGEMENT. 3 Hours.

Pipeline systems asset management, inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations, renewal technologies, and case studies. Credit not granted for both CE 4306 and CE 5389. Prerequisite: graduate standing and consent of instructor.

CE 5390. UNSATURATED SOIL MECHANICS II. 3 Hours.

Advanced principles of unsaturated soil behavior in light of critical state based soil mechanics. Topics: Cam-Clay model for saturated soils, Cam-Clay model for unsaturated soils, and calibration/programming of Barcelona Basic Model for unsaturated soils. Prerequisite: CE 5368 or consent of instructor.

CE 5391. ADVANCED STUDIES IN CIVIL ENGINEERING. 3 Hours.

Individual studies of advanced topics under the supervision of a professor or professors. Graded F, P, R. Prerequisite: consent of instructor.

CE 5392. SPECIAL TOPICS IN AIR POLLUTION. 3 Hours.

Sources, transport, fate, characteristics, and control of air contaminants. May be repeated for credit when topics vary. Topics include: Topic 1 - Air Quality Modeling. Mathematical models for predicting air pollutant transport and transformation in the atmosphere, to evaluate health impacts and potential control strategies. The course covers 4 types of air quality models: box models, photochemical grid models (for ozone and particulate matter), Gaussian dispersion models (major emphasis), and receptor models. Use of Gaussian dispersion modeling software. Topic 2 - Air Pollution Control System Design. Design of air pollution control systems for stationary sources, including particle control technologies (cyclones, electrostatic precipitators, fabric filters and wet scrubbers) and gaseous control technologies (incinerators, adsorption systems, absorption systems, biofilters, nitrogen oxide controls, mercury controls, and carbon dioxide controls). Topic 3 - Air Pollution Chemistry and Meteorology. Designed to give students an understanding of how pollutants react and travel in the atmosphere. Chemistry of ground-level ozone formation, ozone layer depletion, acid deposition, fine particle formation, and climate change; meteorological variables impacting pollutant transport in the atmosphere, such as atmospheric stability, turbulence and wind speed. Prerequisite: Graduate standing and consent of instructor.

CE 5393. ENVIRONMENTAL ORGANIC CHEMISTRY. 3 Hours.

Introduction to chemical structures, reactions, and transformations. Disposition of compounds of environmental significance utilizing sorption, bioaccumulation, acid-base reactions, hydrolysis reactions, biodegradation, and biotransformation. Prerequisite: CE 3334 or consent of instructor.

CE 5394. EARTHQUAKE DESIGN OF REINFORCED CONCRETE BUILDINGS. 3 Hours.

Design of earthquake resistant reinforced concrete (RC) building structures. ACI 318, ASCE 7, earthquake loads effects on buildings and related structural damage, properties of concrete and steel beyond the elastic range, development and anchorage, confined concrete, inelastic behavior of RC members under large load reversals, design of RC beams, columns, beam-column joints, special moment frames, coupling beams, special structural walls, and other structural systems. Prerequisite: CE 4347.

CE 5395. MASTER'S PROJECT. 3 Hours.

Non-thesis master's degree candidates with approval to include a project in their program. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 5396. SITE REMEDIATION ENGINEERING. 3 Hours.

This course provides practical understanding of the engineering principles and practices associated with the characterization and remediation of contaminated sites. Methods for site characterization and risk assessment will be highlighted while the emphasis will be on remedial action screening processes and technology principles and conceptual design. In-situ and ex-situ treatment processes will be covered, including unit operations, coupled processes, and complete systems within the context of community implementation. Case studies with focus on developing communities will be used and computerized tools for process selection and design will be presented. Prerequisite: CE 3334; or consent of instructor.

CE 5398. THESIS. 3 Hours.

Research and preparation pertaining to the master's thesis. Graded F, R.

CE 5695. MASTER'S PROJECT. 6 Hours.

Non-thesis master's degree candidates with approval to include a project in their program. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 5698. THESIS. 6 Hours.

Research and preparation pertaining to the master's thesis. Graded F, P, R.

CE 6197. RESEARCH IN CIVIL ENGINEERING. 1 Hour.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6297. RESEARCH IN CIVIL ENGINEERING. 2 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6300. ADVANCED TOPICS IN CIVIL ENGINEERING. 3 Hours.

Topics of current interest in the field of civil engineering. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: consent of instructor.

CE 6306. PUBLIC TRANSIT PLANNING & OPERATIONS. 3 Hours.

Theory and application of technologies used for transit demand analysis, routing, scheduling, evaluation, crew assignment, maintenance strategies, and management. Land-use impact on public transit policy and operation is also introduced. Prerequisite: CE 4311 or CE 5337 or equivalent.

CE 6308. ANALYTICAL MODELS IN TRANSPORTATION. 3 Hours.

Development and analysis of mathematical models in transportation. Topics include travel demand, trip generation, distribution, mode choice, assignment, plan evaluation, spatial distribution, traffic control and flow models; principles of behavioral, econometric, deterministic, probabilistic, and chaotic simulation models, and their applications. Prerequisite: CE 4311 or CE 5337.

CE 6309. TRAFFIC FLOW THEORY. 3 Hours.

Speed, density relationships of vehicular traffic flow; statistical aspects of traffic events and queuing processes; deterministic models and simulation models of traffic flow behavior; applications of flow theory to traffic problem solutions. Prerequisite: CE 5330 or equivalent.

CE 6311. ADVANCED FOUNDATION DESIGN. 3 Hours.

Subsurface investigations; advanced design of mat foundations, retaining walls, reinforced retaining walls, anchor tiebacks, driven piles, and piers; destructive and nondestructive tests on deep foundations; group piles, laterally loaded piles, and design of foundations in expansive soils. Prerequisite: CE 4321 or CE 5364.

CE 6312. IN-SITU TESTING. 3 Hours.

Site characterization, in-situ testing procedures, and soil property interpretation methods for standard penetration tests, cone penetration tests utilizing friction cone, piezocone, and seismic cone, dilatometer, vane shear, pressure meter, and bore hole shear tests, non-destructive tests for pavement subgrade characterization. Prerequisite: CE 3143 or CE 5370 or consent of instructor.

CE 6313. DESIGN OF EARTH DAMS. 3 Hours.

Introduction to dams and levees, failure and damage analysis, erosion, seepage, filter, drainage design, foundation preparation for problematic subsoil conditions, seepage induced slope stability issues, desiccation crack and erosion control, numerical modeling and case studies, seismic issues. Prerequisite: CE 5367 or consent of instructor.

CE 6314. STORMWATER MODELING. 3 Hours.

Hydrologic modeling methods and issues, urban watershed modeling, methods of system analysis; analysis of hydrologic components as linear and nonlinear systems, watershed response, kinematic wave; and model parameters optimization. Prerequisite: CE 5346 and CE 5347; or consent of instructor.

CE 6315. ADVANCED GEOTECHNICAL MODELING. 3 Hours.

This course covers two numerical simulation methods: discrete element method (DEM) and finite element method (FEM). The four basic elements in DEM: initialization, search, contact models, velocity and displacement calculations will be introduced. This course will use FORTRAN as the coding language. A basic Fortran code will be provided. Students will learn how to make modifications to the basic code for their own applications. A term project will be required that consists of a numerical experiment. Fundamentals of FEM will be introduced including: basic elements, formulation methods, coordinate transformation, and boundary conditions. CAM clay model will be introduced and implemented in ABAQUS as a class exercise. Usage of ABAQUS will be introduced. Applications of FEM including pile soil interaction and simple beam simulation. Prerequisite: Grade of C or better in CE 5363; Grade of C or better in CE 5369; Programming language (FORTRAN, C, or MATLAB); and numerical analyses; or consent of instructor.

CE 6316. SEDIMENT TRANSPORT. 3 Hours.

Sourcing the sediment influx, the settling velocity, Shields critical shear stress, design with critical shear, bedload transport equations, suspended load transport, total transport equation, regime theory as index of stability. Prerequisite: CE 4358 or CE 5346; and CE 5347.

CE 6350. ADVANCED CONCRETE DESIGN II. 3 Hours.

Detailing of connections for ductility demands, modified compression field theory, strut and tie modeling of systems and areas, and design of shear walls and hybrid construction. Behavior of reinforced concrete structures, with emphasis on ductility and detailing. Prerequisite: CE 5312.

CE 6354. REPAIR AND REHABILITATION OF STRUCTURES. 3 Hours.

Causes of distress, evaluation methods for condition, strength, serviceability; repair materials, repair techniques, and quality control methods for repair of concrete. Criteria for rehabilitation; retrofit techniques for change in function, loading, and seismic forces. Prerequisite: CE 5311 and CE 5312.

CE 6355. EARTHQUAKE ENGINEERING. 3 Hours.

Earthquake characteristics; design of structures to resist earthquakes. Characterization of earthquakes for design. Development of design criteria for elastic and inelastic structural response. Seismic performance of various structural systems. Prediction of nonlinear seismic behavior. Basis for code design procedures. Preliminary design of steel and reinforced concrete structures. Evaluation of earthquake vulnerability of existing structures and rehabilitation of seismic deficiencies. Prerequisite: CE 5385.

CE 6356. ENERGY METHODS. 3 Hours.

Principles of mechanics; elastic beams and frames; variational method: curved cantilever beams; Rayleigh Ritz method; special form of Euler equation; differential equation for beam; variation of double integral; first variation of triple integral. Deformable bodies using indicial notation; buckling using energy method; Lagrange and Hamilton Principles; theory and analysis of plates; theory and buckling; and theory of vibration. Prerequisite: CE 5315.

CE 6357. STRUCTURAL STABILITY. 3 Hours.

Buckling of columns; approximate method of analysis for buckling problems; beam columns; structural system stability (buckling of frames); lateral torsional buckling; buckling of plates; and buckling of axially compressed cylindrical shells. Prerequisite: CE 5303 or concurrent registration therein.

CE 6358. ADVANCED ENGINEERING ANALYSIS. 3 Hours.

Introduction to matrices; vector spaces; tensors, Eigenvalue problems. Solution to discrete systems: steady state problems and propagation problems. Solution of continuous systems: differential formulation; variational method; and weighted residual methods. Solution of linear and nonlinear static equilibrium equations. Prerequisite: CE 5315 and MATH 3319.

CE 6360. THEORY OF ELASTICITY. 3 Hours.

Introductory mathematical concepts: vector calculus; tensor algebra. Theory of deformation; strain displacement relations in orthogonal curvilinear coordinate systems. Theory of stress; differential equation of equilibrium in curvilinear spatial coordinates; three dimensional equations of elasticity; nonlinear constitutive relationship; plane theory of elasticity; and plane elasticity in polar coordinates. Prerequisite: CE 5315.

CE 6391. ADVANCED PROJECTS IN CIVIL ENGINEERING. 3 Hours.

Projects related to advanced topics in graduate area. Graded F, P, R. Prerequisite: consent of instructor and approval of Civil Engineering Graduate Advisor.

CE 6397. RESEARCH IN CIVIL ENGINEERING. 3 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6399. DISSERTATION. 3 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 6697. RESEARCH IN CIVIL ENGINEERING. 6 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6699. DISSERTATION. 6 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 6997. RESEARCH IN CIVIL ENGINEERING. 9 Hours.

Individual supervised research projects. May be repeated for credit. Graded F, P, R. Prerequisite: consent of instructor and approval of Supervising Committee Chair.

CE 6999. DISSERTATION. 9 Hours.

Preparation of a doctoral dissertation in civil engineering. Graded F, P, R. Prerequisite: admission to candidacy for the Doctor of Philosophy degree.

CE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Classics (CLAS)

COURSES

CLAS 1300. INTRODUCTION TO CLASSICAL MYTHOLOGY. 3 Hours.

Major Greek and Roman myths and their influence, with emphasis on the visual arts from antiquity to the present, including popular films.

CLAS 2105. CLASSICAL STUDIES ABROAD. 1 Hour.

Short-term excursion to sites of importance in the ancient Greco-Roman world. Offered in summer term, Wintermester, or Maymester. May be taken more than once as topic varies.

CLAS 2300. HOLLYWOOD CLASSICS: THE ANCIENT WORLD IN FILM. 3 Hours.

Comparative study of contemporary films set in the ancient world and the literary sources on which they are based, with emphasis on the reception and reshaping of the Classical heritage by filmmakers to reflect the cultural values and interests of contemporary audiences.

CLAS 2303. THE CLASSICAL ROOTS OF ENGLISH VOCABULARY. 3 Hours.

The study of etymology (word origins) focusing on the large stock of English words derived from ancient Greek and Latin prefixes, roots and suffixes. Recommended for students seeking to improve their general vocabulary and reading comprehension, and as preparation for graduate and professional school entrance exams.

CLAS 2305. TOPICS IN CLASSICAL CIVILIZATION. 3 Hours.

Survey of a particular topic in the realm of Classical studies. May include literature, history, mythology, religion, and the visual arts. Can be offered on campus or as a study-abroad course. May be repeated as topic changes.

CLAS 2307. WOMEN IN THE ANCIENT WORLD. 3 Hours.

Exploration of roles and images of women in ancient Greece and Rome, using a variety of primary (ancient) sources: literature, legal and medical texts, visual art, and inscriptions. Offered as CLAS 2307 and WOMS 2307. Credit will be granted only once.

CLAS 3310. INTRODUCTION TO GREEK CIVILIZATION. 3 Hours.

Ancient Greek culture through the death of Alexander the Great (323 B.C.). Topics covered include politics and society, literature, art, philosophy, and religion. Credit may not be received for both CLAS 2310 (as the course was previously numbered) and CLAS 3310.

CLAS 3320. INTRODUCTION TO ROMAN CIVILIZATION. 3 Hours.

Roman life and thought through the second century A.D. A broad cultural survey including politics and society, literature, art, philosophy, religion and law. Credit may not be received for both CLAS 2320 (as the course was previously numbered) and CLAS 3320.

CLAS 3323. TOPICS IN CLASSICAL MYTHOLOGY. 3 Hours.

Advanced study of Greek and/or Roman myths, with emphasis on the cultural context and methods of myth interpretation (anthropological, psychoanalytical, structuralist, etc.). May be repeated for credit with departmental permission.

CLAS 3335. TOPICS IN CLASSICAL STUDIES. 3 Hours.

Studies in the social, political, and cultural development of the ancient Greeks and Romans, including their influence on subsequent societies. May be repeated for credit with departmental permission.

CLAS 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: consent of the department and completion of or concurrent enrollment in a 3000 level course.

CLAS 4394. SENIOR THESIS/HONORS THESIS. 3 Hours.

A thesis or project completed during the senior year under the direction of a faculty member. Required of all students in the University Honors College.

CLAS 5392. TOPICS IN CLASSICAL STUDIES. 3 Hours.

Studies in the social, political and cultural systems of the ancient Greeks and Romans, including their influence upon subsequent societies. May be repeated for credit as the topic changes.

Communication (COMM)

COURSES

COMM 1300. INTRODUCTION TO COMMUNICATION. 3 Hours. (TCCN = COMM 1307)

Application of communication theories and principles to human communication; from the oral tradition to the printing press, photography, electronic media, and information technology.

COMM 2195. COMMUNICATION CAREER PRACTICUM. 1 Hour.

Individual experience with direct supervision of a communication professional while working with approved profit and non-profit professional organizations. Individual conference should be arranged with supervising professor. See department for course qualifications. May be repeated up to a total of three times. Prerequisite: Department of Communication Majors only and permission of the department. Graded Pass/Fail.

COMM 2311. WRITING FOR MASS MEDIA. 3 Hours. (TCCN = COMM 2311)

Writing techniques in Associated Press style with practice in research and news writing. Credit will not be given for both COMM 2311 and JOUR 1345.

COMM 3300. COMMUNICATION TECHNOLOGY. 3 Hours.

Grounded on theories of mediated communication, this course examines the adoption and effects of current and emerging communication technologies. The course also examines the implications of technology convergence as well as social, economic, organizational factors that shape the design and use of communication technology. Prerequisite: 30 hours earned.

COMM 3303. COMMUNICATION GRAPHICS. 3 Hours.

History, current practice, principles and trends in typography, imaging, pre-press and production, sheet finishing, bindery, paper and ink, logo design, advertising layout, publication design, and computer layout, design, and publishing. Prerequisite: 60 hours earned.

COMM 3310. COMMUNICATION LAW & ETHICS. 3 Hours.

Study of constitutional, statutory, administrative, and ethical governance of communication and the mass media, including journalism, the Internet, advertising, and film. Rights and responsibilities of citizens, professional communicators, and corporations are addressed. Prerequisite: 60 or more hours earned.

COMM 3315. COMMUNICATION THEORY. 3 Hours.

Study of communication theories; interpersonal, organizational, mass media, and intercultural. This course also satisfies the requirements for UNIV 1101. Prerequisite: 30 hours earned.

COMM 3345. VISUALIZING CULTURE: MEDIA, IDENTITY AND POLITICS IN THE GLOBAL WORLD. 3 Hours.

Introduces students to key concepts in Visual Anthropology. This course highlights the contribution of anthropological methods in theorizing the visual in everyday life for the construction of nationalist, gender, ethnic, and class identities. Readings are drawn from diverse geographical regions. Visual material discussed in class may include ethnographic films, art, graphic novels, comics, illustrated magazines, virtual exhibitions and soap operas. Assignments include a writing and research component, and team-based exercises. Offered as ANTH 3345 and COMM 3345; credit will be granted only in one department.

COMM 3346. DISABILITY IN MASS MEDIA. 3 Hours.

Explores how mass media frames disability and neurodiversity for the general public. Focuses on issues related to disability and mass media representation, including journalism, TV, film, advertising, photography, documentary, video games, and the Internet. Topics may include media models of representation, inspiration porn, disability blogs, accessible media, and disabled mimicry in TV and film, among others. Offered as DS 3346 and COMM 3346; credit will be granted in only one department.

COMM 4191. READINGS IN COMMUNICATION. 1 Hour.

Readings addressing contemporary issues in communication. Proficiency in writing and research skills emphasized. Primarily for Communications majors. Prerequisite: 90 or more hours earned; 12 hours of 3000/4000 level in the department.

COMM 4300. COMMUNICATION RESEARCH. 3 Hours.

Introduction to communication research, design, and methodology. Readings and criticism in interpersonal, public address, and mass communication research; project required. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4305. COMMUNICATION & SOCIETY. 3 Hours.

Readings and analysis of the role of communication in modern society; its impact on contemporary social, cultural, political, and intellectual trends. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4306. RACE, GENDER, AND MEDIA. 3 Hours.

Examines issues related to race, gender, and media. Students learn how to think critically about media patterns of representation, ways they become interwoven in media structures, and how the media produce identities. Prerequisite: COMM 3315 and 60 hours earned, or permission of the department.

COMM 4318. MEDIA SALES AND PROMOTION. 3 Hours.

Study of broadcast rating services and terminology used to determine the audience of a particular radio or television operation. Demonstrates the importance of sales skills needed in the media, and the importance of account executives to radio and television stations. Emphasizes positioning media among competitors with respect to promotional and marketing plans designed to build and maintain an audience. Relationship of media ratings to programming and sales. Credit will not be granted for both BCMN 3318 and COMM 4318. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4325. COMMUNICATION HISTORY. 3 Hours.

Evolution and trends in forms of human communication; development of symbols and media technology with attention to their effects on society.

Prerequisite: COMM 3315 and 60 hours earned.

COMM 4330. POLITICAL COMMUNICATION. 3 Hours.

Communication theories, principles, and strategies in modern political campaigns and events. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4335. INTERCULTURAL COMMUNICATION. 3 Hours.

Examination of verbal and nonverbal barriers to effective intercultural communication such as ethnocentrism, stereotyping, prejudice, racism, proxemics, kinesics, haptics, and chronemics. Developing effective communication in intercultural contexts. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4340. CORPORATE COMMUNICATION. 3 Hours.

Examines organizational communication strategies with special emphasis on how communication affects corporate constituencies. Corporate image and identity are linked to corporate advertising, press releases, financial communication, internal communication and crisis communication. Prerequisite: COMM 3315 and 60 hours earned.

COMM 4350. HEALTH COMMUNICATION. 3 Hours.

Overview of health communication in interpersonal and organizational contexts as well as the role of mediated communication on human behavior and policy. Topics include the patient-provider relationship, mental health and illness, risky behaviors, and the role of media and technology in health communication. Prerequisite: COMM 3315 and 60 hours earned, or permission of the department.

COMM 4360. EMERGING MEDIA STRATEGY. 3 Hours.

Branding strategy for creating an effective professional presence across multiple communication platforms. Prerequisites: BCMN 2370, PREL 3320, COMM 3303, CTEC 2350, or permission of the Department.

COMM 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned, and permission.

COMM 4392. ADVOCACY AND POLITICS. 3 Hours.

An introduction to challenges individuals face when advocating for an issue, an idea, or even themselves. The goal of the course is to help students grasp concepts relevant to their internship experiences as Archer Fellows in Washington D.C. Enrollment is restricted to designated Archer Fellows. Prerequisite: POLS 2311 and POLS 2312.

COMM 4393. COMMUNICATION TOPICS. 3 Hours.

Seminar in interdisciplinary topics. May be repeated when topic changes, for a maximum of nine credit hours. Prerequisite: 60 or more hours earned.

COMM 4394. HON THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

COMM 5300. ADVANCED THEORIES IN COMMUNICATION. 3 Hours.

Advanced study of communication theories: interpersonal, organizational, mass media and intercultural.

COMM 5301. SUPERVISED TEACHING. 3 Hours.

Application of theory to the practices of teaching college courses in communication. Students will handle all aspects of the classroom including lecturing, conducting class discussions, issuing assignments, grading and assigning grades under the supervision of the course director. No unit credit will be allowed toward advanced degree.

COMM 5305. COMMUNICATION RESEARCH METHODS. 3 Hours.

Study and application of communication research, design and methodology. Students will apply statistics in communication research and complete a research project/paper.

COMM 5306. QUALITATIVE RESEARCH METHODS. 3 Hours.

Advanced study and application of qualitative communication research, design and methodology. Prerequisite: COMM 5300 and COMM 5305.

COMM 5307. HISTORICAL RESEARCH METHODS IN COMMUNICATION. 3 Hours.

This course provides students with an introduction to historical methods that are relevant to research in communication.

COMM 5310. THEORIES IN PERSUASION. 3 Hours.

A comparison of traditional with contemporary behavioral science theories of persuasive discourse and their supporting research.

COMM 5316. CORPORATION COMMUNICATION STRATEGIES. 3 Hours.

Examines organizational communication strategies with special emphasis on how communication affects corporate constituencies. Corporate image and identity are linked to corporate advertising, press releases, financial communication, internal communication and crisis communication.

COMM 5320. ADVANCED VISUAL COMMUNICATION. 3 Hours.

Theory of visual communication in technical communication. Practice includes conceptualization, development and production.

COMM 5321. ADVANCED INTERNET MARKETING COMMUNICATION. 3 Hours.

Study of the use of information technology to optimize advertising, promotion, public relations and sales functions. Examines an infrastructure of the Internet and how it affects information retrieval, Web design, Web site management and Web site security. Discusses research strategies, usage trends and social implications.

COMM 5323. COMPUTER-MEDIATED COMMUNICATION. 3 Hours.

Study of theoretical and practical issues associated with modern communication technology and computer-mediated communication in interpersonal and organizational communication contexts.

COMM 5332. ADVANCED PROFESSIONAL COMMUNICATION. 3 Hours.

Advanced study of the theory and practice in written and oral presentations with emphasis on the application of communication theory in organizational and technical professions.

COMM 5335. GLOBAL COMMUNICATION. 3 Hours.

Examination of verbal and nonverbal barriers to effective intercultural and international communication. Developing effective communication in advanced study of communication theories: interpersonal, organizational, mass media and intercultural contexts and exploring the definition and impact of global communication.

COMM 5341. MEDIA MANAGEMENT. 3 Hours.

Study of media policy and regulation; media, cultural, and management theories; media economics; accounting and finance; business strategy, management and marketing.

COMM 5345. COMMUNICATION CAMPAIGNS. 3 Hours.

Advanced study of communication theories and research with the goal of developing strategic communication plans, including the selection of the appropriate vehicles and creative tactics. Team project required.

COMM 5346. MEDIA AND PUBLIC POLICY. 3 Hours.

Advanced study of communication theories and research related to understanding the linkage between media, public opinion and public policy. Individual and/or team project required.

COMM 5347. CRISIS COMMUNICATION. 3 Hours.

Advanced study of communication theories related to crisis communication and strategies used to communicate with stakeholders before, during and after crisis situations.

COMM 5349. COMMUNICATION IN VIRTUAL ORGANIZATIONS. 3 Hours.

This course examines the communication processes in virtual organizations. Communication, organizational, and management theories related to virtual organizations will be introduced. Students will learn to critically analyze specific communication issues in virtual organizations, such as organizational trust, knowledge management, communication and knowledge networks, employee relationships, and organizational identification.

COMM 5350. HEALTH COMMUNICATION. 3 Hours.

This course provides an overview of health communication in interpersonal contexts as well as the role of mediated communication on human behavior and policy.

COMM 5351. POLITICAL COMMUNICATION. 3 Hours.

This course emphasizes theoretical perspectives while also exploring, analyzing and evaluating the applied aspects of communication in politics. Students will engage in research according to their own specific interests within communication.

COMM 5352. SOCIAL MEDIA THEORY AND PRACTICE. 3 Hours.

At the intersection of mass and interpersonal communication, social media has reshaped how millions of people experience popular culture, journalism and politics. This course will involve advanced study of networked communication, social implications of these networks and the application of professional techniques for communicating via social media and measuring progress using available platform analytics.

COMM 5353. DIGITAL MEDIA DATA ANALYTICS. 3 Hours.

Study theories and practices related to the collection, analysis, presentation, and interpretation of data for digital communication purposes. Students will work on data analytics and data visualization projects.

COMM 5391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. Can be taken no more than two times for credit. Prerequisite: permission of the department.

COMM 5392. SEMINAR. 3 Hours.

Special topics. Topic varies from semester to semester. May be repeated when topic changes.

COMM 5398. THESIS. 3 Hours.

Student completion of a research project on a subject of primarily theoretical interest, intended for an academic audience. Prerequisite: satisfactory completion of coursework and consent of thesis advisor.

COMM 5399. GRADUATE COMMUNICATION INTERNSHIP. 3 Hours.

Practical training and experience in the field of communication. Applied communication research project is required. Course counts as an elective and has a pass/fail grade. No credit will be given for current employment, previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed. Subject to departmental approval.

COMM 5698. THESIS. 6 Hours.

Student completion of a research study on a subject of primarily theoretical interest, intended for an academic audience. Prerequisite: satisfactory completion of thesis proposal defense and consent of thesis advisor.

Communication Studies (COMS)

COURSES

COMS 0185. FORENSICS. 1 Hour. (TCCN = SPCH 1144)

Preparation for and participation in intercollegiate and intersquad forensic activities. Students engage in supervised research, development of debate skills and individual speaking activities. Prerequisite: permission.

COMS 1301. FUNDAMENTALS OF PUBLIC SPEAKING. 3 Hours. (TCCN = SPCH 1315)

Stress on development of the individual's speaking abilities and confidence in a variety of speaking situations.

COMS 1302. VOICE AND DICTION. 3 Hours. (TCCN = SPCH 1342)

Designed to improve the quality of the individual's speech. Enunciation, articulation, pronunciation, and the fundamentals of voice production. The phonetic alphabet as a visual means of teaching auditory differences.

COMS 2302. PROFESSIONAL AND TECHNICAL COMMUNICATION FOR SCIENCE AND ENGINEERING. 3 Hours.

Theory and practice in written and oral presentations with an emphasis on professional and technical communication for science and engineering. Prerequisites: 30 or more hours earned; ENGL 1301 and either ENGR 1300 or ENGL 1302.

COMS 2304. GROUP COMMUNICATION PRINCIPLES. 3 Hours. (TCCN = SPCH 2333)

Principles and practice of effective interaction within small groups including meeting planning, agenda setting, conflict management, and decision making.

COMS 2305. BUSINESS AND PROFESSIONAL COMMUNICATION. 3 Hours. (TCCN = SPCH 1321)

Insight into communication skills. Designed to give the student experience in interviewing, business presentations, organizational reports, and the relationship of visual and oral presentations to business.

COMS 3309. ORGANIZATIONAL COMMUNICATION. 3 Hours.

Communication functions within formally structured social systems such as business, government, and education. Emphasis on conceptual schemes for conducting analysis of training programs in organizational communication. Credit will not be given for both COMS 3309 and PCOM 3309. Prerequisite: COMS 2304 with a grade of C or better (2.0/4.0), COMS 1301, and 3 hours of Math.

COMS 3310. GROUP COMMUNICATION THEORY. 3 Hours.

Characteristics of group communication including group function and formation, norms, cohesion, problem solving, leadership, and ethics. Prerequisite: COMS 2304 with a grade of C or better (2.0/4.0) and 3 hours of Math.

COMS 3312. BACKGROUNDS OF PUBLIC ADDRESS. 3 Hours.

Traditional works pertinent to theories of communication. Emphasis on discovering the traditional bases shared by empirical and critical studies of rhetorical communication. Prerequisite: COMS 1301 and COMS 2304 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 3315. COMMUNICATION FOR EDUCATORS. 3 Hours.

Basic concepts, theories, research and processes relevant to formal and informal instructional situations. Units of study will focus on intrapersonal, interpersonal, small group, and presentational communication. Prerequisite: COMS 1301 and COMS 2304 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 3316. COMMUNICATION IN HUMAN RELATIONS. 3 Hours.

The human communication process within social, business, and family contexts. Theories and principles of interpersonal communication. Prerequisites: COMM 3315 and COMS 1301. COMS 2304 with a grade of C or better (2.0/4.0).

COMS 3320. INTERVIEW PRINCIPLES. 3 Hours.

Theory and practice in interviewing as it relates to information-gathering, questioning, and response analysis in probing, persuasive, employment, and survey interviews; practical and legal application in employment interviews; preparation of resume and cover letter. Prerequisite: One of the following: COMS 1301, COMS 2302, or COMS 2305.

COMS 3321. ORAL INTERPRETATION OF LITERATURE. 3 Hours.

The fundamental principles of oral interpretation and techniques of interpretation. Stresses background research concerning author and type of material. Prerequisite: COMS 1301. COMS 2304 with a grade of C or better (2.0/4.0).

COMS 3323. ORAL INTERPRETATION OF CHILDREN'S LITERATURE. 3 Hours.

Traditional oral interpretation principles and performance techniques as applied to various genres of children's literature. Prerequisite: COMS 1301, COMS 2304 with a grade of C or better (2.0/4.0).

COMS 4300. PERSUASIVE COMMUNICATION. 3 Hours.

Analysis of the means by which persuasive communication affects individuals and society. Extensive reading of theories of techniques of persuasion. Study of the adaptation of motivational appeals, structural strategies, and other persuasive techniques in interpersonal and public contexts. Prerequisite: COMM 3315 and COMS 1301; COMS 2304 with a grade of C or better (2.0/4.0).

COMS 4302. MODERN PUBLIC ADDRESS. 3 Hours.

Analysis of major 20th-century forms of public address and speakers. Application of various models for criticism and public address. Prerequisite: COMM 3315 and COMS 1301. COMS 2304 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 4315. BUSINESS PRESENTATIONS. 3 Hours.

The role of internal and external informative and persuasive presentations in business organizations. Extensive readings and practice with an emphasis on research, development, organization, and critical evaluation of oral and visual presentations. Credit will not be given for both COMS 4315 and PCOM 4315. Prerequisite: COMS 1301 and a grade of C or better (2.0/4.0) in COMS 2302 or COMS 2305.

COMS 4320. MANAGERIAL COMMUNICATION. 3 Hours.

Analysis of the role of the business manager; readings in research and theory with emphasis on problem-solving and motivation. Credit will not be given for both COMS 4320 and PCOM 4320. Prerequisite: COMM 3315 and COMS 3309 with a grade of C or better (2.0/4.0), or permission of the department.

COMS 4321. READERS THEATRE. 3 Hours.

Readers interpret various kinds of literature for an audience. Analysis and criticism of literature are stressed. Prerequisite: COMM 3315, a grade of C or better (2.0/4.0) in COMS 3321 or COMS 3323, or permission of the department.

COMS 4322. COMMUNICATION TRAINING AND DEVELOPMENT. 3 Hours.

The process of analyzing communication problems and providing training skills for businesses and organizations. Emphasizes practical knowledge of facilitating skill improvement in verbal and nonverbal communication. Prerequisite: COMS 1301 and a grade of C or better (2.0/4.0) in COMS 2302 or COMS 2305.

COMS 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis, covering research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission.

COMS 4393. COMMUNICATION TOPICS. 3 Hours.

Special studies in speech. Topics will vary from semester to semester. May be repeated once when topics vary. Prerequisite: 60 hours earned, and permission.

COMS 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research while working with business and industry. Individual conference to be arranged. Graded Pass/Fail. Prerequisite: 60 or more hours earned, and permission.

Communications Technology (CTEC)

COURSES

CTEC 2350. WEB COMMUNICATION DESIGN AND DEVELOPMENT 1. 3 Hours.

Overview of theoretical principles of communication, organization, human-computer interaction, and user experience research for effective communication over the Internet. This course provides an introduction to essential elements of Web design and development, including using markup and style sheet languages, developing information architecture, and assessing usability.

CTEC 3320. MULTIMODAL COMMUNICATION AND DESIGN. 3 Hours.

Application of contemporary communication theories to examine how meaning is constructed, interpreted and produced through multiple communication modalities. Students are expected to complete a theoretically informed, personal portfolio and accumulate skills in digital workflows, graphic creation and manipulation, audio-video editing, storyboarding, and compositing. Prerequisite: COMM 3303.

CTEC 3350. WEB COMMUNICATION DESIGN AND DEVELOPMENT 2. 3 Hours.

A continuation of CTEC 2350. This course provides in-depth examination of usability, accessibility, online rhetoric, and branding. Content also includes current Web communication technology including markup language, scripting and style sheet, for effective communication on the Web across multiple technological platforms. Prerequisite: CTEC 2350 with a grade of C (2.0/4.0 scale) or better, and 3 hours of Math.

CTEC 4309. INTERNET MARKETING COMMUNICATION. 3 Hours.

Course examines best practices in marketing communication; considers electronic commerce conducted via current communication and information technology. Discussion of theories, research strategies, usage trends, and current development. Prerequisite: COMM 3300, COMM 3315, a grade of C (2.0/4.0) or better in COMM 2311, and one of the following: ADVT 4300, CTEC 3350, PREL 3355, or COMM 4318.

CTEC 4321. DIGITAL COMMUNICATION MANAGEMENT. 3 Hours.

Study of corporate and organizational communication theories through a user-centered approach. Students will design, analyze, and evaluate the organization and structure of digital communication via the development of Web-based, database-supported interactive applications. Prerequisite: COMM 3315, a grade of C or better (2.0/4.0) in the following: COMM 2311, CTEC 2350, and CTEC 3350.

CTEC 4323. USER EXPERIENCE RESEARCH AND DESIGN. 3 Hours.

Study of contemporary theories of user experience research including human-computer interaction, interaction design, multimodal communication, and industrial design. Prerequisites: COMM 3315 and a grade of C or better (2.0/4.0) in the following: COMM 2311, CTEC 2350, CTEC 3320, CTEC 3350, or, for non-CTEC majors, permission of the department.

CTEC 4350. WEB COMMUNICATION DESIGN AND DEVELOPMENT 3. 3 Hours.

This capstone course of the CTEC sequence reviews and applies theoretical principles of communication, human-computer interaction, user experience research, and information architecture for effective communication over the Internet. The course includes web design, implementation, development and project management. Prerequisites: A grade of C (2.0/4.0) or better in the following courses: CTEC 2350, CTEC 3320, CTEC 3350, CTEC 4309, and either CTEC 4321 or CTEC 4323.

CTEC 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

CTEC 4393. SPECIAL TOPICS. 3 Hours.

Special studies in communication technology. Topic varies from semester to semester. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission.

CTEC 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research while working with business and industry. Individual conference to be arranged. Prerequisite: 60 or more hours earned and permission.

Computer Science and Engineering (CSE)

COURSES

CSE 1000. FRESHMAN UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 1105. INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING. 1 Hour.

Introduction to engineering concepts, the computer science and engineering disciplines, skills for written communication, and departmental orientation.

CSE 1106. INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING. 1 Hour.

A practical approach to hands-on computer hardware and software systems in a laboratory environment. Students will be exposed to basic engineering concepts such as simple circuits, digital logic, embedded controllers, computer networking, software design, and Linux operating systems. Prerequisite: C or better in CSE 1310.

CSE 1205. INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING. 2 Hours.

A practical approach to hands-on computer hardware and software systems in a laboratory environment. Students will be exposed to basic engineering concepts such as simple circuits, digital logic, embedded controllers, computer networking, software design, and Linux operating systems. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: CSE 1310.

CSE 1301. COMPUTER LITERACY. 3 Hours. (TCCN = COSC 1301)

For those persons having an interest in finding out what a computer is (and is not), the types of problems suited for computers, and how to utilize a computer to solve problems. The organization and characteristics of computers; application of commercial software such as word processors, spreadsheets, database packages, and communications packages.

CSE 1309. INTRODUCTION TO PROGRAMMING FOR NON-ENGINEERING MAJORS. 3 Hours.

An introduction to the algorithmic process and to programming using basic control and data structures. This course is taught using the Python programming language. Prerequisite: Corequisite MATH 1302.

CSE 1310. INTRODUCTION TO COMPUTERS & PROGRAMMING. 3 Hours. (TCCN = COSC 1320)

An introduction to the computer, to the algorithmic process, and to programming using basic control and data structures, using a procedural language. Prerequisite: C or better in MATH 1302 or C or better in (or concurrent enrollment in) a subsequent mathematics course (Math 1421, Math 1426, Math 2425, Math 2326, Math 3330, HONR-SC 1426 or HONR-SC 2425) and C or better in UNIV 1131 (or concurrent enrollment) or ENGR 1101 (or concurrent enrollment).

CSE 1311. INTRODUCTION TO PROGRAMMING FOR ENGINEERS. 3 Hours.

An introduction to the computer, to the algorithmic process, and to programming using basic control and data structures. This class is currently using the C language. Prerequisite: C or better in (or concurrent enrollment in) one of the following; (Math 1421, Math 1426, Math 2425, Math 2326, Math 3330, HONR-SC 1426, or HONR-SC 2425).

CSE 1320. INTERMEDIATE PROGRAMMING. 3 Hours.

Programming concepts beyond basic control and data structures. Emphasis is given to data structures including linked-lists and trees as well as modular design consistent with software engineering principles. Prerequisite: C or better in CSE 1310 and C or better in (or concurrent enrollment in) (Math 1421, Math 1426, Math 2425, Math 2326, Math 3330, HONR-SC 1426, or HONR-SC 2425) and C or better in UNIV 1131 (or concurrent enrollment) or ENGR 1101 (or concurrent enrollment).

CSE 1325. OBJECT-ORIENTED PROGRAMMING. 3 Hours.

Object-oriented concepts, class diagrams, collection classes, generics, polymorphism, and reusability. Projects involve extensive programming and include graphical user interfaces and multithreading. Prerequisite: CSE 1320.

CSE 1392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of advisor.

CSE 2000. SOPHOMORE UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 2100. PRACTICAL COMPUTER HARDWARE/SOFTWARE SYSTEMS. 1 Hour.

A practical approach to hands-on computer hardware and software systems in a laboratory environment. Students will be exposed to basic design concepts using off-the-shelf hardware components and to tools that enable the design of complex software systems. Prerequisite: CSE 1320.

CSE 2312. COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE PROGRAMMING. 3 Hours.

Computer organization from the viewpoint of software, including instruction set architectures, memory addressing, integer and floating-point representation and arithmetic, instruction pipelining, cache, memory virtualization, and I/O. The relationship of higher-level programming languages to assembly language and instruction set architecture is also explored. Prerequisite: a C or better in CSE 1320 and a C or better in CSE 1205 or CSE 1105.

CSE 2315. DISCRETE STRUCTURES. 3 Hours.

Propositional and predicate logic, mathematical proof techniques, sets, combinatorics, functions and relations, graphs, and graph algorithms.

Prerequisite: C or better in CSE 1310 and C or better in MATH 1426 (or C or better in or concurrent enrollment in MATH 2425).

CSE 2392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of advisor.

CSE 2440. CIRCUIT ANALYSIS. 4 Hours.

Basic principles of electrical circuits using resistors, capacitors and inductors. Filter analysis and synthesis using complex algebra. Introduction to operational amplifiers. Time domain and frequency domain analysis and taxonomy of signals. Concurrent laboratory experiments complement lecture topics. Prerequisite: Grade C or better in MATH 2425 and PHYS 1444.

CSE 2441. DIGITAL LOGIC DESIGN. 4 Hours.

Analysis, design and testing of combinational and sequential logic circuits. Topics include Boolean algebra, logic circuit minimization techniques, synchronous sequential circuit design, algorithmic state machine design, design of arithmetic/logic and control units, and Verilog programming of FPGA devices. Prerequisite: CSE 1320 and CSE 2315.

CSE 3000. JUNIOR UNDERGRADUATE RESEARCH JUNIOR UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 3302. PROGRAMMING LANGUAGES. 3 Hours.

Introduction, analysis, and evaluation of the important concepts found in a variety of programming languages. Formalisms useful in specifying language syntax and semantics; programming language paradigms such as algorithmic, functional, logic, and object-oriented. Prerequisite: C or better in each of the following: CSE 1325, CSE 2312 and CSE 3318.

CSE 3310. FUNDAMENTALS OF SOFTWARE ENGINEERING. 3 Hours.

Software engineering principles, processes, and techniques; software development approaches focusing on functional analysis and functional design methods. Configuration management, implementation strategies, and testing. Team project. Prerequisite: C or better in each of the following: CSE 1320, CSE 1325 and CSE 2315.

CSE 3311. OBJECT-ORIENTED SOFTWARE ENGINEERING. 3 Hours.

Study of an agile unified methodology and its application to object-oriented software development. Topics include requirements acquisition, use case derivation, modeling and design of interaction behavior and state behavior, introduction to design patterns, derivation of design class diagrams, implementation considerations and deployment. Team project. Prerequisite: C or better in each of the following: CSE 3310 and CSE 3318.

CSE 3313. INTRODUCTION TO SIGNAL PROCESSING. 3 Hours.

Examines models for presentation and processing of digital signals. Sampling theorem, correlation and convolution, time and frequency analysis of linear systems, Fourier transform, Z-transform, design of digital filters structures for discrete time systems. Prerequisite: C or better in each of the following: CSE 3318 and either CSE 3380 or MATH 3330.

CSE 3314. PROFESSIONAL PRACTICES. 3 Hours.

Ethics. Contemporary social aspects and responsibilities of computing in a global, societal context. Lifelong learning goals and resources. Entrepreneurship and intellectual property. Project involving written and oral communication. Prerequisite: C or better in CSE 3318 and COMS 2302.

CSE 3315. THEORETICAL CONCEPTS IN COMPUTER SCIENCE AND ENGINEERING. 3 Hours.

Selected theoretical concepts including regular and context free languages, finite state and pushdown automata, Turing machines, computability, and NP-completeness. Prerequisite: C or better in CSE 2315.

CSE 3318. ALGORITHMS & DATA STRUCTURES. 3 Hours.

Design and analysis of algorithms with an emphasis on data structures. Approaches to analyzing lower bounds on problems and upper bounds on algorithms. Classical algorithm design techniques including algorithms for sorting, searching, and other operations on data structures such as hash tables, trees, graphs, strings, and advanced data structures, dynamic programming and greedy approaches. Prerequisite: CSE 1320 and CSE 2315.

CSE 3320. OPERATING SYSTEMS. 3 Hours.

Functions and components of an operating system, including process synchronization, job scheduling, memory management, file systems protection, and deadlocks. Related system software, such as loaders, linkers, assemblers, and windowing systems. Prerequisite: C or better in CSE 2312.

CSE 3323. ELECTRONICS. 3 Hours.

Design, analysis and testing of electronic circuits. Topics include operational amplifiers, diodes, bipolar-junction transistors (BJTs), and field-effect transistors (FETs) and their applications. Concurrent laboratory experiments complement lecture topics. Prerequisite: C or better in CSE 2440.

CSE 3330. DATABASE SYSTEMS AND FILE STRUCTURES. 3 Hours.

Database system architecture; file structures for databases, including indexing hashing, and B+-trees; the relational model and algebra; the SQL database language; Entity-Relationship data modeling; functional dependencies and basic normalization. Prerequisite: C or better in each of the following: CSE 1325 and CSE 3318.

CSE 3380. LINEAR ALGEBRA FOR CSE. 3 Hours.

Solving systems of equations, matrix algebra, determinants, vector spaces, orthogonality and least squares, with applications to computer science. Prerequisite: C or better in CSE 2315.

CSE 3392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of advisor.

CSE 3442. EMBEDDED SYSTEMS I. 4 Hours.

Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications. Prerequisite: C or better in each of the following: CSE 2312, CSE 2440 and CSE 2441.

CSE 4000. SENIOR UNDERGRADUATE RESEARCH SENIOR UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

CSE 4191. INDIVIDUAL PROJECTS. 1 Hour.

Special problems in computer science and engineering on an individual basis. Topics may change from semester to semester. May be repeated for credit. Departmental approval must be obtained in advance for degree credit. Prerequisite: consent of instructor and department chairperson.

CSE 4303. COMPUTER GRAPHICS. 3 Hours.

Theory and practice for the visual representation of data by computers including display devices, output primitives, planes and curved surfaces, two- and three-dimensional transformations, parallel and perspective viewing, removal of hidden lines and surfaces, illumination models, ray tracing, radiosity, color models, and computer animation. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, and either CSE 3380 or MATH 3330.

CSE 4305. COMPILERS FOR ALGORITHMIC LANGUAGES. 3 Hours.

Review of programming language structures, translation, and storage allocation. Theory and practice of compilers and issues in compiler construction including parsing, intermediate code generation, local optimization problems such as register allocation, data-flow analysis, and global optimization. Prerequisite: Admitted into an Engineering Professional Program. C or better in the following: CSE 3302 and CSE 3315.

CSE 4308. ARTIFICIAL INTELLIGENCE. 3 Hours.

An introduction to the field of artificial intelligence studying basic techniques such as heuristic search, deduction, learning, problem solving, knowledge representation, uncertainty reasoning and symbolic programming languages such as LISP. Application areas may include intelligent agents, data mining, natural language, machine vision, planning and expert systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318 and (IE 3301 or MATH 3313).

CSE 4309. FUNDAMENTALS OF MACHINE LEARNING. 3 Hours.

This course offers an introduction to machine learning. Topics include naive Bayes classifiers, linear regression, linear classifiers, neural networks and backpropagation, kernel methods, decision trees, feature selection, clustering, and reinforcement learning. A strong programming background is assumed, as well as familiarity with linear algebra (vector and matrix operations), and knowledge of basic probability theory and statistics. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, IE 3301 or MATH 3313, and CSE 3380 or MATH 3330.

CSE 4310. FUNDAMENTALS OF COMPUTER VISION. 3 Hours.

This course introduces students to basic concepts and techniques in computer vision. The topics covered include morphological operations, connected component analysis, image filters, edge detection, feature extraction, object detection, object recognition, tracking, gesture recognition, image formation and camera models, calibration, and stereo vision. A strong programming background is assumed, as well as familiarity with linear algebra (vector and matrix operations), and knowledge of basic probability theory and statistics. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, IE 3301 or MATH 3313, and CSE 3380 or MATH 3330.

CSE 4314. PROFESSIONAL PRACTICES. 3 Hours.

Ethics. Contemporary social aspects and responsibilities of computing in a global, societal context. Lifelong learning goals and resources. Entrepreneurship and intellectual property. Project involving written and oral communication. Prerequisite: Admitted into an Engineering Professional Program. C or better in COMS 2302.

CSE 4316. COMPUTER SYSTEM DESIGN PROJECT I. 3 Hours.

Analysis and design of an industry-type project that involves hardware and software components to meet desired needs within realistic constraints and standards. The project is to be completed in CSE 4317 the following semester. Multidisciplinary teams of CSE 4316 students are required to develop, review, and present problem definition, project planning, requirements formulation, and design specification. Prerequisites: Admitted into a CSE Professional Program. For academic plan CS__CS or SE__SE, C or better in CSE 3310 and CSE 3320, and C or better in CSE 4314 (or concurrently). For academic plan CSE_CP, C or better in CSE 3320 and CSE 3442, and C or better in CSE 4314 (or concurrently).

CSE 4317. COMPUTER SYSTEM DESIGN PROJECT II. 3 Hours.

Implementation, integration, quality assurance through peer review and testing, and deployment of the project designed in CSE 4316; oral presentation, documentation and project demonstration. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 4316 and continuation with the same team.

CSE 4321. SOFTWARE TESTING & MAINTENANCE. 3 Hours.

Study of software quality assurance, software testing, and software maintenance processes, methods and techniques including formal review techniques, software verification, validation, and testing, types of software maintenance, maintenance activities, and regression testing. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3310.

CSE 4322. SOFTWARE PROJECT MANAGEMENT. 3 Hours.

Introduction to software project management. Issues include effort estimation and costing, project planning and scheduling, option analysis, software quality assurance, and formal technical reviews. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3310.

CSE 4323. QUANTITATIVE COMPUTER ARCHITECTURE. 3 Hours.

Pipelined processors, parallel processors including shared and distributed memory, multicore, Very Long Instruction Word (VLIW) and graphics processors, memory and cache design, computer peripherals, and computer clusters. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4331. DATABASE IMPLEMENTATION AND THEORY. 3 Hours.

Review of the relational model and algebra; relational calculus; relational database design theory; advanced data modeling concepts; object-oriented and object-relational databases; database system implementation techniques, including concurrency control, recovery, atomic commitment, and query processing and optimization, database security; introduction to advanced concepts, such as active, deductive, spatial, temporal, multimedia and distributed databases. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3330.

CSE 4334. DATA MINING. 3 Hours.

Automatic discovery of patterns and knowledge from large data repositories, including databases, data warehouses, Web, document collections, and transactions. Basic topics of data mining including data preprocessing, data warehousing and online analytical processing (OLAP), data cube, frequent pattern and association rule mining, correlation analysis, classification and prediction and clustering, as well as advanced topics covering the techniques and applications of data mining on Web and text documents. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: IE 3301 (or MATH 3313). Co-requisite: CSE 3330.

CSE 4340. FUNDAMENTALS OF WIRELESS NETWORKS. 3 Hours.

Fundamentals of wireless networks, radio spectrum, coding and modulation, multiple access techniques, antennas, noise and interference, channels, demodulation and decoding, error rates and capacity, link budgets, medium access control, rate adaption, and wireless LAN/PAN, ad-hoc, and sensor networks. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 4344 or CSE 4352 or consent of instructor.

CSE 4342. EMBEDDED SYSTEMS II. 3 Hours.

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3323, CSE 3442, and CSE 3313.

CSE 4344. COMPUTER NETWORK ORGANIZATION. 3 Hours.

Design and analysis of computer networks. Emphasis on the OSI architecture but discusses other schemes (e.g., ARPAnet). Data link control, local networks, protocols/architectures, network access protocols, transport protocols, internetworking, and ISDN. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4345. COMPUTATIONAL METHODS. 3 Hours.

Introduction to numerical methods for solving problems in computer science and computer engineering. Topics include computer arithmetic, linear and nonlinear equations, eigenvalue problems, least squares, optimization, interpolation, and simulation. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following IE 3301 or MATH 3313, CSE 3318, and either CSE 3380 or MATH 3330.

CSE 4351. PARALLEL PROCESSING. 3 Hours.

Theory and practice of parallel processing, including characterization of parallel processors, models for memory, algorithms, and interprocess synchronization. Issues in parallelizing serial computations, efficiency and speedup analysis. Programming exercises using one or more concurrent programming languages, on one of more parallel computers. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4352. IOT AND NETWORKING. 3 Hours.

Study of Ethernet stacks and layers, full implementation of an Ethernet stack and a basic low-latency, small footprint IoT protocol on bare metal embedded devices and embedded Linux systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4354. REAL-TIME OPERATING SYSTEMS. 3 Hours.

Design and implementation of a real-time operating system with cooperative and preemption context switching, priority scheduling, semaphores, message queues, and inter-process communications on bare metal microcontrollers. Prerequisite: Admitted into an Engineering Professional Program. C or better in both CSE 3320 and CSE 3442.

CSE 4355. ELECTROMECHANICAL SYSTEMS AND SENSORS. 3 Hours.

Applications of electronics and microcontrollers to the control of electromechanical systems. Topics include driving brushless motors (including stepper motors), brushed permanent magnet motors, and other mechanical actuators; the use of the sensors including IMU, LIDAR, RADAR, GPS, capacitive/inductive sensing, laser distance, thermocouples, strain, pressure, optical encoders, and Hall devices; and control applications. Prerequisite: Admitted into an Engineering Professional Program. C or better in both CSE 3323 and CSE 3442.

CSE 4356. SYSTEM ON CHIP (SOC) DESIGN. 3 Hours.

Design of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4357. ADVANCED DIGITAL LOGIC DESIGN. 3 Hours.

Hierarchical organization, design, simulation, implementation, and testing of digital systems. Industrial standard computer-aided design tools including hardware description languages (HDLs), field-programmable gate arrays (FPGAs), and other prototyping hardware and software will be employed. Design of arithmetic and other algorithmic processes will be covered. A term project will be required. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4358. MICROPROCESSOR SYSTEMS. 3 Hours.

Asynchronous and synchronous memory interfacing and timing, design and implementation of DMA controllers and SDRAM controllers. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4360. AUTONOMOUS ROBOT DESIGN AND PROGRAMMING. 3 Hours.

An introduction to robotics and the design and programming of autonomous robot systems. Topics include basic kinematics, dynamics, and control, as well as sensors, knowledge representation, and programming techniques. Course work includes individual and group projects involving the building and programming of simulated and real robots. Prerequisite: Admitted into an Engineering Professional Program. C or better in each of the following: CSE 3318, CSE 3320 and CSE 3380 (or MATH 3330).

CSE 4361. SOFTWARE DESIGN PATTERNS. 3 Hours.

In-depth study of software design patterns including description of patterns, design principles and techniques used by patterns as well as application of patterns to solving practical design problems. Team project. Prerequisites: Admitted into an Engineering Professional Program. C or better in CSE 3311.

CSE 4372. RISC PROCESSOR DESIGN. 3 Hours.

Design of a RISC processor, based on RISC V and custom instruction set architectures with implementation on an FPGA target for test and verification. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3442.

CSE 4373. GENERAL PURPOSE GPU PROGRAMMING. 3 Hours.

Study of general purpose computation on a GPU. Topics include GPU architectures, stream processing, and programming languages such as OpenCL and CUDA that realize data-parallel, high-throughput compute kernels on GPU architectures. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4376. DIGITAL COMMUNICATION SYSTEMS. 3 Hours.

Study of digital communication systems including source and channel coding, digital modulation techniques, inter-symbol interference, and multi-channel combining and multiple-access methods. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3313.

CSE 4377. WIRELESS COMMUNICATION SYSTEMS. 3 Hours.

Study of wireless systems including modulation, amplification, linearization techniques, filtering, antennas, propagation, reception, and demodulation. Topics include link budget and interference analysis of real systems. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3313.

CSE 4378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

CSE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in CSE 4378 and admission to the UVS certificate program.

CSE 4380. INFORMATION SECURITY. 3 Hours.

Hands-on introduction to the basics of security. Includes system security, buffer overflows, a high-level overview of cryptography, firewalls and intrusion detection/prevention, malware, penetration testing, forensics, and system administration. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4381. INFORMATION SECURITY II. 3 Hours.

Deeper study of the fundamentals of security, including symmetric key cryptography, public key cryptography, cryptographic protocols, malware design, network attacks and defenses, data security, privacy, and wireless security. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320 and C or better in CSE 4344 (or concurrently).

CSE 4382. SECURE PROGRAMMING. 3 Hours.

This course is an introduction to methods of secure software design and development. Students will learn about the major security problems found in software today. Using this knowledge, they will work in teams to find these bugs in software, fix the bugs, and design software so that it has fewer security problems. Static analysis tools will be a core part of the class, but students will also be exposed to black box testing tools. Topics will include input validation, buffer overflow prevention, error handling, web application issues, and XML. Prerequisite: Admitted into an Engineering Professional Program. C or better in CSE 3320.

CSE 4391. INDIVIDUAL PROJECTS. 3 Hours.

Special problems in computer science and engineering on an individual basis. Topics may change from semester to semester. May be repeated for credit. Departmental approval must be obtained in advance for degree credit. Prerequisite: consent of instructor and department chairperson.

CSE 4392. SPECIAL TOPICS. 3 Hours.

New developments in the field of computer science and engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: consent of instructor.

CSE 5191. INDIVIDUAL STUDY IN COMPUTER SCIENCE. 1 Hour.

Topics dealing with special problems in Computer Science on an individual instruction basis. May be repeated for credit.

CSE 5192. INDIVIDUAL STUDY IN COMPUTER SCIENCE. 1 Hour.

Topics dealing with special problems in Computer Science on an individual instruction basis. May be repeated for credit.

CSE 5194. ORIENTATION SEMINAR. 1 Hour.

Presentation of computer science research by CSE faculty, students, and invited speakers. Preparation of program of work.

CSE 5300. FOUNDATION OF COMPUTING. 3 Hours.

Basics of programming, data structures, and algorithms. Introduction to databases and operating systems. Basics of discrete structures and computability. Course is used for the Master's in Data Science degree program and certificate programs for non-CSE majors. It cannot be taken for credit towards any CSE degree.

CSE 5301. DATA ANALYSIS & MODELING TECHNIQUES. 3 Hours.

Concepts and techniques for performing experiments and analyzing their results. Topics cover fundamental statistics, probability and data-representation concepts, interference through hypothesis testing, information theory, queuing models, and selected topics such as capacity planning and bottleneck analysis, clustering and classification, and hidden Markov models with computer science applications as examples.

CSE 5306. DISTRIBUTED SYSTEMS. 3 Hours.

Issues and challenges in distributed systems, including: communication, distributed processes, naming and name services, synchronization, consistency and replication, transactions, fault tolerance and recovery, security, distributed objects, and distributed file systems.

CSE 5307. PROGRAMMING LANGUAGE CONCEPTS. 3 Hours.

Study and evaluation of concepts in programming language for modern computer systems. Programming projects are selected from string-based, symbolic, algorithmic, and object-oriented languages.

CSE 5311. DESIGN AND ANALYSIS OF ALGORITHMS. 3 Hours.

Techniques for analyzing upper bounds for algorithms and lower bounds for problems. Problem areas include: sorting, data structures, graphs, dynamic programming, combinatorial algorithms, introduction to parallel models.

CSE 5314. COMPUTATIONAL COMPLEXITY. 3 Hours.

Sequential and parallel complexity classes (e.g., NP-complete and P-complete) and representative problems in languages, logic and graphs. Reduction techniques. Approximate solutions. Complexity hierarchies.

CSE 5315. NUMERICAL METHODS. 3 Hours.

Selected topics from the theory and practice of using automatic digital computers for approximating arithmetic operations, approximating functions, solving systems of linear and non-linear equations, and solving ordinary and partial differential equations.

CSE 5316. MODELING, ANALYSIS, AND SIMULATION OF COMPUTER SYSTEMS. 3 Hours.

Mathematical formalism and techniques used for computer system modeling and analysis. Reviews probability, transform theory, coding theory, and Petri nets. Topics may include knowledge based modeling, validation procedures, various simulation techniques for stochastic process and real-time distributed systems.

CSE 5317. DESIGN AND CONSTRUCTION OF COMPILERS. 3 Hours.

Review of programming language structures, translation, and storage allocation. Introduction to context-free grammars and their description. Design and construction of compilers including lexical analysis, parsing and code generation techniques. Error analysis and simple code optimizations will be introduced. Prerequisite: MATH 1426, or equivalent, or permission of advisor.

CSE 5318. APPLIED GRAPH THEORY AND COMBINATORICS. 3 Hours.

Connected and disconnected graphs; trees; graph planarity; Hamiltonian circuits and Euler tours; coloring; flow and graph optimization algorithms, fundamentals of combinatorics; generating functions and recurrence relations; inclusion-exclusion principle; applications in telecommunications; mobile computing, parallel processing and multiprocessor architectures.

CSE 5319. SPECIAL TOPICS IN THEORY & ALGORITHMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5320. SPECIAL TOPICS IN SOFTWARE ENGINEERING. 3 Hours.

May be repeated for credit when topics vary.

CSE 5321. SOFTWARE TESTING. 3 Hours.

Study of software quality assurance, software testing process, methods, techniques and tools. Topics include formal review techniques, black box testing, white box testing, integration testing, acceptance testing, regression testing, performance testing, stress testing, and testing of object-oriented software.

CSE 5322. SOFTWARE DESIGN PATTERNS. 3 Hours.

Study and application of object-oriented software design patterns to software development and maintenance in the object-oriented paradigm. Prerequisite: CSE 5324 or concurrent enrollment.

CSE 5323. SOFTWARE ENGINEERING PROCESSES. 3 Hours.

Introduces software lifecycle models, process disciplines, project management concepts, and applies them by mastering the Personal Software Process (PSP).

CSE 5324. SOFTWARE ENGINEERING: ANALYSIS, DESIGN, AND TESTING. 3 Hours.

Motivations, principles, and goals of software engineering; technical aspects of software projects, including: review of structured analysis and structured design, emphasis on object-oriented methods of requirements analysis and specification, design, and implementation; software testing concepts; team project.

CSE 5325. SOFTWARE ENGINEERING: MANAGEMENT, MAINTENANCE, AND QUALITY ASSURANCE. 3 Hours.

Issues and principles for software management; managerial and support aspects of software projects, including: processes, estimation techniques, planning and scheduling, risk analysis, metrics, and quality assurance. Other topics include: configuration management, verification and validation, and maintenance; team project.

CSE 5326. REAL-TIME SOFTWARE DESIGN. 3 Hours.

Specification, design, and analysis of real-time systems including real-time logics and decidability of real-time conditions; real-time scheduling approaches, system requirement specification; procedural and object-oriented methods; specialized analysis techniques for distributed and for control applications; team project. Prerequisite: CSE 5324 or concurrent enrollment.

CSE 5327. TELECOMMUNICATIONS SOFTWARE DEVELOPMENT. 3 Hours.

General understanding and classification of telecommunications systems and applications. Issues relating to the analysis, design, implementation, and testing of telecommunications software. Prerequisite: CSE 5324 and CSE 5344.

CSE 5328. SOFTWARE ENGINEERING TEAM PROJECT I. 3 Hours.

Apply the knowledge and skills gained in other software engineering courses to synthesize a solution to a significant and realistic software development team project. Participate in activities including: proposal writing, problem analysis, software requirements specification, project planning, software design, implementation, software quality assurance, software testing, integration, and demonstration. Required for and open only to Master of Software Engineering degree candidates. Prerequisite: one of CSE 5321, CSE 5322, CSE 5325.

CSE 5329. SOFTWARE ENGINEERING TEAM PROJECT II. 3 Hours.

Apply the knowledge and skills gained in other software engineering courses to synthesize a solution to a significant and realistic software development team project. Participate in activities including: proposal writing, problem analysis, software requirements specification, project planning, software design, implementation, software quality assurance, software testing, integration, and demonstration. Required for and open only to Master of Software Engineering degree candidates. Prerequisite: one of CSE 5321, CSE 5322, CSE 5325.

CSE 5330. DATABASE SYSTEMS. 3 Hours.

Database system architecture; management and analysis of files, indexing, hashing, and B+-trees; the relational model and algebra; the SQL database language; database programming techniques, database design using Entry-Relationship, extended E-R, and UML modeling; basics of normalization. Introduction to database security, query processing and transaction management. Prerequisite: CSE 2320.

CSE 5331. DBMS MODELS AND IMPLEMENTATION TECHNIQUES. 3 Hours.

DBMS system implementation techniques, including query optimization, transaction processing, concurrency control, buffer management and recovery. Object-oriented, object-relational and XML databases. Introduction to advanced database models, such as active, distributed, temporal, spatial and data warehousing.

CSE 5332. DATA SCIENCE. 3 Hours.

This inspirational course follows a data-science-for-all perspective that views data acumen as part of literacy. It aims to instill in students the data acumen, i.e., the basic skills to wrestle with data, to draw insights from data, to make sound decisions responsibly using data, and to effectively communicate about data-driven findings and decisions. Topics include 1) data management: data curation, preparation, model, and querying; 2) data description and visualization: exploratory data analysis, graphics, user interface and user experience design; 3) machine learning and knowledge discovery: supervised learning, unsupervised learning, pattern and knowledge extraction, deep learning, model evaluation and interpretation. Prerequisite: MATH 1301, or MATH 1302, or MATH 1308, or MATH 1426, or equivalent and permission of advisor.

CSE 5333. CLOUD COMPUTING. 3 Hours.

A survey of state of the art cloud computing paradigms: design, implementation, and programming distributed, scalable storage and computational systems. IaaS, PaaS, and SaaS (Infrastructure, Platform and Software as a Service), Hadoop, EC2, S3, and Azure are discussed.

CSE 5334. DATA MINING. 3 Hours.

Preparing data for mining, using preprocessing, data warehouses and OLAP; data mining primitives, languages and system architecture; data mining techniques including association rule mining, classification/prediction and cluster analysis.

CSE 5335. WEB DATA MANAGEMENT. 3 Hours.

This course provides an in depth study of models, languages and techniques for large-scale Web data management in distributed and heterogeneous environments. Topics include: Web programming with an emphasis on Web data management, Web Services, semi-structured data, XML standards, modern Web search engines, web information systems, Web query languages, distributed computing, metadata management with RDF, and Semantic Web.

CSE 5339. SPECIAL TOPICS IN DATABASE SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5342. EMBEDDED SYSTEMS II. 3 Hours.

Advanced course in design of microcontroller-based systems. Emphasis is on the application of microcontrollers to real-time problems. Topics include the study of the differences in bare metal and embedded Linux implementations, developing applications including PID controllers, and system aspects such as bootloader design and watchdog supervision. Prerequisite: CSE 3323 and CSE 3442 or consent of instructor.

CSE 5344. COMPUTER NETWORKS. 3 Hours.

Study of computer network architectures, protocols, and interfaces. The OSI reference model and the Internet architecture will be discussed. Networking techniques such as multiple access, packet/cell switching, and internetworking will be studied. Discussion will also include end-to-end protocols, congestion control, high-speed networking, and network management. Emphasis will be on Internet and ATM. Prerequisite: CSE 3320 or consent of instructor.

CSE 5345. FUNDAMENTALS OF WIRELESS NETWORKS. 3 Hours.

Fundamentals of wireless networks, radio spectrum, coding and modulation, multiple access techniques, antennas, noise and interference, channels, demodulation and decoding, error rates and capacity, link budgets, medium access control, rate adaption, and wireless LAN/PAN, ad-hoc, and sensor networks. Prerequisite: At least one of these courses: CSE 4344, CSE 4352, CSE 5352, or CSE 5344 or consent of instructor.

CSE 5346. NETWORKS II. 3 Hours.

This course provides an in depth study and comparison of the two primary networking paradigms, Internet/broadcast and switched, using two technologies, IPv6 and ATM, as representative examples. The course is implementation-oriented, focusing on issues such as routing, broadcast, multicast, mobility, network configuration, and quality of service. Prerequisite: CSE 5344.

CSE 5347. FUNDAMENTALS OF BLOCKCHAIN & CRYPTOCURRENCY TECHNOLOGIES. 3 Hours.

This course covers the technical concepts underlying blockchains and decentralized cryptocurrency systems, such as Bitcoin and Ethereum, including decentralized ledgers (blockchains), decentralized consensus, smart contracts and zero-knowledge proof systems.

CSE 5348. MULTIMEDIA SYSTEMS. 3 Hours.

Representations and techniques for processing, communicating, and compression of text, audio, graphics, and video in real time. Project integrating these topics. Prerequisite: CSE 3320.

CSE 5349. SPECIAL TOPICS IN NETWORKING. 3 Hours.

May be repeated for credit when topics vary.

CSE 5350. COMPUTER ARCHITECTURE II. 3 Hours.

A study of advanced uniprocessor and basic multiprocessor systems. Topics may include memory management systems, pipelined processors, array and vector processors, and introduction to architecture of multiprocessor systems. Prerequisite: CSE 3322 or consent of instructor.

CSE 5351. PARALLEL PROCESSING. 3 Hours.

Covers the theory and practice of parallel processing. Theoretical topics include: abstract models and algorithms for shared memory computation (PRAM); algorithms for various topologies such as meshes and hypercubes; efficiency and speedup analysis. Problem areas include data structures, numerical methods, graphs, combinatorics. Practical topics include synchronization, routing, scheduling, parallelizing serial computations, programming languages. Includes programming exercises using one or more concurrent programming languages, on one or more parallel computers. Prerequisite: CSE 3320 or consent of instructor.

CSE 5352. IoT AND NETWORKING. 3 Hours.

Study of protocol stacks and layers, implementation of an Ethernet protocol stack, and design of a basic low-latency, small footprint IoT protocol on bare metal embedded devices and embedded Linux systems. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5353. DISTRIBUTED COMPUTING. 3 Hours.

Programming languages, support components, coordination models, and fundamental algorithms for distributed and clustered systems. Prerequisite: CSE 5306.

CSE 5354. REAL-TIME OPERATING SYSTEMS. 3 Hours.

Implementation of a real-time operating system with cooperative and preemption context switching, priority scheduling, semaphores, message queues, and inter-process communications on bare metal microcontrollers. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5355. ELECTROMECHANICAL SYSTEMS AND SENSORS. 3 Hours.

Applications of electronics and microcontrollers to the control of electromechanical systems. Topics include driving brushless motors (including stepper motors), brushed permanent magnet motors, and other mechanical actuators; the use of the sensors including IMU, LIDAR, RADAR, GPS, capacitive/inductive sensing, laser distance, thermocouples, strain, pressure, optical encoders, and Hall devices; and control applications. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5356. SYSTEM ON CHIP (SoC) DESIGN. 3 Hours.

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5357. ADVANCED DIGITAL LOGIC DESIGN. 3 Hours.

Hierarchical organization, design, simulation, implementation, and testing of digital systems. Industrial standard computer-aided design tools including hardware description languages (HDLs), field-programmable gate arrays (FPGAs), and other prototyping hardware and software will be employed. Design of arithmetic and other algorithmic processes will be covered. A term project will be required. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5358. MICROPROCESSOR SYSTEMS. 3 Hours.

Design of asynchronous and synchronous memory interfaces, study of advanced bus architectures, analysis of bus timing, and implementation of DMA controllers and SDRAM controllers. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5359. SPECIAL TOPICS IN SYSTEMS & ARCHITECTURE. 3 Hours.

May be repeated for credit when topics vary.

CSE 5360. ARTIFICIAL INTELLIGENCE I. 3 Hours.

Introduction to the methods, concepts and applications of artificial intelligence, including knowledge representation, search, theorem proving, planning, natural language processing, and study of AI programming languages. Prerequisite: CSE 2320 and CSE 3315, or consent of instructor.

CSE 5361. ARTIFICIAL INTELLIGENCE II. 3 Hours.

Continuation of artificial intelligence methods and techniques, including uncertainty reasoning, machine learning, perception, and advanced topics in knowledge representation, search and planning. Emphasis on design and implementation of AI solutions. Prerequisite: CSE 5360 or consent of instructor.

CSE 5362. SOCIAL NETWORKS AND SEARCH ENGINES. 3 Hours.

Social networks, Search Engines, Recommendation systems, Question & Answering systems are web-enabled Information Technology main stream. This course covers the foundations of these technology including text/query processing, web content analysis, basic graph theory, random walk, PageRank, power law distribution, random graphs, small world, growth models, and network diffusion. Prerequisite: CSE 5311.

CSE 5364. ROBOTICS. 3 Hours.

An introduction to robotics and the design and programming of autonomous robot systems. Topics include basic kinematics, dynamics, and control, as well as sensors, knowledge representation, and programming techniques. Coursework includes individual and group projects involving the building and programming of simulated and real robots. Prerequisite: CSE 2320 and CSE 3442.

CSE 5365. COMPUTER GRAPHICS. 3 Hours.

Input/output devices and programming techniques suitable for the visual representation of data and images. Prerequisite: CSE 1320, analytic geometry and linear algebra, or consent of instructor.

CSE 5366. DIGITAL SIGNAL PROCESSING. 3 Hours.

Introduction to principles and applications of digital signal processing. Topics include: analysis of signals and systems, Fourier and Z transforms, digital filter design techniques (FIR and IIR), autoregressive (AR) and autoregressive moving average (ARMA) modeling. Applications to science and engineering include: financial predictions and processing of digital music. Laboratory work includes some programming and use of high quality library routines and packages such as Mathematica, Matlab. Prerequisite: CSE 1320 and consent of Graduate Advisor.

CSE 5367. PATTERN RECOGNITION. 3 Hours.

Principles and various approaches of pattern recognition processes, including Bayesian classification, parametric/non-parametric classifier design, feature extraction for signal representation, and techniques for classification and clustering. Current issues in pattern recognition research will also be examine. Prerequisite: CSE 2320 , MATH 3313.

CSE 5368. NEURAL NETWORKS. 3 Hours.

Theoretical principles of neurocomputing. Learning algorithms, information capacity, and mapping properties of feedforward and recurrent networks. Different neural network models will be implemented and their practical applications discussed. Prerequisite: CSE 5301 or consent of instructor.

CSE 5369. SPECIAL TOPICS IN INTELLIGENT SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5370. BIOINFORMATICS. 3 Hours.

Basic biology of genome and common laboratory techniques Overview of discrete probability theory, random variables and processes. Issues in genome mapping, sequencing and analysis: sequence alignments and alignment algorithms; genomic databases and information access; structure and features of DNA sequences. Techniques in contemporary biotechnology, including proteomics and gene expression analysis using microarray chips. Prerequisite: CSE 5311 or consent of instructor.

CSE 5372. RISC PROCESSOR DESIGN. 3 Hours.

Design of a RISC processor, based on RISC V and custom instruction set architectures with implementation on an FPGA target for test and verification. Prerequisite: CSE 3442, CSE 5400, or consent of instructor.

CSE 5373. GENERAL PURPOSE GPU PROGRAMMING. 3 Hours.

Study of general purpose computation on a GPU. Topics include GPU architectures, stream processing, and programming languages such as OpenCL and CUDA that realize data-parallel, high-throughput compute kernels on GPU architectures. Prerequisite: CSE 3320 or consent of instructor.

CSE 5376. DIGITAL COMMUNICATIONS. 3 Hours.

Study of digital communication systems including source and channel coding, digital modulation techniques, inter-symbol interference, and multi-channel combining and multiple-access methods. Prerequisite: CSE 3313 or consent of instructor.

CSE 5377. WIRELESS COMMUNICATIONS. 3 Hours.

Study of wireless systems including modulation, amplification, linearization techniques, filtering, antennas, propagation, reception, and demodulation. Topics include link budget and interference analysis of real systems. Prerequisite: CSE 3313 or consent of instructor.

CSE 5379. SPECIAL TOPICS IN BIOINFORMATICS. 3 Hours.

May be repeated for credit when topics vary.

CSE 5380. INFORMATION SECURITY 1. 3 Hours.

Hands-on introduction to the basics of security. Includes system security, buffer overflows, a high-level overview of cryptography, firewalls and IDS/IPS, malware, penetration testing, forensics, and system administration. Prerequisite: CSE 3320 or consent of instructor.

CSE 5381. INFORMATION SECURITY 2. 3 Hours.

Deeper study of the fundamentals of security, including symmetric key cryptography, public key cryptography, cryptographic protocols, malware design, network attacks and defenses, data security, privacy, and wireless security. Prerequisite: CSE 5380 and CSE 4344 or consent of instructor.

CSE 5382. SECURE PROGRAMMING. 3 Hours.

This course is an introduction to methods of secure software design and development for upper-level undergraduate students and graduate students. Students will learn about the major security problems found in software today. Using this knowledge, they will work in teams to find these bugs in software, fix the bugs, and design software so that it has fewer security problems. Static analysis tools will be a core part of the class, but students will also be exposed to black box testing tools. Topics will include input validation, buffer overflow prevention, error handling, web application issues, and XML.

CSE 5383. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty.

CSE 5384. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in CSE 4378 or CSE 5383 and admission to the UVS certificate program (admission to UVS certificate can be waived by consent of instructor).

CSE 5388. SPECIAL TOPICS IN INFORMATION SECURITY. 3 Hours.

May be repeated for credit when topics vary.

CSE 5389. SPECIAL TOPICS IN MULTIMEDIA, GRAPHICS, & IMAGE PROCESSING. 3 Hours.

May be repeated for credit when topics vary.

CSE 5391. INDIVIDUAL STUDY IN COMPUTER SCIENCE. 3 Hours.

Topics dealing with special problems in Computer Science on an individual instruction basis. May be repeated for credit.

CSE 5392. TOPICS IN COMPUTER SCIENCE. 3 Hours.

May be repeated for credit when the topics vary.

CSE 5393. DIRECTED STUDY IN COMPUTER SCIENCE. 3 Hours.

DIRECTED STUDY IN COMPUTER SCIENCE.

CSE 5394. MASTER'S PROJECT I. 3 Hours.**CSE 5395. MASTER'S PROJECT II. 3 Hours.****CSE 5398. MASTER'S THESIS I. 3 Hours.**

Preliminary research effort for the master's thesis, including problem definition and literature search, along with identification of resources, milestones, examining committee members, and external publication venue. Graded F, R.

CSE 5400. FUNDAMENTALS OF COMPUTER ENGINEERING. 4 Hours.

Design of digital logic circuits. Design of microcontroller-based systems, including microprocessor programming, component and system architectures, memory interfacing, asynchronous and synchronous serial interfaces, timer-based peripherals, analog to digital (A/D) and digital to analog (D/A) converters, and typical applications.

CSE 5698. MASTER'S THESIS II. 6 Hours.

Completion of tasks in support of the thesis defined in Master's Thesis I, including oral defense of the written documents. Prerequisite: CSE 5398. Graded F, R, P.

CSE 6197. RESEARCH IN COMPUTER SCIENCE. 1 Hour.

Individually supervised research projects.

CSE 6297. RESEARCH IN COMPUTER SCIENCE. 2 Hours.

Individually supervised research projects.

CSE 6306. ADVANCED TOPICS IN OPERATING SYSTEMS. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5306 or consent of instructor.

CSE 6311. ADVANCED COMPUTATIONAL MODELS AND ALGORITHMS. 3 Hours.

This course aims at exploring advanced computation models, theory and advanced algorithm design and analysis techniques that have broad applicability in solving real-life problems in cross-disciplinary areas such as the Internet computing, Web search engines, data mining, bioinformatics, wireless mobile and sensor networks, dynamic resource management, distributed computing, and social networking. Topics include: Theory of NP-completeness; Equivalence of Machine Models; Lower Complexity Bounds; Randomized and Probabilistic Algorithms; Game-theoretic and Information-theoretic Models; Approximation and Optimization Techniques. Prerequisite: CSE 5311 or consent of instructor.

CSE 6314. ADVANCED TOPICS IN THEORETICAL COMPUTER SCIENCE. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5314 or consent of instructor.

CSE 6319. SPECIAL TOPICS IN ADVANCED THEORY AND ALGORITHMS. 3 Hours.

May be repeated when topics vary.

CSE 6321. ADVANCED AUTOMATION TESTING. 3 Hours.

A detailed investigation of full automation testing of front and back end automation testing techniques and tools. Advanced issues in automation test are studied and applied. Knowledge and skills gained in other software engineering courses are applied to synthesize a full automation testing solution to a significant and realistic software development team project. Prerequisite: CSE 5321 or consent of instructor.

CSE 6323. AGILE SOFTWARE DEVELOPMENT. 3 Hours.

Study of foundations, techniques and tools for agile methodologies in software engineering including agile manifesto and principles such as pair programming, test-first and refactoring. Latest papers in agile methodologies are reviewed and practiced. Prerequisite: CSE 5324 or consent of instructor.

CSE 6324. ADVANCED TOPICS IN SOFTWARE ENGINEERING. 3 Hours.

May be repeated for credit when topics change.

CSE 6329. SPECIAL TOPICS IN ADVANCED SOFTWARE ENGINEERING. 3 Hours.

May be repeated for credit when topics vary. Prerequisite: CSE Graduate Standing.

CSE 6331. ADVANCED TOPICS IN DATABASE SYSTEMS. 3 Hours.

May be repeated for credit when topics change.

CSE 6332. CLOUD COMPUTING & BIG DATA. 3 Hours.

The focus of this course is on data management techniques and tools for storing and analyzing very large volumes of data. Topics include: cloud computing; virtualization; distributed file systems; large data processing using Map-Reduce; data modeling, storage, indexing, and query processing for big data; key-value storage systems, columnar databases, NoSQL systems; big data technologies and tools; large-scale stream processing systems; data analytics frameworks; big data applications, including graph processing, recommendation systems, and machine learning.

CSE 6339. SPECIAL TOPICS IN ADVANCED DATABASE SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 6344. ADVANCED TOPICS IN COMMUNICATION NETWORKS. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5346 or consent of instructor.

CSE 6345. PERVASIVE COMPUTING & COMMUNICATIONS. 3 Hours.

Issues and challenges in pervasive computing environments: interoperability and heterogeneity; location-awareness and mobility; transparency and proactivity; trust, authentication and security, information acquisition and dissemination in mobile and pervasive systems. Context-aware computing. Ad-hoc, sensor and mobile P2P systems in pervasive computing. Case studies. Prerequisite: Introductory courses in Networks, Algorithms and Operating Systems: e.g., CSE 5344, CSE 5311, and CSE 5306, or consent of instructor.

CSE 6347. ADVANCED WIRELESS NETWORKS & MOBILE COMPUTING. 3 Hours.

Wireless architectures and protocols (e.g., GSM, CDMA); channel assignment and resource allocation; mobility and location management; mobile data management; wireless data networking and multimedia; call admission control and QoS provisioning; cross layer optimization, performance modeling. Prerequisite: CSE 5345 and CSE 5330.

CSE 6348. ADVANCES IN SENSOR NETWORKS. 3 Hours.

Covers application and architecture of wireless sensor networks. Topics include platforms, routing, coverage, MAC, transport layer, data storage, query, and in-network processing. Prerequisite: CSE 5345 or equivalent course.

CSE 6349. SPECIAL TOPICS IN ADVANCED NETWORKING. 3 Hours.

May be repeated for credit when topics vary.

CSE 6350. ADVANCED TOPICS IN COMPUTER ARCHITECTURE. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5350 and consent of instructor.

CSE 6351. ADVANCED TOPICS IN COMPUTER ENGINEERING. 3 Hours.

May be repeated for credit when topics change. Prerequisite: CSE 5342 or consent of instructor.

CSE 6352. FAULT-TOLERANT COMPUTING. 3 Hours.

Topics in reliable and fault-tolerant computing. May be repeated for credit when topics change. Prerequisite: CSE 5350 and consent of instructor.

CSE 6353. COMPUTER ENGINEERING SYSTEM DESIGN. 3 Hours.

Advanced course in design of computer engineering systems in a team environment working to produce a larger system. Emphasis is on building a complete system, including requirements analysis, building and integrating components (hardware and software), and testing. Prerequisite: at least three of the following courses: CSE 5342, CSE 5352, CSE 5354, CSE 5355, CSE 5356, or CSE 5357 or consent of instructor.

CSE 6359. ADVANCED TOPICS IN SYSTEMS & ARCHITECTURE. 3 Hours.

May be repeated for credit when topics vary.

CSE 6362. ADVANCED TOPICS IN ARTIFICIAL INTELLIGENCE. 3 Hours.

May be repeated for credit when the topic changes. Prerequisite: CSE 5361 and consent of instructor.

CSE 6363. MACHINE LEARNING. 3 Hours.

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. Prerequisite: CSE 5301 or consent of instructor.

CSE 6364. MACHINE LEARNING. 3 Hours.

A detailed investigation of current machine learning methods, including statistical, connectionist, and symbolic learning. Presents theoretical results for comparing methods and determining what is learnable. Current issues in machine learning research will also be examined. This course is for PhD students only. Prerequisite: CSE 5301 or consent of instructor.

CSE 6366. DIGITAL IMAGE PROCESSING. 3 Hours.

Digitization and coding of images, characterization and representation of digital images in spatial and frequency domains, picture restoration and enhancement, filtering of two-dimensional signals, image reconstruction. Prerequisite: CSE 5366 or consent of instructor.

CSE 6367. COMPUTER VISION. 3 Hours.

Advanced techniques for interpretation, analysis, and classification of digital images. Topics include methods for segmentation, feature extraction, recognition, stereo vision, 3-D modeling, and analysis of time-varying imagery. Also taught as EE 6358. Prerequisite: CSE 5301 or CSE 5360 or EE 5356 or EE 5357, and consent of instructor.

CSE 6368. COMPUTER VISION. 3 Hours.

Advanced techniques for interpretation, analysis, and classification of digital images. Topics include methods for segmentation, feature extraction, recognition, stereo vision, 3-D modeling, and analysis of time-varying imagery. Also taught as EE 6358. This course is for PhD students only. Prerequisite: CSE 5301 or CSE 5360 or EE 5356 or EE 5357, and consent of instructor.

CSE 6369. SPECIAL TOPICS ADVANCED INTELLIGENT SYSTEMS. 3 Hours.

May be repeated for credit when topics vary.

CSE 6379. SPECIAL TOPICS IN ADVANCED BIOINFORMATICS. 3 Hours.

May be repeated for credit when topics vary.

CSE 6388. SPECIAL TOPICS IN ADVANCED INFORMATION SECURITY. 3 Hours.

May be repeated for credit when topics vary.

CSE 6389. SPECIAL TOPICS IN ADVANCED MULTIMEDIA, GRAPHICS, & IMAGE PROCESSING. 3 Hours.

May be repeated for credit when topics vary.

CSE 6392. SPECIAL TOPICS IN ADVANCED COMPUTER SCIENCE. 3 Hours.

May be repeated for credit when the topics vary.

CSE 6397. RESEARCH IN COMPUTER SCIENCE. 3 Hours.

Individually supervised research projects.

CSE 6399. DISSERTATION. 3 Hours.

Preparation of dissertation in computer science or computer science and engineering. Graded F, R.

CSE 6697. RESEARCH IN COMPUTER SCIENCE. 6 Hours.

Individually supervised research projects.

CSE 6699. DISSERTATION. 6 Hours.

Preparation of dissertation in computer science or computer science and engineering. Graded F, R,P,W.

CSE 6997. RESEARCH IN COMPUTER SCIENCE. 9 Hours.

Individually supervised research projects.

CSE 6999. DISSERTATION. 9 Hours.

Preparation of dissertation in computer science or computer science and engineering. Graded P, F, R.

CSE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Construction Management (CM)

COURSES

CM 1311. CONSTRUCTION DRAFTING. 3 Hours.

Introduction to computer aided drafting, using AutoCAD.

CM 1331. CONSTRUCTION SURVEYING. 3 Hours.

Introduction to surveying including distance measurement, corrections, leveling, measurement of angles and directions, traverse adjustment, volumes, cross section and area computations, and error theory. Methods and technologies such as Excel, MathCAD, global positioning system and geographic information systems used to manage data in surveying. Emphasis on the use of total stations. Prerequisite: Grade of C or better in CM 1311.

CM 2311. INTRODUCTION TO CONSTRUCTION MANAGEMENT. 3 Hours.

Characteristics of the construction industry; types of construction companies, contracts, people involved in a project, their responsibilities and interrelationships; ethical conduct; evolution of a project; interpreting working drawings; construction bonds; contract documents.

CM 2313. CONSTRUCTION MATERIALS AND METHODS. 3 Hours.

Materials, methods and sequences of the construction process; emphasis on design, specification, purchase and use of concrete, steel, masonry and wood. An understanding of the uses of construction materials. Prerequisite: Grade of C or better in CM 2311.

CM 2315. INTRODUCTION TO MECHANICS FOR CONSTRUCTION. 3 Hours.

Structural behavior in buildings; forces, moments, support reactions; free-body diagrams, equilibrium; internal forces in columns and beams; deflection; buckling. Prerequisite: Grade of C or better in MATH 1303 and PHYS 1441.

CM 2331. CONSTRUCTION DOCUMENTS. 3 Hours.

Introduction to construction documents and applicable software for use in communicating building design intentions to field personnel, including an understanding of how to interpret, explain, quantify and use construction documents to bid, construct and manage construction projects. Prerequisite: Grade of C or better in CM 2311.

CM 2391. PROBLEMS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Selected problems in construction management on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department.

CM 3313. CONSTRUCTION ESTIMATING I. 3 Hours.

Systems approach to determining required quantities of construction materials; quantification of various types of foundation systems, structural systems and building envelope systems; excerpts of contract documents from a variety of different building projects and materials; plan reading. Prerequisite: Grade of C or better in CM 2311 and CM 2331; Permission of the CE Chair or admission to the CM Professional Program.

CM 3315. CONSTRUCTION LAW AND ETHICS. 3 Hours.

Introduction to basic contract and tort issues and their application in the construction industry; delineation of the various types of contracts and remedies available to parties involved in a construction project; additional related topics including bidding, delays, mechanics liens, site conditions, warranties and the Uniform Commercial Code as it relates to the construction industry. Prerequisite: Grade of C or better in CM 2311 and CM 2313; Permission of the CE Chair or admission to the CM Professional Program.

CM 3331. MECHANICAL AND ELECTRICAL SYSTEMS. 3 Hours.

Mechanical and electrical systems with a major emphasis on estimating and installation, design and control of the electrical, heating, ventilation and cooling system, site planning and acoustical treatments. Prerequisite: Grade of C or better in PHYS 1442; Permission of the CE Chair or admission to the CM Professional Program.

CM 3333. CONSTRUCTION DESIGN I. 3 Hours.

The principles flexure and shear, deflections, buckling are used to consider design/build construction including building systems, building codes, criteria and selection, economic feasibility, value engineering, customer control, and value-added construction services as well as an introduction to Building Information Modeling BIM. Prerequisite: Grade of C or better in CM 2315; Permission of the CE Chair or admission to the CM Professional Program.

CM 3335. SOILS AND FOUNDATION IN CONSTRUCTION. 3 Hours.

Introduction to soil types found on construction projects; properties and classification of soil, embankment control, dewatering, excavation supports, foundations, piers, and pilings. Prerequisite: Grade of C or better in CM 2315; Permission of the CE Chair or admission to the CM Professional Program.

CM 3337. CONSTRUCTION ADMINISTRATION AND ECONOMICS. 3 Hours.

Project planning, cost controls, and construction related financial documents including: schedule of values, labor and operations cost reports, income statements, balance sheets and construction budgets; emphasis on the development of techniques required to ethically and effectively monitor the financial aspects of a construction project. Prerequisite: Grade of C or better in CM 2331 and MATH 1303; Permission of the CE Chair or admission to the CM Professional Program.

CM 3339. CONSTRUCTION SAFETY. 3 Hours.

Examines the application of OSHA 29CFR 1926 for the construction industry along with applicable state and federal construction safety laws pertaining to construction, alterations, or repair work at a construction site. Prerequisite: Grade of C or better in CM 2331; Permission of the CE Chair or admission to the CM Professional Program.

CM 3341. CONSTRUCTION DESIGN. 3 Hours.

Application of statics and strength of materials for design and construction of concrete, masonry, steel, and timber building structures. Prerequisite: Grade of C or better in CM 2313 and CM 2315.

CM 4111. CONSTRUCTION MANAGEMENT CAPSTONE I. 1 Hour.

This course is the first in the Construction Management capstone series and provides project definition, project planning, scheduling, and results in a presentation and plan for implementing during Capstone II. Prerequisite: Grade of C or better in CM 3333; Permission of the CE Chair or admission to the CM Professional Program.

CM 4300. ADVANCED TOPICS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Advanced topics of current interest in any one of the various fields of construction management. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Admission to the professional program and consent of the department chair.

CM 4301. ADVANCED TOPICS IN CONSTRUCTION MANAGEMENT WITH LAB. 3 Hours.

Advanced topics of current interest in any one of the various fields of construction management. The subject title to be listed in the class schedule. May be repeated for credit when topic changes. Prerequisite: Admission to the professional program and permission of the chair of the department.

CM 4304. CONSTRUCTION CONTRACTS. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Prerequisite: Grade of C or better in CM 3315 and CM 3337; Admission to the CM Professional Program.

CM 4313. CONSTRUCTION DESIGN II. 3 Hours.

Application of statics and strength of materials for construction of steel buildings with computer analysis and design. Prerequisite: Grade of C or better in CM 3333 and Admission to the CM Professional Program.

CM 4315. CONSTRUCTION ESTIMATING II. 3 Hours.

Quantification and pricing of direct field costs and general condition costs from construction documents; the preparation of complete lump sum bid package ready for project execution; utilization of complete set of contract documents required; plan reading. Prerequisite: Grade of C or better in ACCT 2301 and CM 3313 and Admission to the CM Professional Program.

CM 4317. CONSTRUCTION SCHEDULING. 3 Hours.

An introduction to construction project management scheduling covering concepts of project selection and scheduling, utilizing the estimate to predict the schedule, scheduling subcontracting, cost controls, project documentation, construction bonds, insurance, payments and the elements of close out; development of professional communication skills through student prepared multi-media presentations. Prerequisite: Grade of C or better in CM 3313 and Admission to the CM Professional Program.

CM 4331. CONSTRUCTION MANAGEMENT CAPSTONE II. 3 Hours.

Utilize information from all previous courses to give an understanding of the construction management profession culminating in a semester project and presentation. A response to an RFP announcement or bid will be prepared for each team project. Prerequisite: Grade of C or better in CM 4315 and CM 4317; Completion of all CM 3000 level courses; Admission to the CM Professional Program.

CM 4332. CONSTRUCTION FIELD OPERATIONS. 3 Hours.

Introduction to the construction industry and the methods, equipment, and management techniques used. Topics include equipment operating characteristics, underground construction, job site safety, and field management. Prerequisite: Grade of C or better in CM 2313 and CM 3335; Admission to the CM Professional Program.

CM 4335. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics; interpretation of geotechnical reports; site preparation; ground improvement; excavation including supports and dewatering; foundations including consideration of deep foundations and expansive soils; tunneling in soils and rock. Prerequisite: Grade of C or better in CM 3335 and admission to the CM Professional Program.

CM 4337. LAND AND SITE DEVELOPMENT. 3 Hours.

Introduction to site planning and its process. This course covers important characteristics of Site Planning involved in a construction project including land features, uses, buildings, regulations, local community cultures, and site analysis and planning. Students will work on developing a site plan for the end of semester project. Prerequisite: Grade of C or better in CM 1331 and CM 3335; Admission to the CM Professional Program.

CM 4351. BUILDING INFORMATION MODELING FOR CONSTRUCTION MANAGEMENT. 3 Hours.

Introduction to techniques used in development and management of Building Information Models. Emphasis on constructability and management. Prerequisite: Grade of C or better in CM 3341 and admission to the CM Professional Program.

CM 4353. RESIDENTIAL AND COMMERCIAL CONSTRUCTION. 3 Hours.

A senior course for students preparing to enter the project management of residential and commercial construction projects, including: aspects of design, bidding/estimating, presentation, value engineering, contracts/negotiation, subcontractor relations, cost controls, management during construction, close out, and post-construction requirements. Prerequisite: Admission to the CM Professional Program.

CM 4357. SUSTAINABLE BUILDING PRACTICE. 3 Hours.

Ethics and application of environmental sustainability practice in building construction. Introduction to U.S. Green Building Council LEED program standards, methods, and procedures as applied to construction documents interpretation and construction. Prerequisite: Admission to the CM Professional Program.

CM 4359. INDUSTRIAL INTERNSHIP I. 3 Hours.

Program provides for a learning experience in a construction management environment appropriate to the undergraduate level of work with a minimum of 150 hours of work. A written report of the experience and a presentation are required. Prerequisite: Permission of instructor and admission to the CM Professional Program.

CM 4360. INDUSTRIAL INTERNSHIP II. 3 Hours.

Student to experience industrial internship under supervision of an industrial mentor and internship instructor. Prerequisite: CM 4359; Admission to the CM Professional Program.

CM 4391. PROBLEMS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Selected problems in construction management on an individual or group basis. Reference material is assigned and progress conferences are held frequently, by arrangement, with a faculty supervisor. Prerequisite: Permission of the chair of the department and admission to the CM Professional Program.

CM 5300. TOPICS IN CONSTRUCTION MANAGEMENT. 3 Hours.

Topics of current interest in the field of construction management. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: Consent of instructor.

CM 5301. TOPICS IN CONSTRUCTION MANAGEMENT WITH LAB. 3 Hours.

Topics of current interest in the field of construction management. The subject title is listed in the class schedule and in the student's record. Topics vary. May be repeated for credit when topic changes. Prerequisite: Consent of instructor.

CM 5313. GEOTECHNICAL ASPECTS OF CONSTRUCTION. 3 Hours.

Review of engineering geology and soil mechanics and teaching of the foundation and underground excavation construction solely to graduate students specializing in construction engineering & management. Topics include interpretation of geotechnical reports, embankment construction, foundations on expansive soils, excavation supports, excavation dewatering, deep foundation construction, tunneling in soft ground as well as in soft/hard rock, and trenchless technology piping. Prerequisite: CM 5379 and CM 5386.

CM 5339. STATISTICS FOR CONSTRUCTION. 3 Hours.

Point estimation, interval estimation, sample size determination, tests of hypothesis, analysis of variance, linear regression, matrix methods for multiple linear regression, polynomial regression, transformations, non-linear regression. Prerequisite: Grade of C or better in CE 3301.

CM 5340. CONSTRUCTION PROJECT ACQUISITION. 3 Hours.

Fundamentals of acquiring the required goods and services necessary to fulfill the obligations of the construction contract. Service and subcontractor contracts, negotiating tactics and strategies, material pricing; and dispute resolution. The course includes negotiation practice based on typical construction acquisition situations to help prepare the student with experience of negotiating in the real world of construction and business. Prerequisite: Consent of instructor.

CM 5342. CONSTRUCTION PROJECT ADMINISTRATION. 3 Hours.

Topics in construction management and project administration, such as project delivery system, documentation and specification, electronic project administration, construction safety, risk allocation and liability sharing, changes and extra work, claims and disputes, and project closeout. Credit not granted for CE 4303 and CM 5342.

CM 5343. BUILDING INFORMATION MODELING. 3 Hours.

Introduction to current Building Information Modeling (BIM); Discussion of the role of BIM in Construction Engineering and Management; Revit Architecture, Structure, and MEP; Creating sets, building elements, structural systems, and MEP systems; BIM and clash detection; BIM and Construction Cost Estimating and Scheduling.

CM 5344. CONSTRUCTION METHODS: FIELD OPERATIONS. 3 Hours.

Introduction to the methods, equipment, and management techniques used in the construction industry. Topics include equipment operating characteristics, job site safety, and field management. Credit not granted for CE 4332 and CM 5344.

CM 5345. INFRASTRUCTURE EVALUATION, MAINTENANCE, AND RENEWAL. 3 Hours.

This course is designed for engineers and managers involved in infrastructure development, sustainability, and replacement. Topics include asset management, inspection, evaluation, maintenance, and renewal alternatives for waste collection and water distribution systems, surface and subsurface drainage, pavements, bridges, culverts, buildings, and other structures. Prerequisite: Consent of instructor.

CM 5350. RISK MANAGEMENT. 3 Hours.

The risk management process including risk identification, monitoring, and control; integrated quantitative cost and schedule risk analysis.

CM 5355. CONSTRUCTION MATERIALS. 3 Hours.

Principles of construction related to construction regulations and standards, loads, fire safety, acoustics, joints and sealants. Systems of construction involving concrete, steel, wood, masonry, sealants, and soil, and including excavations, below grade construction, formwork, cladding, joints, windows, doors, roofing, and ceilings.

CM 5377. CONSTRUCTION FINANCE. 3 Hours.

Financial aspects and job costing of a construction project. Includes project management principles, budgets, cost codes, cost-to-complete, and financial reports specific to the management of a construction company and project control.

CM 5378. CONSTRUCTION CONTRACTS, SPECIFICATIONS, & ADMINISTRATION. 3 Hours.

Types of construction contracts, contractual relationship between general contractor and owner, contractual relationship between general contractor and subcontractors, legal issues in construction administration, insurance, and concepts in value engineering. Reading and evaluating specifications, CSI Master Format. Credit not granted for CE 4304 and CM 5378. Prerequisite: Consent of instructor.

CM 5379. CONSTRUCTION COST ESTIMATING. 3 Hours.

Types of estimates, development of unit costs, quantity takeoff, cost estimating using manual methods and computerized cost estimating, budgets, and costs.

CM 5381. PUBLIC PRIVATE PARTNERSHIP FOR INFRASTRUCTURE PROJECTS. 3 Hours.

Public-private partnership (P3) arrangements as an innovative approach to deliver public infrastructure projects. Topics include P3 benefits, limitations, contracting and implementation strategies. Prerequisite: Grade of C or better in CE 3310 or IE 2308, or consent of instructor.

CM 5382. CONSTRUCTION SUSTAINABILITY. 3 Hours.

Introduction to International Code Council's 2012 International Building Code and USGBC's LEED® New Construction Guidelines v.3 for constructing sustainable/green buildings. Review of building occupancy categories, construction types, allowable height and area, life safety requirements, rated building assemblies, and egress. Site selection, energy and water efficiency, material reuse and indoor air quality. Credit not granted for CE 4307 and CM 5382.

CM 5386. CONSTRUCTION PLANNING & SCHEDULING. 3 Hours.

Construction productivity, planning, & scheduling of operations, flow charts, linear programming, critical path method (CPM), program evaluation review techniques (PERT), precedence networks. Computer methods.

CM 5387. CONSTRUCTION PRODUCTIVITY. 3 Hours.

Evaluation of construction project management's effectiveness. An investigation of the advanced techniques required for improvement of construction projects including time, cost, quality management, preplanning, field evaluation techniques, time-lapse photograph, safety, human factors, and communications. Prerequisite: CM 5379.

CM 5388. PIPELINE CONSTRUCTION AND TRENCHLESS TECHNOLOGY. 3 Hours.

Pipeline and utility design, construction and renewal. Topics include pipeline infrastructure structural considerations, planning and construction considerations, pipe materials, and trenchless technologies. Credit not granted for CE 4305 and CE 5388. Prerequisite: Consent of instructor.

CM 5389. PIPELINE SYSTEMS ASSET MANAGEMENT. 3 Hours.

Pipeline systems asset management, inventory, inspection, and life cycle costs. Topics include pipeline deterioration parameters, asset management technologies, risk assessment, government regulations, renewal technologies, and case studies. Credit not granted for CE 4306 and CE 5389. Prerequisite: Consent of instructor.

Criminology & Criminal Justice (CRCJ)

COURSES

CRCJ 2334. INTRODUCTION TO THE CRIMINAL JUSTICE SYSTEM. 3 Hours. (TCCN = CRIJ 1301)

An overview of the entire criminal justice system; history and development, law enforcement, prosecution and defense, courts and trial processes, and corrections. Formerly CRCJ 3334; credit will not be granted for both CRCJ 3334 and CRCJ 2334.

CRCJ 2335. ETHICS AND THE CRIMINAL JUSTICE SYSTEM. 3 Hours.

An examination of ethical issues confronted by criminal justice personnel and organizations. The course explores the standards and professional responsibilities of criminal justice practitioners, including law enforcement officers, officers of the courts, and juvenile and corrections officials.

CRCJ 2340. CRIMINAL INVESTIGATION. 3 Hours. (TCCN = CRIJ 2314)

Fundamentals of criminal investigation, including theory and history, conduct at crime scenes, sources of information, collection and preservation of evidence, case and trial preparation. Formerly CRCJ 2314; credit will be given for CRCJ 2340 or CRCJ 2314, but not both.

CRCJ 2350. INTRODUCTION TO LAW ENFORCEMENT. 3 Hours.

An overview of the historical and organizational development of police systems. Emphasis is placed on the function and organizational structure of law enforcement agencies and how these agencies interface with other components of the criminal justice system.

CRCJ 3300. THEORETICAL CRIMINOLOGY. 3 Hours.

The methodological and theoretical perspectives of the social and biological sciences as integrated into the criminal justice system.

CRCJ 3307. INTRODUCTION TO SECURITY SYSTEMS. 3 Hours.

Historical development of private security, its form and practice in modern society. Emphasis on three major divisions within the field: industrial, commercial and governmental security organizations and issues.

CRCJ 3310. PROFESSIONAL WRITING FOR CRCJ MAJORS. 3 Hours.

Designed to develop or enhance skills in varied writing styles used in the study of criminology and criminal justice. Legal, technical, and academic writing requirements are presented with emphasis on purpose, form and content. Specific focus is on technical reports for law enforcement agencies, legal research, field investigations, as well as proper citation and reference style. Open to CRCJ majors or minors only.

CRCJ 3320. CYBERCRIME. 3 Hours.

The course presents a conceptual overview of cybercrime and information security. Topics include: history of cybercrime, cybercrime techniques, cyberterrorism, forensics, and information security fundamentals.

CRCJ 3330. FUNDAMENTALS OF LAW. 3 Hours.

This course introduces students to areas of the law that affect the daily lives of U.S. residents. Emphasis is on fundamental criminal law and constitutional law principles which provide a platform for consideration of important public policy issues concerning crime, discrimination, health care, and immigration.

CRCJ 3336. POLICE MANAGEMENT AND ADMINISTRATION. 3 Hours.

Examines the principles of administration, management, politics and leadership with emphasis on their applicability to police planning, organization, direction, control and personnel management.

CRCJ 3337. ADVANCED CRIMINAL PROCEDURE. 3 Hours.

The processes involved in the criminal justice system; the rules of evidence; the laws of arrest, search and seizure; and the judicial process from offense to conviction.

CRCJ 3338. JUVENILE JUSTICE SYSTEMS. 3 Hours.

Organization, processes, and functions of the juvenile justice system in the United States, its historical antecedents, and contemporary challenges. Consideration also given to sociopolitical factors in juvenile justice decision-making. This course satisfies the requirements for UNIV 1101.

CRCJ 3340. CRIMINAL JUSTICE STATISTICS. 3 Hours.

An introduction to basic concepts and techniques necessary for a preliminary and proficient understanding of criminal justice research. Focus is on analyzing and interpreting research findings including types of data, central tendency, and both descriptive and inferential statistics. Prerequisite: CRCJ 2334 and CRCJ 3350 or equivalent.

CRCJ 3350. INTRODUCTION TO RESEARCH METHODS IN CRIMINOLOGY AND CRIMINAL JUSTICE. 3 Hours.

This course introduces students to the research methodology used in criminological research. Emphasis is on the development of a general understanding of why and how research can be and is conducted in the field of criminology and criminal justice. Other dimensions of research are discussed including the nature of scientific thought, the link between research methods and criminological theory, and the various ethical issues concerning research in the field of criminology.

CRCJ 3370. INTRODUCTION TO FORENSICS. 3 Hours.

This course provides an overview of forensic science. Emphasis is on crime scene investigation, physical evidence, organic and inorganic analysis, forensic toxicology and use of DNA in investigations.

CRCJ 3371. CRIME SCENE INVESTIGATION. 3 Hours.

Provides an in-depth examination of the principles of crime scene investigation. Aspects of forensic crime scene investigation from receiving the call, arriving at the scene, processing of the scene, evidence collection, and safety protocols are examined from scientific, procedural, and legal perspectives. In addition, the tools, techniques, and protocols necessary to perform systematic and thorough crime scene investigation will be presented. Prerequisite: CRCJ 3370.

CRCJ 3380. RACE, CRIME, AND JUSTICE. 3 Hours.

An examination of race in the context of the criminal justice system. Emphasis is on social construction of crime; and the treatment of racial minorities as victims and offenders by law enforcement, courts, and corrections. Offered as CRCJ 3380 and MAS 3380; credit will be granted only once. Offered as AAST 3380 and CRCJ 3380; credit will be granted in only one department.

CRCJ 3385. WOMEN AND CRIME. 3 Hours.

This course examines criminology and criminal justice issues as they relate specifically to women. The three major areas of coverage include (1) women and girls as victims of crime, (2) women and girls as criminal offenders; and (3) women working in the criminal justice system. Offered as DIVR 3385, CRCJ 3385 and WOMS 3385; credit will be granted only once.

CRCJ 3390. VICTIMOLOGY. 3 Hours.

The relationship between victims of crime and the criminal justice system. Includes an analysis of the characteristics of crime victims, victim reporting and nonreporting patterns, treatment of victims by the various segments of the criminal justice system, victim assistance programs, and the issue of compensation and/or restitution for victims of crime.

CRCJ 3395. DRUG USE AND ABUSE. 3 Hours.

An examination of the description, classification, and analysis of the problem of illegal drug use. Focus is on current drug policies in the United States, and a comparison of worldwide drug policies, and critical analysis of each.

CRCJ 4191. CONFERENCE COURSE. 1 Hour.

Directed individual study; research and study on a topic agreed upon by instructor and student. No more than six hours credit will be granted for conference courses in criminal justice. Prerequisite: permission of the instructor.

CRCJ 4291. CONFERENCE COURSE IN CRIMINAL JUSTICE. 2 Hours.

Directed individual study; research and study on a topic agreed upon by instructor and student. No more than six hours credit will be granted for conference courses in criminal justice. Prerequisite: permission of the instructor.

CRCJ 4301. THE AMERICAN JUDICIAL SYSTEM. 3 Hours.

Federal, state, and local judicial systems, with special emphasis on state trial courts having criminal jurisdiction. Court structure and function, court management, and judicial behavior.

CRCJ 4302. MOCK TRIAL I. 3 Hours.

The purpose of this course is to enhance the student's knowledge of the American adversarial judicial system through in-depth study of trial procedure and evidentiary rules. The primary teaching vehicle is a simulated trial based on the official hypothetical case published by the American Mock Trial Association for the current school year. Cases alternate between criminal and civil cases. The current state of our nation affords us a unique opportunity to explore ways to incorporate digital modalities of jury trials and their impact on our justice system.

CRCJ 4303. MOCK TRIAL II. 3 Hours.

In-depth examination of the structure, functions and operations of U.S. civil and criminal trials, with special attention to modern jury decision making and its impact on the criminal justice process by learning practical skillsets related to the voir dire and trial court process.

CRCJ 4309. PRIVATE SECURITY ADMINISTRATION. 3 Hours.

The essentials of governmental and proprietary security development and program planning; including personnel recruitment and training, developing and conducting security audits, records and information protection, and general applications of modern management techniques to security organization. Prerequisite: CRCJ 3307.

CRCJ 4315. WHITE-COLLAR AND CORPORATE CRIME. 3 Hours.

Study and analysis of criminal syndicates, corporate crime, computer crime, criminal corporations, organized crime, and transnational criminal operations.

CRCJ 4325. GANGS. 3 Hours.

An examination of historical and contemporary street and correctional institutional gangs. Addresses the nature and definition of gangs, types and diversity of membership of gangs, theoretical explanations, criminal and deviant behavior, law enforcement responses, intervention and prevention strategies, and public policy issues.

CRCJ 4332. COMMUNITY CORRECTIONS. 3 Hours.

Evaluation of practices, issues, and trends in community corrections. Emphasis is on the de-institutionalization movement, probation, parole, intermediate punishments, and other community alternatives to incarceration.

CRCJ 4333. INSTITUTIONAL CORRECTIONS. 3 Hours.

Examination and evaluation of practices, issues, and trends in institutional corrections. Emphasis is on administration, organization, and effectiveness of incarceration.

CRCJ 4340. FORENSIC DEATH INVESTIGATION. 3 Hours.

An exploration of death investigations including an overview of protocols utilized to investigate a death as well as autopsy perspectives. Focus is on the numerous causes of death and the working relationship of police investigators, death investigators, forensic pathologists, and forensic laboratories. Prerequisite: CRCJ 3370.

CRCJ 4341. FORENSIC EXAMINATION OF IMPRESSION EVIDENCE. 3 Hours.

Explores how impression evidence is formed, how to collect and enhance impression evidence and how to compare this type of evidence. The student will also learn how impression evidence is presented and utilized in a courtroom setting. Prerequisites: CRCJ 3370 and CRCJ 3371 or permission of the instructor.

CRCJ 4342. FORENSIC HAIR AND FIBER IDENTIFICATION. 3 Hours.

Introduces the student to forensic hair and fiber examination by microscopy, including the presentation of the techniques, skills, and limitations of the hair and fiber examiner in a modern crime laboratory setting. Collection techniques utilized at the crime scene and from items of evidence will also be examined. The impact of these techniques on the criminal justice system, in particular the court system, will be explored. Prerequisite: CRCJ 3370 or permission of the instructor.

CRCJ 4343. FORENSIC EXPERT TESTIMONY. 3 Hours.

Survey of the techniques for providing testimony as an expert witness in a court of law, including proper physical appearance, demeanor, qualifications, presentation of evidence, offering opinion, and ethics of providing testimony. Prerequisite: CRCJ 3370.

CRCJ 4344. CRIME ACROSS THE LIFE COURSE. 3 Hours.

This course will introduce students to developmental and life-course criminology, which seeks to understand the development of offending over time. In particular, the class will focus on early precursors to criminal behavior, stability and factors impacting change in criminal behavior, and how genetics and the environment may impact criminal behavior.

CRCJ 4345. CRIME AND THE CRIMINAL JUSTICE SYSTEM IN THE MEDIA. 3 Hours.

An examination of crime and the criminal justice system as depicted in the media; special emphasis on the roles of the media in influencing individual and societal perceptions of, and reactions to, crime and the criminal justice system.

CRCJ 4352. TERRORISM AND MASS VIOLENCE. 3 Hours.

Examination of historic and current trends in civil disruption from domestic/international perspectives. Considers literature and philosophical basis of political terrorism; costs of terrorism; future trends and deterrence by civil or military intervention. Formerly CRCJ 3352; credit will not be granted for both CRCJ 4352 and CRCJ 3352.

CRCJ 4355. ORGANIZED CRIME: NATIONAL AND INTERNATIONAL. 3 Hours.

An examination of organized crime in the United States and internationally, including history, development, ethnic links, impact upon society and the economy, and international cooperation aimed at eradicating the occurrence and proliferation of this form of criminality.

CRCJ 4357. FORENSIC FIREARMS IDENTIFICATION. 3 Hours.

This course introduces students to the field of forensic firearm and tool mark identification. Topics include development, manufacture, evaluation and comparison of firearms, ammunition and tool mark evidence. Students will also acquire an understanding of the firearm examiner's responsibilities as they impact the criminal justice system. Prerequisite: CRCJ 3370.

CRCJ 4365. CAPITAL PUNISHMENT. 3 Hours.

An examination of historic and current trends in capital punishment. Considers the literature and philosophical basis of capital punishment, the costs of capital punishment, and future trends of capital punishment. Provides an in-depth examination of capital punishment from a criminal justice policy perspective.

CRCJ 4380. COMPARATIVE CRIMINAL JUSTICE SYSTEMS. 3 Hours.

An overview of criminal justice systems in other countries. Includes an intensive study and analysis of materials on their law enforcement, judicial, and corrections components; review of comparative studies on a variety of criminal justice topics.

CRCJ 4386. TOPICS IN CORRECTIONS. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4387. TOPICS IN CRIME AND CRIMINOLOGY. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4388. TOPICS IN LAW AND JUDICIAL PROCESSES. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4389. TOPICS IN LAW ENFORCEMENT AND PRIVATE SECURITY. 3 Hours.

May be repeated for credit as the topics vary, but credit will not be granted for more than 12 semester hours of CRCJ-prefix topics courses without permission of advisor.

CRCJ 4390. INTERNSHIP IN CRIMINAL JUSTICE. 3 Hours.

Provides the student with an opportunity to apply academic experience to practical situations by serving for a specified number of hours as participant-observer in a criminal justice agency. May be taken for a total of six semester hours. Internships must be arranged with internship supervisor in the semester prior to enrolling for this course. Prerequisite: permission of the instructor.

CRCJ 4391. CONFERENCE COURSE IN CRIMINAL JUSTICE. 3 Hours.

Directed individual study; research and study on a topic agreed upon by instructor and student. No more than six hours credit will be granted for conference courses in criminal justice. Prerequisite: permission of the instructor.

CRCJ 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

CRCJ 5196. CONFERENCE COURSE CRJU. 1 Hour.**CRCJ 5301. PROSEMINAR IN CRIMINOLOGY AND CRIMINAL JUSTICE. 3 Hours.**

This course is a comprehensive introduction to the discipline, with particular emphasis on the specialties of department faculty, academic research, and writing style. Classic and contemporary literature will be used to examine criminal behavior and the structure, function, operation, and interaction of the criminal justice system components as well as current practices and future trends in criminology and criminal justice.

CRCJ 5309. RESEARCH METHODS IN CRIMINAL JUSTICE. 3 Hours.

Examination of research methodology in criminal justice. Special emphasis on methods and techniques for conducting research in criminal justice, including a review of problems encountered in sampling and survey research, field research, public policy implementation, and program evaluation.

CRCJ 5310. STATISTICS & RESEARCH PRACTICES IN CRIMINAL JUSTICE. 3 Hours.

Advanced methods and techniques of research and research design in criminology and criminal justice. Course will cover pure and applied research and expose students to contemporary methodological and analytical issues. Students will be instructed on the use of existing CRCJ databases as well as the collection of new data and particular aspects of SPSS (Statistical Package for the Social Sciences software) and advanced data analysis. Prerequisite: CRCJ 5309 or equivalent.

CRCJ 5318. CRIMINAL JUSTICE PERSONNEL ADMINISTRATION. 3 Hours.

Personnel administration and management in criminal justice agencies and institutions; analyzes functions of recruitment, selection, hiring, placement, evaluation, dismissal, benefits systems, minority recruitment, training, education, promotion, career development, and retirement.

CRCJ 5319. ISSUES IN POLICING. 3 Hours.

In-depth analysis of historical, current, and future issues in policing and police administration. Emphasis will be placed on the role of police in society, police-citizen relationships, and empirical evaluations of police effectiveness, police behavior, and programs and strategies.

CRCJ 5327. CONSTITUTIONAL ISSUES IN THE CRIMINAL JUSTICE SYSTEM. 3 Hours.

Examination of a variety of legal issues critical to a thorough understanding of the various aspects of the criminal justice system. Special attention is given to contemporary constitutional issues and court decisions and their impact on the criminal justice process.

CRCJ 5332. CORRECTIONAL THEORY AND PRACTICE. 3 Hours.

Examination of social, psychological, political, and historical bases of interventions in the control and disposition of offenders. Emphasis on contemporary policies, practices, and problems in institutional, semi-institutional, and community-based corrections.

CRCJ 5342. ETHICS IN CRIMINAL JUSTICE. 3 Hours.

This course focuses on the ethical decisions and dilemmas encountered in the criminal justice system. Topics covered include criteria for ethical decision making, professional codes of ethics, and ethical and legal dilemmas faced by criminal justice professionals.

CRCJ 5350. THEORETICAL CRIMINOLOGY. 3 Hours.

Explores the etiology of crime, theory development and crime causation. Emphasis is on theoretical perspectives and policy implementation.

CRCJ 5351. TERRORISM AND CRIME. 3 Hours.

This course examines the origins, nature, and operational characteristics of terrorist groups. Students are exposed to topics ranging from the definition of "terrorism" to the unique characteristics of terrorist cells in the United States and abroad. Particular emphasis is on historical and contemporary terrorist attacks against the United States.

CRCJ 5352. WOMEN, CRIME & CRIMINAL JUSTICE. 3 Hours.

A summary of issues related to women as criminal offenders, victims of crime, and professionals in the criminal justice system. The course focuses on crimes women are most likely to commit and/or be processed through the criminal justice system for, the punishment of female offenders, the types of victimizations most often experienced by women, and employment issues unique to women employed in the criminal justice system. While the main emphasis of the course will be on the experiences of women in the U.S., attention will also be given to women on a global scale.

CRCJ 5353. CRIMINAL JUSTICE ORGANIZATIONAL THEORY & MANAGEMENT THOUGHT. 3 Hours.

An examination of organizational theory with specific application to the operation and management of criminal justice agencies. The historical precedents and emergence of contemporary perspectives are presented with their implication for effective functioning of the criminal justice system.

CRCJ 5354. COMPARATIVE CRIMINAL JUSTICE SYSTEMS. 3 Hours.

This course is an overview of crime, criminal behavior, and criminal justice systems throughout the world. This course includes an intensive study and analysis of materials on law enforcement, judicial, and corrections components; a review of comparative studies on a variety of criminal justice topics; and a basic worldwide understanding of philosophies of law and justice. This is a global learning course.

CRCJ 5360. RACE, CRIME JUSTICE & THE LAW. 3 Hours.

This course explores the role of race and ethnicity within the juvenile and criminal justice system. Emphasis is on the social construction of crime, racial and ethnic inequalities, the law and policies/practices that impact blacks and other racial minorities.

CRCJ 5364. CRIME AND THE MEDIA. 3 Hours.

Utilizing a social constructionist perspective, the course examines the mass media's role in engendering and cultivating American society's perception of crime. This course examines factors influencing the social reality of crime, and attempts to deconstruct perceptions of crime-related mass media events.

CRCJ 5366. JUVENILE DELINQUENCY AND JUVENILE CORRECTIONS. 3 Hours.

Correctional modes are discussed and applied to juvenile offenders. Theoretic approaches to causation, modification, and control of delinquent behaviors are presented, and policy implications and limitations are discussed. Historical and contemporary perspectives and approaches are presented in the context of evolving and emerging practices and procedures.

CRCJ 5370. PRACTICUM. 3 Hours.

Professional or pre-professional experience in a criminal justice related agency or institution with the approval and direction of the student's supervising professor; intended for non-thesis option students who do not have professional experience related to criminal justice.

CRCJ 5373. WHITE-COLLAR AND CORPORATE CRIME. 3 Hours.

This course exposes students to the basic concepts associated with incorporation and corporate liability, the definitional complexity of white-collar crime and the idea of crime as a socially constructed phenomenon. The types of behaviors encompassed by the terms "white-collar crime" and "corporate crime", the similarities and differences between white-collar and street-level offenders, and various theoretical explanations for white-collar crime are explored. In addition, the course includes an examination of the physical and economic costs of white-collar crime, landmark cases and issues related to detection, enforcement, and sentencing of white-collar offenders. This course has been offered previously as CRCJ 5393-Special Topics. To be cross-listed with CRCJ 4373. White-Collar and Corporate Crime. Prerequisite: CRCJ 5301.

CRCJ 5380. CRIMINAL JUSTICE SEMINAR. 3 Hours.

Synthesis course for advanced graduate students. Special emphasis on examination of constructs of crime/criminals, justice and systems. Requires individual research in area of particular concern to student.

CRCJ 5381. CRIME & PUBLIC POLICY. 3 Hours.

This course addresses crime and criminal justice policy. Emphasis is on the examination of media and political forces that shape criminal justice responses and policy initiatives. In the context of theoretical paradigms, the impact of race, class, economics, and gender on development of criminal justice public policy is examined.

CRCJ 5382. COMPREHENSIVE ISSUES IN CRIME AND JUSTICE. 3 Hours.

An advanced course covering a broad array of issues related to criminology, crime, and the justice system. This course is designed to review topics related to the comprehensive examination.

CRCJ 5393. TOPICS IN CRIME AND CRIMINOLOGY. 3 Hours.

May be repeated for credit as the topic changes.

CRCJ 5394. TOPICS IN JUSTICE ISSUES. 3 Hours.

May be repeated for credit as the topic changes.

CRCJ 5396. CONFERENCE COURSE IN CRIMINAL JUSTICE. 3 Hours.

Reading and research in a specialized area of criminal justice under the direction of a member of the graduate faculty.

CRCJ 5398. THESIS. 3 Hours.**CRCJ 5698. THESIS. 6 Hours.**

Dance Theory (DNCE)

COURSES

DNCE 1131. BALLROOM DANCE. 1 Hour.

Introduction to various styles of ballroom dance with emphasis on fundamental patterning, rhythms, and partnering work.

DNCE 1132. MODERN DANCE I. 1 Hour.

Introduction to Modern dance technique and terminology with emphasis on fundamental movement patterns and dynamic alignment.

DNCE 1134. TAP DANCE. 1 Hour.

Introduction to Tap dance technique and terminology with emphasis on styles and rhythmic patterns.

DNCE 1135. BALLET I. 1 Hour.

Introduction to Ballet dance technique and terminology with emphasis on fundamental patterns and dynamic alignment.

DNCE 1136. JAZZ DANCE I. 1 Hour.

Introduction to Jazz dance technique and terminology with emphasis on fundamental movement patterns and dynamic alignment.

DNCE 1137. HIP-HOP DANCE. 1 Hour.

Introduction to Hip-Hop dance technique with an emphasis on various styles as related to social and cultural contexts.

DNCE 1138. DANCE IMPROVISATION AND PARTNERING. 1 Hour.

Development of solo and ensemble spontaneity, vocabulary, and composition. Dance partnering skills developed through an understanding of physical principles and structural support. Course is designed for all skill levels.

DNCE 1139. DANCE PERFORMANCE I. 1 Hour.

Introductory concepts and practice in dance performance and production processes. Students are required to participate in roles of performer, dramaturg, and/or production crew. Students participate in dance auditions and are eligible to be cast in faculty, guest, and/or student choreography. May be repeated for credit. Open to all university students.

DNCE 1142. DANCE CONDITIONING. 1 Hour.

Introductory movement practices to develop strength, flexibility, and range of motion as related to dance technique.

DNCE 1300. DANCE APPRECIATION. 3 Hours. (TCCN = DANC 2303)

Designed to develop an awareness and appreciation of dance in its artistic, social, and cultural contexts through an overview of the aesthetic and critical dimensions of viewing and creating various dance idioms. Offers a variety of dance experiences, including the viewing of dance in live and video formats, reading and writing about dance, and experiencing selected dance movements from various dance genres. Explores the relationship of dance to other art forms. This course satisfies the University of Texas at Arlington core curriculum requirement in Creative Arts.

DNCE 2139. DANCE PERFORMANCE II. 1 Hour.

Intermediate level concepts and practice in dance performance for the concert stage. Students are required to participate in faculty-supervised dance performances throughout the semester. Prerequisite: An audition is required to enroll and permission of instructor.

DNCE 2238. DANCE COMPOSITION. 2 Hours.

Exploration of choreographic elements with emphasis on composing space, time, and energy. Students will develop movement through solo and group practice.

DNCE 3232. MODERN DANCE II. 2 Hours.

Intermediate-level Modern dance technique with emphasis on artistry, musicality, and composition. Prerequisite: DNCE 1132 or permission of instructor.

DNCE 3235. BALLET II. 2 Hours.

Intermediate-level Ballet dance technique with emphasis on artistry, musicality, and composition. Prerequisite: DNCE 1135 or permission of instructor.

DNCE 3236. JAZZ DANCE II. 2 Hours.

Intermediate-level Jazz dance technique with emphasis on artistry, musicality, and composition. Prerequisite: DNCE 1136.

DNCE 3307. DANCE FOR CAMERA AND ALTERNATIVE SPACES. 3 Hours.

Theory and practice of creating, performing, and directing dance specifically for camera and spaces beyond the studio and concert stage. Analysis of post-modern and contemporary practices as related to dance research, education, and production. Course is designed for all skill levels.

DNCE 3308. 21st CENTURY DANCE. 3 Hours.

Survey and critical analysis of trends in contemporary dance through the process of viewing, analyzing, and writing about dance. Focus on written analysis of creative methods, production techniques, and dance as a reflection of contemporary society. Students are required to attend and review dance productions.

DNCE 3309. DANCE IN WORLD CULTURES. 3 Hours.

Theory and practice of dance in world cultures. Analysis of historical and contemporary contexts of world dance forms through viewing, reading, writing, and practicing select dances from regions around the globe. The course is designed for all skill levels.

DNCE 3335. DANCE FOR MUSICAL THEATRE. 3 Hours.

Instruction in and application of specific musical theatre styles. May be repeated once for credit. Prerequisite: Permission of advisor.

DNCE 3340. DESIGN AND TECHNOLOGY FOR DANCE. 3 Hours.

Theory and practice of producing dance for the concert stage. Focus on theatrical lighting, costuming, makeup, stage management, and theatre safety as applied to dance performance.

DNCE 3342. EXPERIENTIAL ANATOMY FOR DANCE. 3 Hours.

Theory and practice of conditioning, bodywork, movement fundamentals, and injury prevention to develop strength, flexibility, coordination, and range of motion as applied to anatomical function in a dance context. Course is designed for all skill levels.

DNCE 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

DNCE 4232. MODERN DANCE III. 2 Hours.

Advanced-level Modern dance technique with emphasis on artistry and complex movement patterns. Prerequisite: Grade of B or better in DNCE 3232 or permission of instructor.

DNCE 4235. BALLET III. 2 Hours.

Advanced-level Ballet dance technique with emphasis on artistry and complex movement patterns. Prerequisite: Grade of B or better in DNCE 3235 or permission of instructor.

DNCE 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

DNCE 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of instructor.

Data Science (DATA)

COURSES

DATA 1301. INTRODUCTION TO DATA SCIENCE. 3 Hours.

This course provides an introduction to the field of data science with a high level overview of basic concepts, data types, and techniques while introducing data-informed decision making.

DATA 3311. MATHEMATICS FOR DATA SCIENCE. 3 Hours.

This course covers techniques from linear algebra and probability with an emphasis on how they are used in data science. Working with real data sets will be emphasized, along with basics of Matlab or R programming. Prerequisite: MATH 1426.

DATA 3401. PYTHON FOR DATA SCIENCE 1. 4 Hours.

This is the first of a two course sequence offering the foundations of Python programming in the context of data science. It introduces the full syntax of the Python language as it overviews structured, functional, and object oriented programming methodologies. It also provides a basic conceptual understanding of computing and introduces Unix command-line tools, software employed in data science such as git and Jupyter, and Python libraries such as numpy, matplotlib, and Pandas. Prerequisite: MATH 1426 or concurrent enrollment in MATH 1426.

DATA 3402. PYTHON FOR DATA SCIENCE 2. 4 Hours.

This is the second of a two course sequence offering the foundations of Python programming in the context of data science. It reinforces concepts presented in DATA 3401 with greater depth with a focus on application to various problems in data science, while exploring the python library ecosystem. Prerequisite: DATA 3401, or consent of instructor.

DATA 3421. DATA MINING, MANAGEMENT, AND CURATION. 4 Hours.

This lecture and lab course will provide training in working with databases, including data mining techniques and principles and best practices in data management, storage, and curation. Prerequisite: DATA 3401 or consent of instructor.

DATA 3441. STATISTICAL METHODS FOR DATA SCIENCE 1. 4 Hours.

This lecture and lab course will provide an introduction to the fundamental building blocks of advanced data analysis, with emphasis on advanced linear algebra, optimization, statistical inference, and Monte Carlo methods. Working with real data sets will be emphasized, along with basics of R programming. Prerequisite: DATA 3401, DATA 3402 or consent of instructor.

DATA 3442. STATISTICAL METHODS FOR DATA SCIENCE 2. 4 Hours.

This lecture and lab course will provide an introduction to the principles and general methods for the analysis of categorical data. This type of data occurs extensively in both observational and experimental studies, as well as industrial applications. While some theoretical statistical detail is given, the primary focus will be on methods of data analysis. Topics include generalized regression models, logistic regression models, Poisson regression models, and multinomial regression models. Problems will be motivated from a scientific perspective. Prerequisite: DATA 3441.

DATA 3461. MACHINE LEARNING. 4 Hours.

This course introduces and surveys Machine Learning techniques and their application to various problems in data science. Prerequisite: DATA 3401, DATA 3402 or consent of instructor.

DATA 4380. DATA PROBLEMS. 3 Hours.

This course is intended for Junior-level Data Science students, and will enable them to identify, define, and explore a number of potential problems and projects, for follow-up in the capstone course sequence. Prerequisite: Permission of instructor.

DATA 4381. DATA CAPSTONE PROJECT 1. 3 Hours.

This is the first of a two-semester sequence that will involve deep engagement in a team or individual project in Data Science. Presentation of written and oral reports will be required. Prerequisite: DATA 4380.

DATA 4382. DATA CAPSTONE PROJECT 2. 3 Hours.

This is the second of a two-semester sequence that will involve deep engagement in a team or individual project in Data Science. Presentation of written and oral reports will be required. Prerequisite: DATA 4381.

Data Science MS (DASC)

COURSES

DASC 5300. FOUNDATION OF COMPUTING. 3 Hours.

Basics of programming, data structures, and algorithms. Introduction to databases and operating systems. Basics of discrete structures and computability. Course is used for the Master's in Data Science degree program and certificate programs for non-CSE majors. It cannot be taken for credit towards any CSE degree. Prerequisite: Graduate standing.

DASC 5301. DATA SCIENCE. 3 Hours.

This inspirational course follows a data-science-for-all perspective that views data acumen as part of literacy. It aims to instill in students the data acumen, i.e., the basic skills to wrestle with data, to draw insights from data, to make sound decisions responsibly using data, and to effectively communicate about data-driven findings and decisions. Topics include 1) data management: data curation, preparation, model, and querying; 2) data description and visualization: exploratory data analysis, graphics, user interface and user experience design; 3) machine learning and knowledge discovery: supervised learning, unsupervised learning, pattern and knowledge extraction, deep learning, model evaluation and interpretation. Prerequisite: MATH 1301, or MATH 1302, or MATH 1308, or MATH 1426, or equivalent and permission of advisor.

DASC 5302. INTRODUCTION TO PROBABILITY AND STATISTICS. 3 Hours.

Topics include descriptive statistics, set theory, combinatorics, mathematical expectation, probability distributions, confidence interval estimation, regression analysis, analysis of variance, and design of experiments. Prerequisite: MATH 1426 or equivalent.

DASC 5303. DATA SCIENCE PROJECT MANAGEMENT. 3 Hours.

Management and control of multifaceted science and engineering projects. Coordination and interactions between client and various service organizations. Project manager selection. Typical problems associated with various phases of project life cycle. Case studies illustrate theories and concepts. Students will be expected to demonstrate an understanding of communication and collaboration, including workflow, reproducibility, codebase management, collaboration tools, oral and written communication, presentation and storytelling, and team management, as well as ethics, such as understanding bias, fairness, credibility and misinformation, security, privacy, and codes of conduct. Prerequisite: graduate standing.

DASC 5309. DATA SCIENCE CAPSTONE PROJECT. 3 Hours.

Students will design, develop and present a substantial data science project by applying the knowledge and skills acquired from relevant courses. The projects will be drawn from real-world applications and data through collaboration with community partners. Prerequisite: Completed 18 graduate credit hours.

Disability Studies (DS)

COURSES

DS 2301. TOPICS IN DISABILITY STUDIES. 3 Hours.

Special topics of interest in the field of Disability Studies. May be repeated for credit when the topic changes.

DS 3307. HISTORY OF DISABILITY. 3 Hours.

Examines the history of ideas about disability, the historical lives of people with disabilities, and the history of disability policy. The growth of asylums, the rise of the eugenics movement, a historical look at freak shows, the impact of industrialization on experiences of disability, the evolution of special education, the role of ideas about disability in colonialism, the historical treatment of disabled veterans, and the development of the disability rights movement. Geographic focus will vary. Offered as HIST 3307 and DS 3307; credit will only be granted once. Prerequisite: HIST 1311 and HIST 1312.

DS 3312. DISABILITY & SOCIAL WORK. 3 Hours.

Examines major themes in disability and social work. Topics include basic understandings of disability, lived experiences of people with disabilities, legal and policy perspectives, working with adults and children with a variety of disabilities, history of disability policy and disability rights, disability advocacy, and resources in the community, among others. Offered as DS 3312 and SOCW 3312; credit will only be granted in one department.

DS 3321. TOPICS IN DISABILITY STUDIES. 3 Hours.

Special topics of interest in the field of disability studies. May be repeated for credit when the topic changes.

DS 3327. CYBORGS AND PROSTHETICS. 3 Hours.

Explores the history, theories, and evolving representations of prosthetics, bionics, cyborgism, and the post-human. Investigates the origins and development of the prosthetics industry, historical experiences of prosthetics users, and cultural depictions and debates about human-technology interactions. Offered as DS 3327 and HIST 4327 and previously as DS 3321 and HIST 4388; credit will only be granted once.

DS 3331. RESEARCH IN DISABILITY STUDIES. 3 Hours.

Introduction to the theories and methods that disability studies scholars use to conduct research and present their findings in written and oral form. Recommended: HIST 3307 or DS 3321.

DS 3346. DISABILITY IN MASS MEDIA. 3 Hours.

Explores how mass media frames disability and neurodiversity for the general public. Focuses on issues related to disability and mass media representation, including journalism, TV, film, advertising, photography, documentary, video games, and the Internet. Topics may include media models of representation, inspiration porn, disability blogs, accessible media, and disabled mimicry in TV and film, among others. Offered as DS 3346 and COMM 3346; credit will be granted in only one department.

DS 3355. UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS. 3 Hours.

Explores the principles of Universal Design using the performing arts as a case study: creating environments, events, buildings, and products to accommodate the broadest spectrum of human ability, size, age, and other characteristics. Investigates how to put into practice the accessibility guidelines of the Americans with Disabilities Act of 1990. Performing is not required. Offered as THEA 3355 and DS 3355; credit will only be granted in one department.

DS 3399. DISABILITY & ART. 3 Hours.

Explores the many connections between disability and art, including both art created by people with disabilities and the wide variety of artistic representations about disability. Examines the purposes of art-making by people with disabilities: for therapeutic reasons, as a means of self-expression, to achieve professional goals, or as an act of activism. Investigates historical depictions of disability in art as well as art's role as a visual voice for the disability rights movement. Offered as DS 3399 and ART 3399; credit will only be granted once. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor or Disability Studies.

DS 4191. CONFERENCE COURSE. 1 Hour.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the director of the minor.

DS 4291. CONFERENCE COURSE. 2 Hours.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the director of the minor.

DS 4329. DISABILITY & WORK. 3 Hours.

Explores the complex relationship between disability and work within the United States from a current and historical perspective. Topics include study of the Americans with Disabilities Act; research on the diversity, population, and changes in proportions of people with disabilities; employment rates and experiences of people with disabilities; attitudes and perspectives surrounding and affecting the employment opportunities and experiences of people with disabilities; and ways to provide inclusive, non-discriminatory workplaces. Offered as MANA 4329 and DS 4329; credit will only be granted once. Prerequisite: 60 hours or MANA 4326 or Disability Studies permission.

DS 4391. CONFERENCE COURSE. 3 Hours.

Directed independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. Course may be repeated for credit once with a change in faculty. Prerequisite: permission from the director of the Minor in Disability Studies.

DS 4395. DISABILITY STUDIES INTERNSHIP. 3 Hours.

Supervised internship in which students apply the academic skills they have acquired in Disability Studies courses by working in a related non-profit or business environment. Prerequisite: HIST 3307 or 3 hours of core disability studies courses; permission of the instructor.

Diversity Studies (DIVR)

COURSES

DIVR 2315. INTRODUCTION TO LGBTQ+ STUDIES. 3 Hours.

Provides an introduction to Gay and Lesbian Studies, including the study of transsexual, transgender, and queer identities. May address topics such as LGBTQ history; sexuality and civil rights; the representation of LGBTQ in art, literature, and popular culture; and/or feminist analysis of sex, gender, and sexuality. Explains the methods and theories employed in gay and lesbian studies, emphasizing the intersection of gender, sexuality, race, ethnicity, class, and ability/disability. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. This course is offered as WOMS 2315 and DIVR 2315. Credit will be granted in only one department.

DIVR 2350. SPECIAL ISSUES IN DIVERSITY STUDIES. 3 Hours.

Special topics of interest in the disciplines of Diversity Studies. May be repeated for credit when the topic changes.

DIVR 3301. INTRODUCTION TO LATINA/HISPANIC FEMINISM. 3 Hours.

This interdisciplinary course explores Latina/Hispanic feminism through the intersection of race, class, gender, and sexuality. This course is organized around the following issues: colonization, immigration, globalization, sexism, health, and violence. Through an analysis of cultural production, politics, socio-economics, literary texts, and feminist methodology, the goal of this course is to develop a robust understanding of how Latina/Hispanic feminist methodologies can be used as tools for social change and social justice. Offered as WOMS 3301, MAS 3301, and DIVR 3301. Credit will only be granted in one department.

DIVR 3305. WOMEN'S HEALTH ISSUES. 3 Hours.

Will address specific issues of importance to women and their health, including growth and development, nutrition, reproductive health, pregnancy, chronic diseases, and relationship/family issues. Offered as DIVR 3305, HEED 3305 and WOMS 3305. Credit will be granted only once.

DIVR 3328. MARITAL AND SEXUAL LIFESTYLES. 3 Hours.

Contemporary American lifestyles selected from: singles, traditional marriage, homosexuals, single-parent families, open marriage, non-marital sexuality, cohabitation, dual-career marriage, childless couples, egalitarian marriage, families in later life. Offered as DIVR 3328, SOCI 3328 and WOMS 3328; credit will be granted only once.

DIVR 3356. WOMEN, WORK AND SOCIAL CHANGE. 3 Hours.

Women's work experiences, how these experiences are changing, and relationship between paid employment and non-wage household labor. Paid and unpaid work experiences are empirically examined in terms of a variety of theoretical perspectives. Offered as DIVR 3356, SOCI 3356 and WOMS 3356; credit will be granted only once.

DIVR 3385. WOMEN AND CRIME. 3 Hours.

This course examines criminology and criminal justice issues as they relate specifically to women. The three major areas of coverage include (1) women and girls as victims of crime, (2) women and girls as criminal offenders; and (3) women working in the criminal justice system. Offered as DIVR 3385, CRCJ 3385 and WOMS 3385; credit will be granted only once.

DIVR 4350. SPECIAL TOPICS IN DIVERSITY STUDIES. 3 Hours.

Special topics of interest in the disciplines of Diversity Studies. May be repeated for credit when the topic changes.

Division of Student Success (UNIV)

COURSES

UNIV 1000. FIRST YEAR EXPERIENCE. 0 Hours.

A course that orients students to life on UTA's campus and emphasizes engagement beyond the classroom. Students in this course will experience the UTA community by attending campus events and making connections beyond their studies, including interaction with career services, the library and financial literacy services. Students will also be able to identify campus resources to support their wellness from multiple aspects of their lives, both the social and the physical. Each UNIV 1000 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs will work with students on finding their place on campus, learning academic success skills, and developing a degree map.

UNIV 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

UNIV 1302. COLLEGE LEARNING. 3 Hours.

An introduction to the learning strategies and behaviors necessary for academic success in academic programs and in personal and career development. Focus is on self-assessment, self-regulation, and employing cognitive and psychological theories and strategies for self-change. Students complete a self-change project based on theories and models of behavior modification. Gateway Advantage students are required to enroll in this course during their first semester.

UNIV 3335. PEER ACADEMIC LEADER TRAINING. 3 Hours.

Students are trained on the expectations and responsibilities of becoming a Peer Academic Leader (PAL). These students will work as group leaders for UNIV 1131 after successful completion of the course. Students will learn group instruction procedures and requisite guidance material to explain academic regulations and student services, analyze study skills, initiate appropriate study habits, and make appropriate referrals when necessary. Focus on classroom management, learning theory, and lesson plan development. Elective credit; does not count as part of the professional education certification requirements. Prerequisite: Permission of the instructor.

Early Childhood Education (ECED)

COURSES

ECED 4308. APPLICATIONS IN TECHNOLOGY FOR TEACHERS OF YOUNG CHILDREN. 3 Hours.

Provides introduction to basic computer operations and technology, including fundamentals of formatting documents in ClarisWorks; spreadsheet, database and word processing. Students will examine hardware and software appropriate for use with young children and consider developmentally appropriate use of technology in early childhood classrooms. Taken concurrently with ECED 4310 and ECED 4311. Field experience required. Prerequisites: ECED 4305, BEEP 4306, and EDTC 4301.

ECED 4310. SPECIAL POPULATIONS AND DIVERSE SETTINGS. 3 Hours.

Provides preparation for accommodating children with special needs in EC-6 classroom settings. Focus on characteristics of children with special needs, program accommodations, legal issues, individual assessment and planning, family and agency involvement, and inclusion strategies. Course will examine a variety of diverse settings where children and families live and learn, including homeless shelters. Taken concurrently with BEEP 4384 and ECED 4311. Field experience required. Prerequisites: ECED 4305.

ECED 4318. FOUNDATIONS OF EARLY CHILDHOOD EDUCATION. 3 Hours.

History, issues, and trends in early childhood education; impact of state and federal mandates on programs for children; and foundations for early learning including learning environments, curriculum development, instructional delivery, guidance, and appropriate assessment. Five hours observations in the field required. This course is a prerequisite course and must be taken with ECED 4317.

ECED 4319. OBSERVATION AND ASSESSMENT OF EC-6 CHILDREN. 3 Hours.

Principles of designing and implementing authentic assessment techniques that are individually respectful, culturally fair, reliable, and appropriate for children in EC-6 classrooms. Emphasis on observation, documentation, portfolios, informal and formal evaluations, group tests and measurements, purposes of norm-referenced and criterion-referenced tests, and research findings in assessment of children. Taken concurrently with ECED 4314 and ECED 4687 Residency. Prerequisite: BEEP 4384, ECED 4310 and ECED 4311.

ECED 4320. FOUNDATIONS OF ELEMENTARY EDUCATION. 3 Hours.

A study of developmentally appropriate curriculum and methods for elementary classrooms, including diversity, assessment, behavior guidance and management, planning instruction and creating positive learning environments. Includes an overview of the history of elementary education and issues currently facing the profession. Course will also address instructional needs and appropriate assessment of all students in inclusive, multicultural, and multilingual classrooms. Five hours observations in the field required. Field-based experiences required - One full day per week on elementary campus. Prerequisite: ECED 4317 and ECED 4318. Taken concurrently with ECED 4320, and BEEP 4306.

ECED 5190. SELECTED TOPICS IN EARLY CHILDHOOD EDUCATION. 1 Hour.

An examination of different topics related to early childhood education. This course may be repeated for credit with permission.

ECED 5191. INDEPENDENT RESEARCH. 1 Hour.

Research over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

ECED 5290. SELECTED TOPICS IN EARLY CHILDHOOD EDUCATION. 2 Hours.

An examination of different topics related to early childhood education. This course may be repeated for credit with permission.

ECED 5291. INDEPENDENT RESEARCH. 2 Hours.

Research over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

ECED 5310. DIVERSE POPULATIONS IN TODAY'S SCHOOLS. 3 Hours.

Provides preparation for accommodating children with special needs in EC-6 classroom settings. Focus on characteristics of children with special needs, program accommodations, legal issues, individual assessment and planning, family and agency involvement, and inclusion strategies. Course will examine a variety of diverse settings where children and families live and learn, including homeless shelters.

ECED 5321. LANGUAGE AND LITERACY DEVELOPMENT YEARS. 3 Hours.

Examine relationships among listening, speaking, reading, and writing. Focus on verbal and non-verbal communication skills in native and second-language development. Consider theories of speaking, reading, and writing in children, with focus on the use of children's literature in social and cognitive development.

Economics (ECON)

COURSES

ECON 2110. SELECTED TOPICS IN ECONOMICS. 1 Hour.

Topics of current interest in economics. The subject title is to be listed in the class schedule. May be repeated for credit when the topic changes. Prerequisite: ECON 2305 or ECON 2306.

ECON 2305. PRINCIPLES OF MACROECONOMICS. 3 Hours. (TCCN = ECON 2301)

(ECON 2301). Elementary models of the macroeconomy. Measures of aggregate economic activity and unemployment and inflation, money and banking, monetary and fiscal policy, international trade and payments, and applications of theory to society's problems.

ECON 2306. PRINCIPLES OF MICROECONOMICS. 3 Hours. (TCCN = ECON 2302)

(ECON 2302) The science of choice; develops demand, supply, and the market mechanism for allocating society's scarce resources; analyzes the impact of different industry structures in the market; applies the tools of microeconomic analysis to various topics such as price controls and international trade.

ECON 2337. ECONOMICS OF SOCIAL ISSUES. 3 Hours.

Economic analysis and application of basic economic principles to a variety of social issues and topics. Students will become familiar with the U.S. economy, its structure, and how economics applies to an assortment of public policy topics such as crime, energy, immigration, drug use, prostitution, minimum wage, our aging population, healthcare, gender driven wages, recycling, and the macro economy, to name a few. In addition, current economic issues and events may be incorporated into the course via lecture and/or class discussions. This is a non-technical course which satisfies the core requirement for social and behavioral studies. Will not serve to meet degree requirements for College of Business Administration majors. Offered as ECON 2337 and AAST 2337; credit will be granted in only one department.

ECON 3222. BITCOIN AND ECONOMICS OF CRYPTOCURRENCIES. 2 Hours.

Bitcoin (BTC) is a digital asset with unique characteristics that has spawned an industry of similar digital assets called cryptocurrencies. The course will examine BTC (and other cryptocurrencies) as both a vehicle for wealth storage and a transaction asset, analyze the market valuation of cryptocurrencies within the context of modern asset pricing theory at an introductory level, and examine the specific characteristics of the BTC market compared to other asset markets. Prerequisite: ECON 2306.

ECON 3301. THE ECONOMICS OF HEALTH. 3 Hours.

Applies economic analysis to the health sector; examines issues involving health insurance and how these issues have been addressed by the market and by the government; role of market structure in health care markets such as the hospital and pharmaceutical industries; compares the U.S. health care system to health care systems in other countries. Prerequisite: ECON 2306.

ECON 3302. THE ECONOMICS OF CRIME. 3 Hours.

Economic analysis of criminal activity and its impact on the allocation of scarce resources; economic models of criminal behavior, optimum allocation of criminal justice resources, public and private sector approaches to deterrence, and current issues such as gun control and drug abuse prevention. Prerequisite: ECON 2306.

ECON 3303. MONEY AND BANKING. 3 Hours.

Monetary and banking systems of the United States, including the roles that money and interest rates play in the economy, the functions and organization of financial markets, financial institutions, central banks, operations of monetary policy, recent developments in the financial industry and the response of monetary authority. Prerequisite: ECON 2305.

ECON 3304. PUBLIC SECTOR ECONOMICS. 3 Hours.

Examines various economic reasons that may justify government involvement in the economy with particular focus on the problems inherent in government intervention. It considers topics such as the efficiency and fairness of alternative taxing systems, the growth and effects of government debt, and public choice (how spending and taxing decisions are made). It analyzes various government programs such as Social Security, health care, expenditure programs for the poor, etc. Prerequisite: ECON 2306.

ECON 3305. LAWS AND ECONOMICS. 3 Hours.

A review of the economic effects of laws and legal institutions, including property rights, the common law of contracts and torts, regulations, and crime and punishment. Prerequisite: ECON 2306.

ECON 3306. SPORTS ECONOMICS AND BUSINESS. 3 Hours.

Economic principles applied to the analysis of professional and amateur sports. Topics include fan demand, team output decisions, league/conference organization, the societal costs and benefits of government financing of sports facilities, player value, and collective bargaining. The course is designed for both business and economics majors. Prerequisite: ECON 2306.

ECON 3310. MICROECONOMICS. 3 Hours.

Develops the theory of consumer and firm behavior using tools of marginal analysis and game theory. Students learn the features of, and requirements for, competitive equilibrium. Examines strategies and outcomes under imperfect competition such as market power, externalities, and imperfect information. Prerequisite: ECON 2306 and 60 credit hours.

ECON 3312. MACROECONOMICS. 3 Hours.

Aggregate economic performance, including economic growth and business cycles. Models and real data will be used. Interactions among private sector behavior, government policies, central bank actions and international events, and their effects on GDP, employment, growth, and prices will be studied. Prerequisite: ECON 2305, ECON 3303, and 60 credit hours.

ECON 3313. INDUSTRIAL ORGANIZATION AND PUBLIC POLICY. 3 Hours.

Explains market structure and its relation to strategic behavior, advertising, pricing and product differentiation decisions. Further topics include the organization of the firm, takeovers, mergers and acquisitions, research and development, and the various regulatory controls placed on firms and industries. Prerequisite: ECON 2306.

ECON 3317. STATISTICS FOR ECONOMETRIC ANALYSIS. 3 Hours.

Course reviews probability and statistics needed for econometric analysis. Topics include preliminary Bayesian Statistics, expectations, measures of central tendency, the Central Limit Theorem, and basic hypothesis testing including the t-test. Students also learn basic coding necessary for these practices in Excel and other programs. Prerequisite: BSTAT 3321.

ECON 3318. REGRESSION ANALYSIS AND DATA VISUALIZATION. 3 Hours.

Building on ECON 3317, students learn how to answer questions with data via regression analysis by exploring the connections between observed economic data and their underlying populations. Various computer programs are used to both perform analysis and present results in a clear, concise and visually appealing way. Emphasis is placed on applications and hands-on data analysis. Prerequisite: ECON 3317.

ECON 3328. PRINCIPLES OF TRANSPORTATION. 3 Hours.

The application of microeconomic and statistical tools in the analysis of the various modes of transportation. Topics for discussion include transportation as a derived demand, regulation of transportation, mass transit, and international issues in transportation. Prerequisite: ECON 2306.

ECON 3335. ECONOMICS OF PUBLIC POLICIES. 3 Hours.

Applies the principles of microeconomics to a wide range of public policy topics, including education, energy, health care, immigration, drugs, crime, recycling, risk and safety, Social Security, sports stadiums, tax policy, and topics on the economics of the family. Prerequisite: ECON 2306.

ECON 3388. EUROPEAN ECONOMIC HISTORY, 1750 TO PRESENT. 3 Hours.

An economic analysis of historical events leading up to and following the Industrial Revolution, large-scale industry, early banking, commerce, Utopian movements, war, postwar economic integration and the continuing debate over economic globalization. Prerequisite: ECON 2305.

ECON 4191. STUDIES IN ECONOMICS. 1 Hour.

Advanced studies, on an individual basis, in the various fields of economics. Prerequisite: ECON 2306 and 90 credit hours and departmental permission.

ECON 4291. STUDIES IN ECONOMICS. 2 Hours.

Advanced studies, on an individual basis, in the various fields of economics. Prerequisite: ECON 2306 and 90 credit hours and departmental permission.

ECON 4300. ADVANCED COMMUNICATION FOR BUSINESS AND ECONOMIC PROFESSIONALS. 3 Hours.

The course includes the creation of documents that can include financial formulas and economic forecasting, industry-specific reports, and presentations incorporating the results of a financial or economic theory and corresponding research. The course will use a variety of learning methods including lecture, class discussion, case analysis and presentation, guest speakers, and written exercises. This course is required to be eligible to sit for the Certified Business Economic (CBE) Exam. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: BCOM 3360 and senior status in BS Economics or consent of instructor.

ECON 4302. ENVIRONMENTAL ECONOMICS. 3 Hours.

Economic forces that influence the quality of the environment; economic theory and environmental management; regulatory requirements for economic impact analysis; international issues including trade and implications for Third World economies. Prerequisite: ECON 2306.

ECON 4305. THE ECONOMICS OF DISCRIMINATION. 3 Hours.

Course reviews the economic theory of discrimination that arises from personal preference and social forces, that is revealed in numerous market situations. Empirical evidence of the impact on employment, careers, purchasing, business practice, and economic outcomes are studied. Students will prepare presentations on the topic. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: ECON 2306.

ECON 4306. COMPARATIVE ECONOMIC SYSTEMS. 3 Hours.

Studies how differing economies are organized with respect to market, command, and traditional institutions. Several empirical economics are evaluated and compared with respect to performance and efficiency. Each economy is placed within its unique historical and social context to explore why certain institutions work in one situation but may fail in others. Prerequisite: ECON 2306.

ECON 4311. MANAGERIAL ECONOMICS. 3 Hours.

Applies Economic Optimization as the fundamental methodology to guide decisions at the firm level. Microeconomic Theory provides the foundation for decision making and strategy. Topics include investment decisions, pricing, price discrimination, strategy, bargaining, uncertainty, moral hazard and adverse selection, and incentive structures for employees and for units of the firm. The class is real-world-oriented exploring actual decisions of firms. Prerequisite: ECON 2306 and 60 credit hours.

ECON 4316. DIGITAL BUSINESS TRANSFORMATION. 3 Hours.

Economics and strategy applied to emerging online markets: the gig economy (e.g., Airbnb, Uber, Slashdot), digital entertainment (e.g., Spotify, Netflix, Hulu), and video gaming (e.g., World of Warcraft, Play Store, Twitch). Economic concepts covered will include platforms, pricing, product positioning, social media, collaboration. Explores how various aspects of IT have transformed previous business models and how future developments could transform it further. Prerequisite: ECON 3310 or ECON 4311 or Consent of the instructor.

ECON 4318. ECONOMIC REGRESSION ANALYSIS CAPSTONE. 3 Hours.

Course builds on linear regression models learned in ECON 3318. Students explore the causal relationships between variables and learn how to use more advanced regression analysis techniques. Students display their mastery of regression analysis through a capstone project using techniques from the course to present their findings. Prerequisite: ECON 3318.

ECON 4319. ECONOMIC GROWTH AND DEVELOPMENT. 3 Hours.

The issues underlying vast differences in development among the nations of the world. Course covers the elements of theories of growth, the role of international trade, and issues of institutional structures related to economic progress in a nation. Prerequisite: ECON 2305 and ECON 2306.

ECON 4320. GAMES AND DECISION MAKING. 3 Hours.

Game theory studies the strategic interactions between two or more parties. These interactions are common in business, law, politics, and sports. Examples include analysis of "games" in the real world such as competition among firms, complex business decisions, and political campaigns. This course starts with the basics of game theory (such as Nash equilibrium and dominant strategies) and moves to more complicated games such as repeated and stochastic games, and auctions. The course includes in-class demonstrations, hands-on experiments, and real-world examples. Students will think analytically and frame strategic interactions by accessing the incentives of those involved through the tools discussed. Prerequisite: ECON 2306.

ECON 4321. INTERNATIONAL TRADE. 3 Hours.

The course provides an understanding of international trade (international movement of goods and services), migration (international movement of labor), and investment (cross-border movement of assets) theories. It is designed to better understand the implications of such theories as they relate to international business management. It helps managers deal with the opportunities and challenges created by the global environment. Prerequisite: ECON 2306.

ECON 4322. INTERNATIONAL FINANCE. 3 Hours.

The nature and instruments of international payments. International financial institutions and arrangements. Exchange rate, balance of payment, and income determination theories. Prerequisite: ECON 2305.

ECON 4323. MATHEMATICAL ECONOMICS. 3 Hours.

This course focuses on applying mathematical concepts to solve economic and business problems. Course will upgrade mathematical skills for graduate work in economics and business. The emphasis is on calculus and linear algebra and their economic applications. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: MATH 1315 or MATH 1316 and ECON 3310 and ECON 3312.

ECON 4324. MONETARY AND FISCAL POLICY. 3 Hours.

The effects of money on production and national income; quantity and commodity theories of money; various theories of interest rates; instruments and policies of Federal Reserve monetary action; proposals for monetary reform. Central bank systems. Prerequisite: ECON 2306 and ECON 3303 and 60 credit hours.

ECON 4325. ECONOMIC FORECASTING. 3 Hours.

The class presents methods that allow users to capture movement in data related to seasonality, trend and cycles to produce forecasts for economic date. Students are exposed to practical coding applications in software including R. Prerequisites: ECON 3318 or equivalent.

ECON 4330. HUMAN RESOURCE ECONOMICS. 3 Hours.

Application of economic principles to labor topics such as the demand for marriage, the demand for children, the economics of beauty, the economics of highly paid sports and entertainment stars, the effects of immigration on U.S. wages and employment, workplace discrimination, the effects of affirmative action policies, and the effects of minimum wage legislation. Prerequisite: ECON 2306.

ECON 4331. SEMINAR IN ECONOMICS. 3 Hours.

Readings and discussions of special topics in economics. Prerequisite: 60 or 90 credit hours and consent of instructor. May be repeated for credit with consent of department chair.

ECON 4391. STUDIES IN ECONOMICS. 3 Hours.

Advanced studies, on an individual basis, in the various fields of economics. Prerequisite: ECON 2306 and 90 credit hours and departmental permission.

ECON 4393. ECONOMICS INTERNSHIP. 3 Hours.

Practical training in economics. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

ECON 5182. INDEPENDENT STUDIES IN ECONOMICS. 1 Hour.

Extensive analysis of an economic topic. Prerequisite: Departmental Permission Required.

ECON 5199. GRADUATE ECONOMICS INTERNSHIP. 1 Hour.

Practical training in economics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

ECON 5282. INDEPENDENT STUDIES IN ECONOMICS. 2 Hours.

Extensive analysis of an economic topic. Prerequisite: Departmental Permission Required.

ECON 5299. GRADUATE ECONOMICS INTERNSHIP. 2 Hours.

Practical training in economics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

ECON 5300. ADVANCED COMMUNICATION FOR BUSINESS AND ECONOMIC PROFESSIONALS. 3 Hours.

This course focuses on developing industry-specific acumen necessary to work in the fields of economics, finance, marketing, management, and information systems. The course includes the creation of documents that can include financial formulas and economic forecasting, industry-specific reports, and presentations incorporating the results of a financial or economic theory and corresponding research. The course will use a variety of learning methods including lecture, class discussion, case analysis and presentation, guest speakers, and written exercises. This course is required to be eligible to sit for the Certified Business Economic (CBE) Exam.

ECON 5301. MATHEMATICAL ECONOMICS. 3 Hours.

Course is designed to upgrade mathematical skills for graduate work in economics and business. The emphasis is on calculus and linear algebra and their applications in economic analysis. Mathematical tools covered include optimization, comparative-statics analysis, and simple dynamic analysis. Prerequisite: MATH 1316 or other calculus course.

ECON 5305. THE ECONOMICS OF DISCRIMINATION. 3 Hours.

Course reviews the economic theory of discrimination that arises from personal preference and social forces, that is revealed in numerous market situations. Empirical evidence of the impact on employment, careers, purchasing, business practice, and economic outcomes is studied. Students will prepare presentations on the topic. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: Graduate student standing regardless of major.

ECON 5306. ENVIRONMENTAL ECONOMICS. 3 Hours.

An examination of the development of laws and policies that concern the environment followed by an application of economic analysis for environmental issues such as water use, air pollution, land controls, public lands, and global environmentalism. Other topics include: property rights, theories of regulation, and enviropreneurship. Participants will produce and present a case study on an environmental economic subject of interest. Prerequisite: ECON 5311 or equivalent.

ECON 5310. MICROECONOMIC THEORY. 3 Hours.

Development of marginal analysis and game theory tools in economics; focus on the analysis of consumer choice and decision making by firms; development of competitive model and various deviations from competition including the exercise of market power, externalities, and information asymmetries. Prerequisite: ECON 3310.

ECON 5311. ECONOMIC ANALYSIS. 3 Hours.

Provides an overview of microeconomic foundations of economic analysis with a focus on business applications. Topics include supply and demand, marginal analysis, pricing issues, and theory of the firm. An overview of macroeconomics is also provided, covering monetary and fiscal policy, inflation, growth, and international trade. Non-credit for MS in Economics.

ECON 5312. MACROECONOMIC THEORY. 3 Hours.

Study of contemporary macroeconomic theory and applications, including stylized facts of macroeconomics, the general framework for macroeconomic analysis, the analysis of modern macroeconomic models, and the long-run economic growth. Prerequisite: ECON 3312.

ECON 5313. DECISIONS AND STRATEGY. 3 Hours.

Decision analysis applied to pricing, hiring, investing, and partnering. Analyze conditions needed to create competitive advantage. Applications to decisions regarding: entering markets, launching products, developing informational advantages, establishing contractual and non-contractual relationships, and managing incentives within the organization.

ECON 5314. ECONOMIC ANALYSIS FOR BUSINESS DECISIONS. 3 Hours.

This course demonstrates how microeconomic theory can be used in business decision-making. Analytical tools are developed to study competitive analysis, strategic position and dynamics, internal organization of the firm, and the firm's strategic position in the supply chain. Through the use of real business information, the class provides an understanding of how to link economic theory with practice. Students will engage in empirical analysis. Prerequisite: ECON 5336 or BSAD 6317 concurrent.

ECON 5315. COMPETITION, INNOVATION, AND STRATEGY. 3 Hours.

Based on economic analysis, students develop the skills to assess the competitive landscape and identify appropriate strategic responses. Applications include: Strategic Pricing, Product Positioning, Project Selection, Entry/Exit, R&D Investments, Organizational Structure, and Supply Chain Incentives. Prerequisite: ECON 3310 or equivalent.

ECON 5316. DIGITAL BUSINESS TRANSFORMATION. 3 Hours.

Economics and strategy applied to emerging online markets: the gig economy (e.g., Airbnb, Uber, Slashdot), digital entertainment (e.g., Spotify, Netflix, Hulu), and video gaming (e.g., World of Warcraft, Play Store, Twitch). Economic concepts covered will include platforms, pricing, product positioning, social media, collaboration. Explores how various aspects of IT has transformed previous business models and how future developments could transform it further. Prerequisite: ECON 5313 or ECON 5314 or ECON 3310 or Consent of the instructor.

ECON 5318. ECONOMICS OF SPORTS. 3 Hours.

Economic principles applied to the analysis of professional and amateur sports. Topics include fan demand, team output decisions, league/conference organization, the societal costs and benefits of government financing of sports facilities, player value, and collective bargaining. The course is designed for both business and economics majors. Prerequisite: ECON 5311 or equivalent.

ECON 5319. THE GLOBAL ECONOMY. 3 Hours.

Students explore the theoretical foundations and real world evidence of topics in international trade, commercial policies (such as tariffs and quotas), and international finance. The emphasis in the first part of the course is on the welfare implications of international trade and commercial policies. The second part looks at international finance and open economy macroeconomics covering the foreign exchange market, balance of payments, and international parity conditions. Prerequisite: ECON 5311 or ECON 5314.

ECON 5321. GLOBAL BUSINESS ANALYTICS. 3 Hours.

This course provides a working knowledge of tools that influence the decisions multinational firms make in the global environment. It is designed to understand the implications of international trade, investment, and institutional theories as they relate to international business management. It focuses on how to test the implications of theories using global data sets. Participants will complete an empirical research project and present their findings. Prerequisite: ECON 5336 or BSAD 6317, or consent of the instructor.

ECON 5325. TRANSFER PRICING. 3 Hours.

Course concerns the theory, practice, strategy and taxation of intra-firm trade among affiliated entities of a multinational enterprise (MNE). Transfer pricing is important for maximizing profits, monitoring performance of segments of an MNE, establishing control over cash and income flows, advancing strategic objectives, and reducing overall corporate tax burden. Issues arise in accounting, economics, taxation, and law.

ECON 5327. MONETARY POLICY AND FINANCIAL SYSTEM ANALYSIS. 3 Hours.

This course reviews the link between financial systems, monetary policy, and the macro economy, with an emphasis on the role that financial markets and institutions play in the domestic and global business environment. Contemporary policy issues are considered and we study how monetary policy actions affect financial markets and institutions. Students will engage in empirical applications using actual data and simulation exercises. Prerequisite: ECON 5336.

ECON 5329. RESEARCH METHODS IN APPLIED ECONOMICS. 3 Hours.

Each student presents a replication of a published article that uses methods from Econometrics I/II, Forecasting, Forecasting and/or Time Series. The instructor will present replications of several published papers and assist students in choosing studies that they will attempt to replicate. Class meetings will focus on answering specific questions that arise as students carry out their replication exercises. The course concludes with student presentations, along with submission of a written report summarizing the replication effort and detailing the extent to which published results were replicable. The goal is to develop the skills to write quality papers using a variety of statistical techniques. Prerequisite: ECON 5336 or BSAD 6317.

ECON 5330. HUMAN RESOURCE ECONOMICS. 3 Hours.

This course studies labor supply decisions made by households, labor demand decisions made by firms, and the equilibrium wage differences that result from these decisions. Other topics include unemployment, human capital investments, efficiency wages and other incentive schemes, inequality, labor mobility and migration, and discrimination. Prerequisites: ECON 5311 or equivalent.

ECON 5331. PROJECT EVALUATION AND FEASIBILITY ANALYSIS. 3 Hours.

This course introduces feasibility analysis including demand/market evaluation, cost estimation, and benefit-cost analysis. Students gain the ability to apply economic analysis methods (present worth, annual cost, rate of return, benefit-cost ratios, and breakeven) to basic economic problems. Other issues include depreciation; risk and uncertainty; sensitivity analysis; and global economic factors that impact the economy and project funding. Students will perform an empirical evaluation of project feasibility using cost-benefit tools. Prerequisite: ECON 5314 or consent of instructor.

ECON 5332. GOVERNMENT, TAXES, AND BUSINESS STRATEGY. 3 Hours.

The interaction between government and business is broad. Effective business leadership requires the ability to analyze and respond to public policy. Economics provides a framework for understanding the incentives of consumers, businesses, bureaucrats, and civil servants in different policy environments and predicting their behavior in response to policy changes. This course focuses primarily on tax policy at the federal, state and local levels, including issues in corporate taxation, personal income tax, treatment of capital gains and losses, tax incidence, work-leisure choices, fiscal competition among state and local governments, capital flight, and fiscal federalism. Prerequisite: Graduate Standing.

ECON 5333. ECONOMICS OF HEALTH. 3 Hours.

Economic analysis applied to current health policy issues, including health expenditures, public and private insurance, incentives, provider education and labor markets, hospitals, prescription drugs, malpractice, long-term care, the Internet, and various proposals for reform.

ECON 5336. APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS I. 3 Hours.

Develops an understanding of statistical and econometric techniques. Participants exploit real data and computational power to uncover patterns/trends and examine relationships. Focus on conceptual frameworks and the application of techniques to data sets in various fields. Participants learn to use statistical packages such as R and SAS to apply the tools to real data and will complete an empirical analysis paper. Prerequisite: Graduate standing.

ECON 5337. BUSINESS & ECONOMIC FORECASTING. 3 Hours.

The course develops univariate and multivariate methods that allow users to capture patterns in data related to seasonality, trend and other random components to produce forecasts that are useful in virtually any business environment. Students also gain extensive practical experience coding in R and will be able to use statistical tools to critically assess the usefulness of alternative methods. Prerequisite: ECON 5336 or BSAD 6317 or consent of instructor.

ECON 5338. APPLIED TIME SERIES. 3 Hours.

Covers topics of time series data analysis popularly used in many fields, including economics and business. Begins with univariate analysis of time series data with the focus on ARIMA, GARCH model, and unit-root tests, and extends to multivariate analysis of distributed lag model, VAR, and cointegration tests. The last part of the course is devoted to discussion of popular nonlinear dynamic models, such as TAR and structural breaks, before moving on to dynamic panel data models. Since emphasis is put on empirical applications, students will spend time in the computer lab to apply the techniques they learn to a variety of time series data. Students will undertake empirical analysis using statistical software. Prerequisite: ECON 5336 or BSAD 6317.

ECON 5339. APPLIED BUSINESS AND ECONOMICS DATA ANALYSIS II. 3 Hours.

The course covers cross-section, panel data, and limited dependent variables methods. Topics may include analysis of natural experiments/differences-in-differences, panel data methods, instrumental variable estimation, simultaneous equation models, sample selection corrections, and limited dependent variable and hierarchical models. Participants learn how to use statistical packages such as R, SAS, and STATA to apply these methods to data to examine causal relationships. They build an understanding of appropriate methods for different research design. Participants will complete an empirical research paper. Prerequisite: ECON 5336/BSAD 6317, or consent of the instructor.

ECON 5341. ADVANCED BUSINESS AND ECONOMIC DATA ANALYTICS. 3 Hours.

Students use advanced modeling and estimation techniques applied to large data sets collected by both business and government. The course includes assignments designed to give practical experience at applying the advanced statistical methods, culminating in a final project that includes a written report and class presentation. Projects will exploit data from various sources, such as sales transactions, individual health records, Internet search results, Twitter feeds, and environmental data. The advanced techniques covered may include data mining, statistical visualization, computational statistics, and other computer-intensive statistical methods. Prerequisite: ECON 5336 and ECON 5339; or BSAD 6317 and BSAD 6318.

ECON 5342. ADVANCED BUSINESS AND ECONOMICS COMMUNICATION (3,0). 3 Hours.

This class encompasses oral and written communication necessary for professional communication. Students will complete deliverables for an electronic portfolio including written work samples that reflect their understanding of financial and economic principles and practices in their field of expertise. Students will evaluate best practices for writing technical documents for: crisis, marketing, negotiation, human resources, persuasion, employment, and networking pertaining to major field of study. Students will complete an oral presentation on an industry-specific topic. This course fulfills NABE requirements for communications in order to sit for CBE exam.

ECON 5343. CAUSAL INFERENCE FOR BUSINESS DECISIONS. 3 Hours.

Students learn methods to identify and measure the outcomes of business decisions. In particular, students will learn various issues pertaining to the miss-attribution of causal effects. The course surveys multiple methods to overcome the misidentification problem. Students will engage in empirical analysis. Prerequisites: ECON 5336 or BSAD 6317 and ECON 5339 or BSAD 6318.

ECON 5382. INDEPENDENT STUDIES IN ECONOMICS. 3 Hours.

Extensive analysis of an economic topic. Prerequisite: Departmental Permission Required.

ECON 5391. SPECIAL TOPICS IN ECONOMICS. 3 Hours.

In-depth study of selected topics in economics. May be repeated when topics vary. Prerequisite: Departmental Permission Required.

ECON 5398. THESIS. 3 Hours.

Graded R/F only. Prerequisite: Permission of Graduate Advisor in Economics.

ECON 5399. GRADUATE ECONOMICS INTERNSHIP. 3 Hours.

Practical training in economics. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

ECON 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: Permission of Graduate Advisor in Economics.

ECON 5998. THESIS. 9 Hours.

Graded P/F/R. Prerequisite: Permission of Graduate Advisor in Economics.

ECON 6310. ADVANCED MICROECONOMIC THEORY. 3 Hours.

Investigates the advanced neoclassical theory of microeconomics. The course develops formal models of consumer behavior, market structure, general equilibrium, and welfare. The objective of the course is to acquaint students with the analytical tools necessary to evaluate the formal literature in economics and to conduct scientific, hypothesis-driven statistical studies. Prerequisites: ECON 5301 and ECON 5310.

ECON 6312. ADVANCED MACROECONOMIC THEORY. 3 Hours.

Topics include dynamic general equilibrium analysis of model economies, monetary theory in overlapping generations models, advanced growth theory, and new open-economy macroeconomics. Prerequisites: ECON 5301 and ECON 5312.

Education (EDUC)

COURSES

EDUC 2101. EXPLORING TEACHING. 1 Hour.

An opportunity to experience a mentorship with public school students while exploring the impact Gardner's Multiple Intelligences and personality profiles play in the learning environment. Ten hours of mentorship required. Academic credit awarded. Service Learning course.

EDUC 2302. THE PROFESSIONAL EDUCATOR. 3 Hours.

This course introduces students to the teaching profession. Professionalism, ethics, learning theory and historical foundations, advocacy, and current trends and issues in education will be examined. Students will develop a personal philosophy of education. This course fulfills the University requirement for either UNIV 1101 or UNIV 1131.

EDUC 2330. STUDENT LEADER EFFECTIVENESS TRAINING. 3 Hours.

Identifies the philosophy and theories of leadership, leadership styles, and contemporary leadership issues for any student who desires to pursue their leadership education. Practical application of leadership skills are developed through interactive class discussions, analyzing case studies, and group problem-solving and role-playing experiences. Elective only and does not count as part of the professional education certification requirements.

EDUC 3301. TEACHING DIVERSE LEARNERS. 3 Hours.

A survey course that focuses on effective differentiated instruction, assessment, and management strategies for working with diverse learners to build capacity for constructing a culturally responsive learning environment. Designed to provide increased self-awareness and insight into issues of diversity. Additionally, students will examine education law and models related to diverse learners as well as strategies for working with parents and families of diverse learners. Students will evaluate multicultural context, demographics, and practices at a local school. This course requires students to spend a minimum of 20 hours a semester in a K-12 classroom.

EDUC 3333. STEM EDUCATION IN THE PK-12 CONTEXT. 3 Hours.

Methods and materials for integrated STEM teaching and learning in the PK-12 context. Emphasis on developing best practices for an integrated context that combines and makes connections between science, technology, engineering, and mathematics. This includes, but is not limited to, project and problem-based learning, real world problem solving, inquiry-based instruction, computational thinking, and engineering design. Includes field-experience in a PK-12 STEM setting.

EDUC 3390. SPECIAL TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4316. FOUNDATIONS OF EDUCATION. 3 Hours.

The course introduces students to the teaching profession. Historical foundations, professionalism, school law (including special education law), diversity in education, effective communication, family involvement, and current trends and issues in education will be examined. Students will also examine personal reasons for wanting to teach and will create a personal philosophy of education. Field observation required. (2-1).

EDUC 4318. POSITIVE CLASSROOM MANAGEMENT. 3 Hours.

A survey of effective strategies of classroom management based on contemporary research. Particular attention will be paid to creating proactive learning environments through positive behavioral interventions and supports. Outcomes students will demonstrate include: instructional management and application of positive behavioral supports, procedures of assessment for planning classroom management; understanding of functional behavior assessment, a continuum of behavioral support, and the role of behavioral strategies in instructional classroom management; and understanding classroom management systems and instructional formats.

EDUC 4319. CLASSROOM ASSESSMENT. 3 Hours.

This course will introduce students to classroom assessment strategies that are used to inform teaching. Focus will include ways to interpret standardized test results and also create and use authentic classroom-based assessments to design and deliver differentiated instruction. Data-based instructional decisions will also be introduced. Course will include a field-based component.

EDUC 4325. WOMEN IN SCIENCE. 3 Hours.

Explores the role of women in science. Emphasis on gender and science, the history of women in science, gender equity in the classroom, strategies for the retention of women scientists, the current culture/climate for women in science, and contemporary women in science. Offered as EDUC 4325, SCIE 4325, and WOMS 4325. Credit will be granted only once.

EDUC 4331. KNOWING AND LEARNING IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program. Psychological foundations of learning; problem solving in mathematics and science education utilizing technology; principles of expertise and novice understanding of subject matter; implications of high-stakes testing; and foundations of formative and summative assessment. Three lecture hours a week for one semester; additional hours may be required. Prerequisite: SCIE 1201 or SCIE 1334 or concurrent enrollment in either.

EDUC 4332. CLASSROOM INTERACTIONS. 3 Hours.

Restricted to students in the UTeach Arlington program. Principles of delivering effective instruction in various formats (lecture, lab activity, collaborative settings); examination of gender, class, race, and culture in mathematics and science education; overview of policy related to mathematics and science education. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in SCIE 1202 or C or better in SCIE 1334; C or better in EDUC 4331 or concurrent enrollment.

EDUC 4333. MULTIPLE TEACHING PRACTICES IN MATH AND SCIENCE. 3 Hours.

Restricted to students in the UTeach Arlington program who have earned a passing score on the preliminary portfolio. Multiple research-based teaching practices including foundations of project-based, case-based, and problem-based learning environments; principles of project-based curriculum development in mathematics and science education; classroom management and organization of inquiry-based, problem-based/project-based learning classrooms. Three lecture hours a week for one semester with additional fieldwork hours to be arranged. Prerequisite: C or better in EDUC 4332; formal admission to program.

EDUC 4340. HUMAN GROWTH AND DEVELOPMENT. 3 Hours.

Prerequisite to subsequent courses in teacher education. Physical, social, emotional, and cognitive growth patterns from conception to early adulthood, emphasizing familial, cultural, societal, and genetic determinants of behavior. Topics include developmental characteristics of children and adolescents including exceptional learners and students with special needs.

EDUC 4341. ORGANIZATION AND MANAGEMENT OF INSTRUCTION IN SECONDARY SCHOOLS. 3 Hours.

Emphasizes the importance of organizing, developing, and adapting management systems to enhance learning in classroom environments. Managing the teaching-learning process, applying a variety of assessment techniques, motivation, and adapting management styles to meet student needs. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4342. APPLICATIONS OF INSTRUCTION IN MIDDLE/SECONDARY SCHOOL CLASSROOMS. 3 Hours.

Field-based applications of inquiry-based curriculum planning and instructional theory and methods. Includes writing and implementing unit and instructional goals and objectives, using instructional lesson models to meet teacher appraisal criteria including utilization of classroom technology and audiovisual aids, planning for individual needs, and evaluating student progress. This course involves a lecture and application of lecture/theory. The application of lecture/theory will require students to spend time in a Grades 4-12 classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4343. TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL. 3 Hours.

Methods and materials for social studies teaching and learning at the secondary school level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a social studies classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a grades 7-12 social studies classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4344. TEACHING IN MIDDLE/SECONDARY SCHOOL SCIENCE CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based science teaching and learning at the middle/secondary level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a science classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a Grades 4-12 science classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4345. TEACHING IN MIDDLE/SECONDARY SCHOOL MATHEMATICS CLASSROOMS. 3 Hours.

Methods and materials for inquiry-based mathematics teaching and learning at the middle/secondary school level. Emphasis on establishing a productive classroom environment, curriculum planning, implementation of effective instructional strategies, integration of educational technologies, and assessing student learning. Includes field-experience in a mathematics classroom in a local middle or high school. The application of lecture/theory will require students to spend time in a Grades 4-12 mathematics classroom during normal school hours, Monday-Friday, for typically one day a week throughout the semester.

EDUC 4346. SECONDARY SCHOOL CULTURE AND THE TEACHING PROFESSION. 3 Hours.

School cultures, effective schools and teaching practices, stages of professional development, foundations of American schools, legal and ethical aspects, and societal demands on the school.

EDUC 4347. SECONDARY SCHOOL INTERNSHIP WITH TECHNOLOGY APPLICATIONS. 3 Hours.

Supervised and directed professional practice in a local secondary school. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. Internship must be taken the semester prior to residency. Theory from technology will be applied during internship assignment.

EDUC 4352. TEACHING DIVERSE POPULATIONS. 3 Hours.

Effective instruction, assessment, and management strategies for working in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. This course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a K-12 classroom during normal school hours, 8 a.m.-4 p.m., Monday-Friday.

EDUC 4390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a project or a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor.

EDUC 4647. CLINICAL TEACHING IN MIDDLE/SECONDARY SCHOOL/ALL-LEVEL CLASSROOMS. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theories/backgrounds/strategies to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice. Prerequisite: Office of Educational Field Experiences approval required.

EDUC 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5263. READING AND DEVELOPMENT. 2 Hours.

This course will focus on the acquisition of reading skills in the typically developing child. Sub-skills and precursors of reading such as visual and phonological processing will be examined from a neurological point of view. This foundational knowledge will then be applied to researching reading difficulties as well as the teaching and learning in the classroom for typically developing students and those with reading difficulties.

EDUC 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5305. EFFECTIVE TEACHING AND LEARNING FOR 21ST CENTURY EC-12 STUDENTS. 3 Hours.

Students gain understanding of the nature of learning and the purpose of education as the pedagogical foundation to teaching in any discipline. Students develop knowledge of state and national standards and apply these standards vertically and horizontally in preparing high quality teaching and learning experiences. Students gain experience critically analyzing disciplinary content, instructional models, lessons, curricula, and research literature. Students learn to construct and test instructional models using activities that focus attention on diversity, authentic assessments, intellectual, social and emotional development, interdisciplinary connections, and technology. Must be taken prior to EDUC 5309.

EDUC 5309. ADVANCED TEACHING MODELS FOR DIVERSE LEARNERS. 3 Hours.

Students engage in the advanced study and design of curriculum models with an understanding of cognitive development, pedagogical content knowledge (PCK), and learning progressions. Students learn in-depth analyses of how students learn and how to appropriately differentiate instruction. Students learn culturally responsive teaching practices and gain skill in developing learning experiences that attend to teaching diverse learners. Prerequisite: EDUC 5305.

EDUC 5310. DIVERSE POPULATIONS IN TODAY'S SCHOOLS. 3 Hours.

An overview of the diverse populations in today's schools and effective instruction, assessment, and management strategies for working in diverse educational settings. Urban, suburban, and rural school communities and populations will be addressed with special attention to issues of human growth and development, culture, ethnicity, exceptionality, gender, language, religion and socioeconomic status. This course application of lecture/theory which will require students to spend a minimum of 20 hours in a K-12 classroom during normal school hours.

EDUC 5314. EFFECTIVE CLASSROOM INSTRUCTION. 3 Hours.

Designed to provide teachers with skills and competencies based on research findings on effective teaching and instruction related to promoting student academic achievement. Includes identifying, developing, and practicing instructional variables that affect teacher performance and student learning tasks. Includes field-experience in a local middle or high school based on teacher candidate's certification program. The application of lecture/theory will require candidates to spend time in a grades 7-12 classroom during normal school hours, Monday-Friday.

EDUC 5315. CLINICAL TEACHING. 3 Hours.

Supervised clinical teaching in candidate's area of certification. Candidates will be assigned full-time according to school district calendar. Required seminars provide candidates with theory to integrate and apply during clinical teaching. This experience will help candidates apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis.

EDUC 5321. EDUCATIONAL RESEARCH. 3 Hours.

Examination of basic concepts and procedures necessary for empirical research investigations within classroom contexts, experimental design, data collection and interpretation, and statistical analysis.

EDUC 5322. EDUCATIONAL RESEARCH AND EVALUATION. 3 Hours.

An overview of basic concepts and procedures necessary for analyzing, designing, and conducting quantitative and qualitative educational studies. A focus on educational research, including empirical research, investigations data collection and interpretation, and statistical analysis. Also, a focus on educational evaluation including accreditation, personnel appraisal, and educational programs and materials.

EDUC 5329. CLASSROOM MANAGEMENT AND DISCIPLINE. 3 Hours.

Analysis of the variables that affect teacher and student behavior in the classroom. Survey of effective strategies of classroom management and discipline based on contemporary research. Particular attention to individual student differences in settings such as gifted and talented, handicapped, and learning disabled.

EDUC 5330. LEADERSHIP IN THE INSTRUCTIONAL SETTING. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement.

EDUC 5358. THEMATIC SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Professional development program for elementary and secondary science teachers who will examine a variety of instructional strategies. The course will provide a broad spectrum of content from all areas of science and provide opportunities to participate in investigations, field trips and seminars. The course will facilitate the implementation of a thematic science curriculum in elementary and secondary schools through research-based practices.

EDUC 5359. ENVIRONMENTAL SCIENCE FOR ELEMENTARY AND SECONDARY TEACHERS. 3 Hours.

Designed for elementary, middle and high school teachers who will examine a variety of environmental education issues and instructional strategies for classroom and outdoor settings. The course will provide a broad spectrum of content from all areas of science and will provide opportunities to participate in field trips, science investigations and seminar sessions. It will facilitate the implementation of an environmentally based curriculum in schools using best practices.

EDUC 5360. INTRODUCTION TO MIND, BRAIN, AND EDUCATION. 3 Hours.

Students will explore and integrate five themes central to the emerging field of Mind, Brain and Education (MBE): development as seen by cognitive scientists and neuroscientists; the conceptual and technical tools used in MBE; and specific educational issues (e.g., dyscalculia, dyslexia, attention deficits, role of emotions etc.). This course also offers a number of exercises to help students become researchers as well as consumers of research. This iterative work is intended to support the longer-term goal of helping students develop and complete a capstone project for the master degree in Mind, Brain and Education. The capstone project is addressed in numerous courses in the masters program and concludes in EDUC 5368.

EDUC 5361. INTRODUCTION TO EDUCATIONAL NEUROSCIENCE. 3 Hours.

This course is designed to provide an introduction to foundational areas of neuroscience such as brain anatomy and brain mapping techniques and its applications to education. Students will study different viewpoints of links between education and neuroscience and develop their own notions of what educational questions might be answered with brain-based techniques.

EDUC 5362. THE NEUROSCIENCE OF TYPICAL & ATYPICAL LANGUAGE DEVELOPMENT. 3 Hours.

This course will examine the many levels of language including phonetics, phonology, semantics, syntax and pragmatics from both functional and neuroscientific perspectives. This will be closely tied to language acquisition and early language development. The focus on the pre-reading years will provide a solid basis for further study of literacy-related skills and overall learning. Sub-skills and precursors of reading will be examined from a neurological point of view and applied to researching reading difficulties as well as the teaching and learning in the classroom. Course offered as EDUC 5362 and SPED 5309; co-list credit will be granted only as one.

EDUC 5363. THE NEUROSCIENCE OF TYPICAL & ATYPICAL DEVELOPMENT OF MATHEMATICAL AND REASONING ABILITY. 3 Hours.

The course focuses on the development of problem-solving, logical, numeracy, and mathematical skills from a cognitive neurocognitive perspective. Woven throughout the course is attention to cognitive biases in scientific thinking. Two prominent features of the course include neuroplasticity as a result of organic and environmental pressures and brain-based disorders (dyscalculia, ADHD, autism) and adaptive strategies.

EDUC 5364. EPISTEMOLOGY AND NEUROSCIENCE. 3 Hours.

Students will explore the basic principles of reasoning and knowledge construction as well as their psychological and neurobiological underpinnings. Students compare and contrast the deductive and inductive methods used in decision-making and belief-forming processes. The course also highlights the role of the frontal cortex and limbic system in how learners address and resolve questions and challenges in varying contexts. The goal of the course is to offer students the theoretical structures and critical strategies necessary for assessing their own work toward the completion of the capstone project as well as for analyzing the outcomes it generates. The skills acquired in this course are widely transferrable and can help the student to become a better consumer and producer of pedagogical and scientific research.

EDUC 5365. THEORETICAL AND CONCEPTUAL MODELS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course is designed to help students connect cognitive science to instructional practice. Students examine the roles that cognitive models play in learning and in designing lessons and curricula. The cognitive models in this course are used to provide a framework for recognizing possible strategies for improving or re-designing curricula, as well as build lessons or interventions that fit their working context. Students are expected to take part in a prototype curriculum, analyze how it was constructed and to use their insights to build a modest curriculum over the course of the semester.

EDUC 5366. EVALUATING AND DEBUNKING EDUCATIONAL INTERVENTIONS. 3 Hours.

This course focuses on making sense of the impact of interactions between educational variables in complex systems like classrooms and schools. Being able to predict outcomes in dynamic environments requires understanding that the variables themselves can change as a result of interacting with each other, which influences how we understand systems from neural networks to school districts. The general sense of the course will be to understand certain behaviors/characteristics of dynamic systems from the examination and analysis of exemplars from multiple domains. We also examine how areas of the brain demonstrate these characteristics and use them to implement certain functionalities, and in turn examine the implications of these functionalities on curriculum and instruction.

EDUC 5367. RESEARCH METHODS IN MIND, BRAIN, AND EDUCATION. 3 Hours.

This course presents an overview of the process of scientific inquiry, while fostering an understanding of research paradigms used by researchers in MBE. The primary course goals are to support students in developing a framework for their capstone project in MBE, and help them identify the research tools and methods necessary to carry out the capstone project. To support this work students analyze research from MBE as well as the wider literature to identify relevant tools, techniques and methodologies. As students develop expertise with the tools and techniques that are relevant to their capstone project they are expected to share that knowledge with their peers.

EDUC 5368. CONDUCTING RESEARCH IN MIND, BRAIN, AND EDUCATION. 3 Hours.

The goal of this course is to help students in the Mind, Brain and Education program complete their capstone project. Students work collaboratively with fellow students and with faculty oversight to prepare a poster presentation that summarizes their capstone work, as well as choose a local, national or international conference to present their work.

EDUC 5370. INTRODUCTION TO GIFTED AND TALENTED CHILDREN. 3 Hours.

Psychological characteristics of gifted and talented children. Introduction to identification techniques, educational programs, instructional approaches, and special problems.

EDUC 5371. MEASUREMENT AND ASSESSMENT OF GIFTED AND TALENTED CHILDREN. 3 Hours.

Tests, formal and informal measures, and systems for identification and selection of the gifted and talented student. Basic test construction theory, test interpretation, and test uses.

EDUC 5372. METHODS, MATERIALS, AND CURRICULUM FOR THE GIFTED AND TALENTED. 3 Hours.

Curriculum theory and curriculum design for the gifted student. Methodology for implementing practical and theoretical objectives for gifted instruction.

EDUC 5373. CREATIVITY: THEORIES, MODELS, AND APPLICATION. 3 Hours.

The concept of and current research on creativity, the nature and assessment of creative thinking, as well as methods of fostering creativity.

EDUC 5374. PRACTICUM. 3 Hours.

Participation in a gifted and talented setting supervised by a university and/or school district representative. A wide range of practical experiences will be emphasized. Graded P/F/R.

EDUC 5380. DIVERSITY IN EDUCATIONAL SETTINGS. 3 Hours.

Effective leadership, instruction, and management strategies for work in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity such as culture, ethnicity, exceptionality, gender, language, religion, and socioeconomic status. Demographic issues along with urban and suburban educational settings will also be addressed.

EDUC 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDUC 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

EDUC 5394. UNDERSTANDING AND DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this introductory course, students learn about different types of educational research methods and study designs that can be applied to real-world settings. Furthermore, students learn about how to write measurable research questions, ethically collect data, and be introduced to qualitative, quantitative, and mixed methods study designs. At the conclusion of this course, students should be able to understand the basics of educational research to determine whether it would be appropriate for implementation in a real-world authentic setting. This course is to be taken after at least 3 hours of graduate course work and preceding EDUC 5397 or EDUC 5368.

EDUC 5395. DESIGNING CLASSROOM RESEARCH. 3 Hours.

In this course, students will develop their own classroom educational research project. Their designed study will be based in the literature in their educational field and focus on classroom research questions and problems that will inform teaching practices. In this course, students will develop an individual research problem statement, argue the significance of the problem, complete a written literature review and logical chain of reasoning related to the stated problem, write specific research questions to investigate the problem in educational settings, and design a research study (methodology) that will effectively investigate their research questions. Students design a research study that shows promise for improving education, written as the first three chapters of a scholarly classroom action research project. Prerequisite: EDUC 5394. For M.Ed.T. students, this course is to be taken in the final semester of the masters' degree program. For M.Ed. students, this course is to be taken in the semester just prior to the final semester of the masters' degree program, and in the semester immediately preceding EDUC 5397.

EDUC 5396. EEG Laboratory and Experimental Design. 3 Hours.

This course is an introduction to EEG technique, covering experimental design, recording, analysis, and interpretation of brainwaves.

EDUC 5397. IMPLEMENTING AND DISSEMINATING CLASSROOM RESEARCH. 3 Hours.

In this advanced course, students will build on the knowledge gained in EDUC 5394/EDUC 5367 to specifically focus on how to collect, analyze, and interpret different types of data grounded in a variety of educational research methods. This course is split into three sections focusing on quantitative data analyses/interpretations (e.g., correlations, t-tests, and regressions), qualitative data analyses/interpretations (e.g., thematic analysis, content analysis, and summative analysis), and mixed methods analyses/interpretations. At the conclusion of this course, students should be able to collect, analyze, and interpret different types of data commonly used in educational classrooms to make data driven decisions. Prerequisite: EDUC 5394 or EDUC 5367.

EDUC 5600. COUNSELING STUDENTS IN SCHOOLS. 6 Hours.

The focus of this capstone course will be individual and group counseling theories and techniques for pre k-12 students in an educational setting. Special techniques are included for substance abuse, and for using group play therapy. Knowledge of Diagnostic and Statistical Manual of Mental Disorders, 4th. Edition (DSM IV) will be covered for purposes of diagnosis and for outside referral when necessary. Three hours in a supervised counseling practicum in area schools or with school children will be required.

Education (EDUCIR)

COURSES

EDUCIR 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

Education Counseling (EDCO)

COURSES

EDCO 5241. A STUDY OF THE ETHICAL, LEGAL, AND PROFESSIONAL ISSUES IN SCHOOL COUNSELING. 2 Hours.

A study of the ethical, legal, and professional issues involved in the provision of guidance and counseling services in an educational setting. Content includes issues of confidentiality and privileged communication, record keeping, malpractice, client rights, counselor responsibilities, codes of ethics, and relevant laws.

EDCO 5242. TESTING AND ASSESSMENT IN SCHOOL COUNSELING. 2 Hours.

A study of the nature, characteristics, and ethical uses of psychological tests and assessment instruments in an educational setting. Included are measurements of intelligence, aptitude, achievement, interest, and personality.

EDCO 5243. THE SCHOOL GUIDANCE PROGRAM. 2 Hours.

Guidance counselors provide a variety of services in addition to counseling. Career and mental health informational services, mediation and crisis intervention services are included as well as working with parents, community resources, and the instructional staff.

EDCO 5300. Counseling Students in Schools, Part 1. 3 Hours.

During this capstone course and practicum, candidates will attend a three-hour evening course, and must complete a minimum of 80 of their 160 practicum hours in an approved public school. This will include individual counseling, small group counseling, consulting activities, guidance activities delivered to classrooms, planning, testing and test interpretation, and other activities as directed by the site-based mentor counselor and by a UTA supervisor. Additionally, there will be required every-other-Friday two-hour-after-school seminars at UTA.

EDCO 5301. Counseling Students in Schools, part 2. 3 Hours.

This course is a follow up to EDCO 5300 and will also include required every-other-Friday afternoon two-hour-after-school seminars. Candidates will complete their practicum activities this semester by finishing their total of 160 (minimum) supervised hours in their approved public school along with all other course requirements. A university supervisor and a site-based mentor counselor will provide practicum supervision.

EDCO 5340. ADVANCED HUMAN GROWTH AND DIVERSITY. 3 Hours.

This advanced course includes the theories of psychosocial, cognitive, and biological development as well as the characteristics and needs of special populations including gifted and talented and special education. Also included is research on gender, culture, ethnicity, socioeconomic status, intellect, lifestyle, and other issues of relevance for educators and students in today's schools.

Education Middle Level (EDML)

COURSES

EDML 4300. PRE-ADOLESCENT/ADOLESCENT GROWTH AND DEVELOPMENT. 3 Hours.

Prerequisite to subsequent courses in teacher education. Physical, social, emotional, and cognitive growth patterns from emphasizing familial, cultural, societal, and genetic determinants of behavior. Topics include the following: developmental characteristics of pre-adolescents/ adolescents including exceptional learners and students with special needs, a variety of disabilities (Learning Disabled, Emotionally Disabled, Behavior Disorders, Attention Deficit Hyperactivity Disorder, etc.), the creation and purpose of Individual Education Plans, concepts, and forms, as well as the IDEA law, its application and ethical considerations. The course also includes a field component.

EDML 4350. NATURE & CURRICULUM NEEDS OF THE YOUNG ADOLESCENT LEARNER. 3 Hours.

Examines the curriculum, instruction, and organization of middle grades schools. Provides a substantial knowledge base in the nature and needs of early adolescents, as well as in middle school curriculum, instruction, and behavior management. A variety of instructional approaches will be discussed including the purpose and need for appropriate language, behavior, and disability modifications, inclusion, resource, content mastery, and others. Theory and practice in the teaching of students with special needs will be addressed. The course also includes a field component. Prerequisite: Admitted to the Middle Level Program.

EDML 4360. TEACHING STUDENTS WITH SPECIAL NEEDS - A SURVEY. 3 Hours.

Theory and practice in the teaching of students with special needs, including a survey of the variety of disabilities (LD, ED, physical handicapped, conduct, ADD, ADHD, etc.), the creation and purpose of Individual Education Plans, concepts and forms. The IDEA law and its application, and ethical considerations. A variety of instructional approaches will be discussed including the purpose and need for appropriate modifications, inclusion, resource, consult, content mastery and others. Special emphasis will be the State basic skills assessment and the State developed alternative assessment.

EDML 4370. SOCIAL STUDIES & DIVERSITY IN THE MIDDLE LEVEL GRADES. 3 Hours.

Examination of materials, methods, content, and assessment learning experiences associated with middle level social studies. Content areas include history, geography, economics, government, citizenship, culture, science, technology, and society. Prerequisites: EDML 4300 & EDML 4350; BEEP 4384; LIST 4343.

EDML 4371. SCIENCE IN THE MIDDLE LEVEL GRADES. 3 Hours.

Instructional approaches, management, materials, and effective teaching practices pertinent to teaching science in the middle level grades; the organization of science content and the selection and implementation of lesson designs which utilize a hands-on approach promoting discovery and inquiry. This Inquiry course involves a two-hour lecture and two-hour application of lecture /theory. The two-hour application of lecture/theory will require students to spend time in a 4-8 classroom during normal school hours. Prerequisites: EDML 4300, EDTC 4301, and EDML 4350.

EDML 4372. MATHEMATICS IN THE MIDDLE LEVEL GRADES. 3 Hours.

Curriculum standards, methods, and effective teaching practices as proposed by the National Council of Teachers of Mathematics for the middle level; the organization of mathematics content with an emphasis on using manipulatives and technology to teach math. This inquiry course involves a two-hour lecture and two-hour application of lecture/theory. The two-hour application of lecture/theory will require students to spend time in a 4-8 classroom during normal school hours. Prerequisite: EDML 4350.

EDML 4676. MIDDLE LEVEL FIELD-BASED EXPERIENCE. 6 Hours.

Supervised and directed field-based experience, Monday through Thursdays. Candidates will be placed in two settings: an early grade (4,5,6) and late grade (6,7,8) experience as well as in two content areas. Prerequisite: EDML 4300, EDML 4350, LIST 4343, and BEEP 4384. This course must be taken just prior to student teaching (EDML 4677).

EDML 4677. MIDDLE LEVEL CLINICAL TEACHING. 6 Hours.

Supervised and directed clinical teaching experience in an approved field setting, Monday through Friday. Candidates will be assigned for the Independent School District (ISD) calendar. Candidates will be placed in two settings: an early grade (4,5,6) and late grade (6,7,8) experience as well as in two content areas. Required seminars will provide candidates with theory to integrate and apply during clinical teaching. Prerequisites: LIST 4378.

EDML 5302. SCIENCE IN THE MIDDLE GRADES. 3 Hours.

The examination of instructional strategies, materials, current research, and technology pertinent to teaching science in the middle grades; the scope and sequence of science content and implementation of instructional approaches to accommodate diverse student populations.

EDML 5303. MATHEMATICS IN THE MIDDLE GRADES. 3 Hours.

The examination of instructional strategies, materials, current research, and technology pertinent to teaching mathematics in the middle grades; the scope and sequence of math content and the selection and implementation of instructional approaches to accommodate diverse student populations.

EDML 5304. SOCIAL STUDIES IN THE MIDDLE GRADES. 3 Hours.

An examination of content, methods, current research, and learning theory appropriate for social studies education in the middle grades. Special attention to methods that promote analytical and evaluative abilities necessary for participatory democracy in a culturally diverse society.

EDML 5308. MIDDLE GRADES ORGANIZATION, INSTRUCTION, AND MANAGEMENT. 3 Hours.

The examination of principles, theories, and research related to developmentally responsive middle level programs, effective instruction and effective strategies of classroom management. Attention is given to the employment of a variety of approaches for developing an appropriate climate to meet the varying needs of the middle level student.

EDML 5315. CLINICAL TEACHING. 3 Hours.

Clinical teaching in candidate's certification area(s). This longitudinal experience will help candidates apply theory and research to practice.

EDML 5328. PREADOLESCENT/ADOLESCENT GROWTH, DEVELOPMENT, AND LEARNING THEORY. 3 Hours.

Course will focus on physical, social, emotional, and cognitive growth patterns of 10- to 15-year-old children, emphasizing familial, cultural, societal, and genetic determinants of behavior. Attention is given to current research regarding the developmental characteristics of adolescents, including exceptional learners and students with special needs.

EDML 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

Educational Administration (EDAD)

COURSES

EDAD 1130. FOUNDATIONS OF LEADERSHIP. 1 Hour.

Student leadership trainers, under the supervision of the staff in the Department of Student Activities, facilitate class discussion and assist students in identifying the necessary skills for effective leadership in university organizations and in both personal and professional settings. Topics include: leadership vs. management communication, leadership styles and personality traits, emotionally intelligent leadership, ethical leadership, leadership and change, and diversity and cultural awareness. Opportunities are provided for group problem solving, and team interaction and collaboration. Elective only and does not count as part of the professional certification requirements. Pass-Fail grades will be awarded.

EDAD 2330. THEORIES IN LEADERSHIP. 3 Hours.

Identifies the philosophy and theories of leadership, leadership styles, and contemporary leadership issues. Practical application of leadership skills are developed through interactive class discussions, analyzing case studies, and group problem-solving and role-playing experiences.

EDAD 4330. CAPSTONE IN LEADERSHIP STUDIES. 3 Hours.

This capstone course focuses on the synthesis of learning and experiences across the prior 15 hours of coursework. Students will design and present their new understandings of leadership and speculate about futures on the horizon. Prerequisite: EDAD 2330.

EDAD 4390. SELECTED TOPICS IN LEADERSHIP. 3 Hours.

An examination of different topics related to leadership. This seminar may be repeated for credit as the topic changes.

EDAD 4391. INDEPENDENT RESEARCH. 3 Hours.

An examination of selected topics related to leadership. Can be repeated for credit with permission.

EDAD 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDAD 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDAD 5199. PROBATIONARY CERTIFICATION INTERNSHIP. 1 Hour.

This course provides mentoring and supervision to UTA Educational Leadership and Policy Studies students employed as assistant principals or principals while on a Probationary Certificate and not enrolled in either EDAD 5389 or EDAD 5399. Individuals must reenroll in EDAD 5199 while on probation, which is initially issued for one calendar year.

EDAD 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDAD 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDAD 5302. EDUCATIONAL TECHNOLOGY PLANNING. 3 Hours.

This course is designed to help prepare future educational administrators in assessing, revising, or developing a technology plan for their school, district, or campus. Students will explore the overall concepts of technology, new applications of technology, and how they apply to educational standards, such as the National Educational Technology Standards for Teachers (NETS-T) and the Technology Standards for School Administrators (TSSA).

EDAD 5303. TEACHER LEADERSHIP FOR SCHOOL IMPROVEMENT. 3 Hours.

Examine formal/informal leadership in schools emphasizing the roles and contributions of teachers as leaders of instructional improvement at the classroom and school levels. Study organizational dynamics and school culture from theoretical and practical perspectives for improving teaching and learning. Develop leadership strategies for shaping professional learning communities.

EDAD 5304. DATA-DRIVEN ASSESSMENT. 3 Hours.

Examine the impact of national and state-level education standards on curriculum and instruction. Examine the structure and uses of both standardized and informal assessments. Examine methods for using assessment data to design differentiated instruction that meets varying student needs.

EDAD 5305. CURRICULUM DESIGN, IMPLEMENTATION, AND EVALUATION. 3 Hours.

An examination of theory and research in curriculum development, implementation, and evaluation. Emphasis on current trends in the content areas.

EDAD 5306. COACHING AND CONSULTATION SKILLS. 3 Hours.

Examine various methods of coaching at the individual teacher, grade-level or subject-area team, and whole-school levels. Includes in-class instructional demonstrations, teacher observations and providing feedback, coaching through team meetings, and providing whole-school professional development. Also effective ways of including school administrators in instructional improvement.

EDAD 5307. TEACHER LEADERSHIP POLICY TRENDS AND ISSUES. 3 Hours.

Examines current national and state-level trends and policies in teacher leadership. Reviews research on the effects of various models of teacher leadership on instructional improvement.

EDAD 5309. ADVANCED INSTRUCTIONAL STRATEGIES. 3 Hours.

A study of advanced models of teaching, including concept attainment, inductive thinking, inquiry, cognitive growth, non-directive group investigation, laboratory training, simulation and the training model. Research in teacher effectiveness and demonstration of various models will be required.

EDAD 5315. RESEARCH PRACTICUM. 3 Hours.

Examination of basic concepts and procedures necessary for empirical research investigations within classroom contexts, experimental design, data collection and interpretation, and statistical analysis.

EDAD 5321. EDUCATIONAL RES. 3 Hours.**EDAD 5322. EDUCATIONAL RESEARCH AND EVALUATION. 3 Hours.**

An overview of basic concepts and procedures necessary for analyzing, designing, and conducting quantitative and qualitative educational studies. Topics include familiarization with educational journals, associations, funding agencies, accreditation procedures, program evaluation, sampling procedures, data collection, and statistical analyses.

EDAD 5330. LEADERSHIP IN THE INSTRUCTIONAL SETTING PRACTICUM. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement. Prerequisite: EDAD 5389.

EDAD 5350. AMERICAN COLLEGE STUDENT. 3 Hours.

The purpose of the course is to explore and understand the nature, culture, and development of the American College Student. The course focuses on examining a range of development theories that offer insight into the processes of student learning, growth, and development during the college years.

EDAD 5351. HIGHER EDUCATION ADMINISTRATION AND STUDENT AFFAIRS. 3 Hours.

The course is designed to introduce students to the organization, management, and philosophy of higher education administration and student affairs at post-secondary institutions. It explores the range of services and organizations associated with the wide-range of positions that exist in student and academic affairs and helps students gain a better understanding of the potential career opportunities that await them after graduation.

EDAD 5352. HIGHER EDUCATION LAW. 3 Hours.

The purpose of this course is to provide students with the fundamental cases of higher education law for administrators. Topics of this course may include the legal structure of higher education, separation of church and state, religion, academic freedom, employment and tenure, due process, computer-related legal issues, copyright, students' rights of speech and expression, search and seizure, desegregation, tort liability, contracts and collective bargaining.

EDAD 5353. HIGHER EDUCATION FINANCE. 3 Hours.

This course will provide knowledge of the theoretical basis for use of tax funds for education, student fees and tuition, state methods for financing, planning, cost benefit, budgeting, federal role, capital outlay, and the relationships between educational objectives and resource allocations.

EDAD 5354. THE AMERICAN COMMUNITY COLLEGE. 3 Hours.

This course will provide students with the philosophical and historical foundations of the American community college system. Students will explore current issues including, but not limited to, the evolution of the community college baccalaureate, principles of accreditation, institutional effectiveness, workforce development, and federal oversight of community colleges.

EDAD 5355. HIGHER EDUCATION CURRICULUM. 3 Hours.

An examination of theory and research in curriculum development, implementation, and evaluation in higher education settings. Emphasis will be on current trends in the content areas.

EDAD 5356. HISTORY, PRINCIPLES, AND PHILOSOPHY OF HIGHER EDUCATION ADMINISTRATION. 3 Hours.

This course is for current and prospective faculty, administrators, and staff seeking to learn about the American higher education system. The topics addressed include the history, recent developments, and strategies for future management and administration, finance, organization, governance, and the mission and role of higher education in American society.

EDAD 5357. HIGHER EDUCATION TRENDS AND ISSUES. 3 Hours.

The course is designed to introduce students to key issues affecting higher education today. Through diverse and critical readings, the students explore issues such as access and equity, affirmative action, faculty, academic freedom, college costs, and strategic change.

EDAD 5360. LEADERSHIP THEORY. 3 Hours.

Leadership theories and the practice of leadership serve to focus this course designed to prompt self awareness as a school leader.

EDAD 5363. ADVANCED EDUCATIONAL RESEARCH. 3 Hours.

An in-depth coverage of selected topics in the design of research and the collection and analysis of data. Topics include multivariate analyses, experimental and quasi-experimental designs, development and selection of data collection instruments, focus group interviewing, observational research, the delphi method, and interpretive analysis.

EDAD 5365. LEADING LEARNING ORGANIZATIONS. 3 Hours.

The change process in educational settings serves to focus this course. Moving along the continuum of change theories, the planning, adoption, implementation and institutionalization of change are explored across public school and post-secondary learning organizations.

EDAD 5376. EDUCATIONAL GOVERNANCE. 3 Hours.

Focus on the appointed and elected entities and bureaucracies that determine and implement policy in public education.

EDAD 5377. CONTEMPORARY ISSUES IN EDUCATION. 3 Hours.

An exploration of selected controversial issues in contemporary education. Symposium/seminar/lecture format.

EDAD 5379. SUPERINTENDENCY INTERNSHIP. 3 Hours.

Provides experiences in the various roles and responsibilities of a superintendent of schools under the direction of a school district mentor and a university supervisor. An internship project will be developed in consultation with public school and university personnel.

EDAD 5380. DIVERSITY AND EQUITY IN EDUCATION. 3 Hours.

Effective leadership, instruction, and management strategies for work in diverse educational settings. Designed to provide increased self-awareness and insight into issues of diversity and equity such as culture, ethnicity, exceptionality, gender, language, and socioeconomic status. Demographic issues along with urban and suburban educational settings will also be addressed.

EDAD 5381. GOVERNANCE, POLITICAL AND LEGAL ASPECTS OF EDUCATION. 3 Hours.

Focus on the legal foundation of public education, political theory, and application of political skills in working with school personnel, students, parents, and community organizations. The role of the law, court rulings, and the politics of school governance at the federal, state, and local levels will be addressed.

EDAD 5382. FOUNDATIONS OF EDUCATIONAL ADMINISTRATION. 3 Hours.

Will address the various aspects of instructional leadership roles and responsibilities of central office as well as building level administrators and supervisors. Topics included will be history of educational administration, educational philosophy, the global understanding of administrative roles in urban and rural settings, and professional organizations, as well as an overview of educational reforms, site-based management, governance, instructional management, evaluation, exchanging ideas, making changes, coaching beginning teachers, mentoring of teachers and peers, and a diverse community.

EDAD 5383. THE PRINCIPALSHIP. 3 Hours.

The Principalship will address the role of the campus leader in the leadership, organization and administration of schools. The importance of campus culture, climate, vision and ethics will be stressed throughout standards-based instruction, case studies, developmental activities, readings, reflections and field experiences. The importance of appropriate principal induction will be stressed along with the concepts of the principal as scholar-practitioner and proactive leader. An emphasis will be placed on continuous school improvement and a commitment to professional development.

EDAD 5384. RESOURCE MANAGEMENT IN EDUCATION. 3 Hours.

School finance, as well as auxiliary areas of resource management, will be addressed. The emphasis will be on the use of technology, alternative models of financing and budgeting, and sources of revenue from the federal, state, and local levels as well as from private sources. The course is designed to assist administrators in developing an understanding of the functions, operation, and evaluation of auxiliary services which support the educational program.

EDAD 5388. EDUCATIONAL POLICY ISSUES IN THE PUBLIC SCHOOLS. 3 Hours.

Examination of positions on policy issues of importance in education.

EDAD 5389. ADMINISTRATIVE PRACTICUM. 3 Hours.

Designed to provide prospective educational administrators job-related experiences under supervision in an appropriate educational setting. An approved professional study is designed in relationship to the intern's interest and past experiences. Can be repeated for credit with approval of advisor.

EDAD 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDAD 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDAD 5395. FUTURISTIC LEADERSHIP ROLES IN SCHOOL ADMINISTRATION. 3 Hours.

Concepts and skills to prepare educational leaders for learner-centered schools and to anticipate and foster the professional development of all staff and parents in the learning community.

EDAD 5399. CAPSTONE PRACTICUM IN EDUCATIONAL LEADERSHIP AND POLICY STUDIES. 3 Hours.

The course focus will be on collaborative inquiry and action research in the individual classroom, team, school, and/or professional learning community. Each student will identify, research, design and initiate addressing a real problem at their work site. Students will leave this course and graduate from the program with a research presentation as part of their informal professional portfolio. Successful completion of the Capstone Internship will fulfill the comprehensive examination requirements for the graduate degree and/or certification. Requirements of EDAD 5399 will include, but not be limited to, those collaboratively established by University faculty and school administrative personnel.

EDAD 6179. SUPERINTENDENCY PRACTICUM. 1 Hour.

Provides experiences in the various roles and responsibilities of a superintendent of schools under the direction of a school district mentor and a university supervisor. An internship project will be developed in consultation with public school and university personnel.

EDAD 6279. SUPERINTENDENCY PRACTICUM. 2 Hours.

Provides experiences in the various roles and responsibilities of a superintendent of schools under the direction of a school district mentor and a university supervisor. An internship project will be developed in consultation with public school and university personnel. Prerequisite: permission of advisor.

EDAD 6301. INTRODUCTION TO K-16 DOCTORAL STUDIES. 3 Hours.

This course will examine K-16 literature, the dissertation process, and practices of successful doctoral students. Students will explore the purpose and function of scholarly writing, practice fundamental writing and editing skills, and utilize APA style requirements. Prerequisite: ELPS doctoral program admittance required.

EDAD 6304. K-16 QUANTITATIVE RESEARCH DESIGN & METHODOLOGY. 3 Hours.

Advanced course that covers the logic of research methods and design with an emphasis on empirical and other quantitative methods, including designing, conducting, and analyzing research from multiple paradigms. Emphasis will be placed on the steps involved in the administration of a research project including literature review, methodology, data collection and analysis, and presentation and publication in multiple media. State-of-the-art technology will be utilized.

EDAD 6308. QUALITATIVE RESEARCH DESIGN & METHODOLOGY. 3 Hours.

Research processes including developing interview questions, interviewing, coding/analyzing, interpreting data, theorizing, and reporting results, with participant observation as needed. Special focus on methods available to triangulate/verify data in order to confirm or achieve convergent validity. Establishing appropriate safeguards to ensure that findings are drawn from the data.

EDAD 6310. STATISTICAL METHODS. 3 Hours.

Statistical applications that emphasize sampling theory, normal, t, and F distributions, hypothesis tests, types of errors, power, analysis of variance for designs with one or more levels of classification, random effects and mixed models, comparisons among means, randomized block designs, designs with repeated measures including split-plot designs, zero-order correlation, and simple linear regression. More advance principles of parametric and non-parametric statistics will also be emphasized. State-of-the-art technology will be utilized.

EDAD 6315. ADVANCED STATISTICAL METHODS. 3 Hours.

Review of correlation topics including zero-order, part and partial correlation, two variable linear regression theory, standard error of estimate, coefficient of determination, test for linearity of regression, relation of correlation ratio to analysis of variance, multiple correlation, point-biserial correlation, phi coefficient, tetrachoric correlation, canonical correlation, rank correlation, Fisher's Z and significance test for r, and effect size. Fundamentals of multiple regression including relationship to analysis of variance, and analysis of covariance. General introduction to factor analysis models, multiple analysis of variance, multiple analysis of covariance, and meta-analysis. Applicability to K-16 studies.

EDAD 6318. ADVANCED QUALITATIVE METHODS. 3 Hours.

This course is for doctoral students who have already taken the introductory qualitative course (EDAD 6308). Students extend the lessons gained from that course by completing a small-scale research project, writing a paper using a traditional journal format, and formally presenting their findings to their class colleagues. The format of the class will provide opportunities for active learning and self-reflection on issues important to qualitative researchers. Prerequisite: EDAD 6308.

EDAD 6320. K-16 PHILOSOPHY & HISTORY POLICY RESEARCH. 3 Hours.

Analysis of the roles of history, philosophy, culture, and values in shaping educational policy. Topics include the Greek Academies, the Medieval Universities, Progressivism, Neo-Conservatism, and Postmodern perspectives, as necessary antecedents to the K-16 movement. Detailed analysis of the roles, history, philosophy, culture, and values for public school and policy making within institutions of higher education.

EDAD 6325. K-16 POLICY ANALYSIS RESEARCH. 3 Hours.

A study of principles and practices involved in policy analysis research in educational settings.

EDAD 6327. K-16 POLICY & LAW ANALYSIS RESEARCH. 3 Hours.

A study of principles and practices involved in policy analysis research in educational settings and critical analysis of the legal underpinnings of public K-16 education with particular emphasis on the United States Constitution.

EDAD 6330. K-16 LEGAL POLICY RESEARCH. 3 Hours.

Critical analysis of the legal underpinnings of public K-16 education with particular emphasis on the United States Constitution. Attention will also be paid to varieties of statutory construction, the role of case law, and the significance of administrative decisions in the K-16 context. Legal implications of synergistic relationships spanning the K-16 context.

EDAD 6331. LEADERSHIP IN THE K-12 INSTRUCTIONAL SETTING. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement. For doctoral students only.

EDAD 6335. K-16 ACCOUNTABILITY POLICY RESEARCH. 3 Hours.

A comprehensive course covering the research about and role of outcomes assessment in institutional accountability and accreditation. Addresses the relationship between outcomes assessment and strategic planning. Exploration of outcomes assessment in public schools and institutions of higher education.

EDAD 6340. K-16 ORGANIZATIONAL THEORY RESEARCH. 3 Hours.

In depth study of theories of organizing, the ways in which they are evidenced in educational organizations and the ways in which they influence leaders and learning.

EDAD 6342. K-16 ORGANIZATIONAL & LEADERSHIP THEORY RESEARCH. 3 Hours.

In depth study of theories of organizing, the ways in which they are evidenced in educational organizations and the ways in which they influence leaders and learning. Analysis of both classical and contemporary theories, and their application in K-16 settings.

EDAD 6343. HISTORICAL, SOCIAL, & CULTURAL CONTEXTS OF EDUCATION. 3 Hours.

This course examines the manner in which K-16 education is influenced by the broader social and cultural contexts within which it is situated. Course materials draw from the foundations, history, sociology, politics, and economics of education. More specifically, the course will consider the ways that race, class, and gender relate to the inequitable distribution of educational opportunity. Additional concepts/topics such as language status, nationality, physical & mental ability, sexual orientation, etc., will be explored to develop a deeper understanding of the ways that student marginalization manifests in K-16 schooling. Prerequisite: ELPS doctoral program admittance required.

EDAD 6345. K-16 HUMAN RESOURCES LEADERSHIP RESEARCH. 3 Hours.

Human resource needs in educational settings, including faculty and staff recruitment, selection, evaluation, retention, promotion, tenure, grievances, and leadership and personnel development.

EDAD 6350. K-16 CURRICULUM LEADERSHIP RESEARCH. 3 Hours.

Foundations, principles, and issues of curriculum, including vertical alignment and the middle college concept. Exploration of curriculum development in both public schools and institutions of higher education. Analysis of the role of articulation agreements.

EDAD 6351. HIGHER EDUCATION AND STUDENT AFFAIRS ADMINISTRATION. 3 Hours.

The course is designed to introduce students to the organization, management, and philosophy of higher education administration and student affairs at post-secondary institutions. It explores the range of services and organizations associated with the wide-range of positions that exist in student and academic affairs and helps students gain a better understanding of the potential career opportunities that await them after graduation. For doctoral students only.

EDAD 6352. HIGHER EDUCATION LAW. 3 Hours.

The purpose of this course is to provide students with the fundamental cases of higher education law for administrators. Topics of this course may include the legal structure of higher education, separation of church and state, religion, academic freedom, employment and tenure, due process, computer-related legal issues, copyright, students' rights of speech and expression, search and seizure, desegregation, tort liability, contracts and collective bargaining. For doctoral students only.

EDAD 6353. HIGHER EDUCATION FINANCE. 3 Hours.

This course will provide knowledge of the theoretical basis for use of tax funds for education, student fees and tuition, state methods for financing, planning, cost benefit, budgeting, federal role, capital outlay, and the relationships between educational objectives and resource allocations. For doctoral students only.

EDAD 6354. American Community College. 3 Hours.

This course will provide students with the philosophical and historical foundations of the American community college system. Students will explore current issues including, but not limited to, the evolution of the community college baccalaureate, principles of accreditation, institutional effectiveness, workforce development, and federal oversight of community colleges. For doctoral students only.

EDAD 6355. K-16 STUDENT SERVICES LEADERSHIP RESEARCH. 3 Hours.

Analysis of the student services, co-curricular, extracurricular, and auxiliary enterprise functions of both public schools and institutions of higher education. Particular emphasis on the relationship with the institutions' stated curricula, purposes, and institutional missions.

EDAD 6356. HISTORY, PRINCIPLES, AND PHILOSOPHY OF HIGHER EDUCATION ADMINISTRATION. 3 Hours.

This course is for current and prospective faculty, administrators, and staff seeking to learn about the American higher education system. The topics addressed include the history, recent developments, and strategies for future management and administration, finance, organization, governance, and the mission and role of higher education in American society. For doctoral students only.

EDAD 6357. HIGHER EDUCATION TRENDS AND ISSUES. 3 Hours.

The course is designed to introduce students to key issues affecting higher education today. Through diverse and critical readings, the students explore issues such as access and equity, affirmative action, faculty, academic freedom, college costs, and strategic change. For doctoral students only.

EDAD 6358. AMERICAN COLLEGE STUDENT. 3 Hours.

The purpose of the course is to explore and understand the nature, culture, and development of the American College Student. The course focuses on examining a range of development theories that offer insight into the processes of student learning, growth, and development during the college years. For doctoral students only.

EDAD 6359. HIGHER EDUCATION CURRICULUM. 3 Hours.

An examination of theory and research in curriculum development, implementation, and evaluation in higher education settings. Emphasis will be on current trends in the content areas. For doctoral students only.

EDAD 6360. K-16 LEADERSHIP THEORY RESEARCH. 3 Hours.

Organizational leader behavior in K-16 settings with reference to interpersonal relationships, hierarchy, management style, and communication. Analysis of both classical and contemporary organizational theories, and their application in K-16 settings.

EDAD 6365. K-16 LEADING LEARNING ORGANIZATIONS RESEARCH. 3 Hours.

Building on organizational and leadership theories and their use in educational organizations, this course focuses on the study of change theory and its uses in leading learning organizations in times of change.

EDAD 6371. PERSONNEL & SCHOOL LAW. 3 Hours.

Focuses on understanding the relationship between motivation and the management of human resources; articulate the basics of team management and group facilitation; identify proper procedures for recruiting, assignment, and inducting personnel; and recognize the legal requirement for suspension, transfer, reduction in force and dismissal of professional personnel. Prerequisite: permission of advisor.

EDAD 6373. THE SUPERINTENDENCY. 3 Hours.

This course introduces candidates to the many facets of the superintendency with a focus on the challenges facing the superintendent today. Topics include: exercising collaborative leadership, developing a strong organizational culture, dealing with the politics of education, building strong superintendent-board relations, managing the problems of school reform, and planning. Instruction is problem-oriented and included field-based experiences.

EDAD 6374. ADVANCED SCHOOL BUSINESS ADMINISTRATION. 3 Hours.

Survey principles of public school finance at the local, state, and federal levels. Examines the school budgeting process, methods of school funds accounting and techniques of school business management. Prerequisite: permission of advisor.

EDAD 6376. Educational Governance. 3 Hours.

Focus on the appointed and elected entities and bureaucracies that determine and implement policy in public education. For doctoral students only.

EDAD 6378. ADVANCED CURRICULUM AND PROGRAM ASSESSMENT. 3 Hours.

Focuses on the processes of implementing district-wide curriculum, programs, and other innovations in school systems. Topics include: recent research on the implementation of change in curriculum and instruction, trends in education, strategic and contextual planning, program and student assessment and accountability, and national curriculum projects. Prerequisite: permission of advisor.

EDAD 6380. K-16 RESEARCH PRACTICUM I. 3 Hours.

An In depth research experience that provides an opportunity for participants to work with an experienced faculty researcher on cutting edge K-16-related research. The practicum experience will be personalized to best meet the individual student's needs, aptitudes, and aspirations in the context of the K-16 research arena.

EDAD 6381. POLITICAL AND LEGAL ASPECTS OF K-12 EDUCATION. 3 Hours.

Focus on the legal foundation of public education, political theory, and application of political skills in working with school personnel, students, parents, and community organizations. The role of the law, Ct rulings, and the politics of school governance at the federal, state, and local levels will be addressed. For doctoral students only.

EDAD 6383. The Principalship. 3 Hours.

Examination of current research on effective instructional organizations and classroom instruction in today's schools, on characteristics of school leadership, and on the role and function of the teacher as instructional leader. Topics include the essential components of instruction, developing instructional-management systems, evaluating student and teacher performance, assisting colleagues to monitor and improve instructional skills, school climate and leadership styles as they impact on school improvement. For doctoral students only.

EDAD 6384. RESOURCE MANAGEMENT IN K-12 EDUCATION. 3 Hours.

School finance, as well as auxiliary areas of resource management, will be addressed. The emphasis will be on the use of technology, alternative models of financing and budgeting, and sources of revenue from the federal, state, and local levels as well as from private sources. The course is designed to assist administrators in developing an understanding of the functions, operation, and evaluation of auxiliary services which support the educational program. For doctoral students only.

EDAD 6385. K-16 RESEARCH PRACTICUM II. 3 Hours.

A research experience in K-16 research that provides an opportunity for participants to experience the process research with an experienced university professional. The experience will be individualized to best meet the student's needs, aptitudes, and aspirations in the context of K-16 research.

EDAD 6390. SELECTED TOPICS K-16 EDUCATIONAL LEADERSHIP RESEARCH. 3 Hours.

Topics will vary by semester, and may afford students the opportunity for choice within the cohort design. Selected topics courses will provide opportunities for faculty to teach courses in their area of expertise that meet students' needs, aptitudes, and aspirations. Examples of selected topics that may be offered in leadership research include: k-16 student judicial processes, K-16 academic program administration, and K-16 student information management systems. May be repeated for credit with permission of instructor.

EDAD 6391. INDEPENDENT RESEARCH. 3 Hours.

Research for independent study over topic agreed upon between student and instructor. Can be repeated for credit with permission. For doctoral students only.

EDAD 6392. SELECTED TOPICS K-16 EDUCATION POLICY RESEARCH. 3 Hours.

Topics will vary by semester, and may afford students the opportunity for choice within the cohort design. Selected topics courses will provide opportunities for faculty to teach courses in their area of expertise that meet students' needs, aptitudes, and aspirations. Examples of selected topics that may be offered in leadership research include: K-16 governance, IDEA & ADA, and K-16 articulation. May be repeated for credit with permission of instructor.

EDAD 6399. DISSERTATION. 3 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree, and permission of major professor. Graded P/F.

EDAD 6699. DISSERTATION. 6 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree, and permission of major professor. Graded R/F/P/W.

EDAD 6999. DISSERTATION. 9 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree, and permission of major professor. Graded P/R/F.

EDAD 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Educational Administration (EDADIR)

COURSES

EDADIR 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDADIR 6391. INDEPENDENT RESEARCH. 3 Hours.

Research for independent study over topic agreed upon between student and instructor. Can be repeated for credit with permission. For doctoral students only.

Educational Technology (EDTC)

COURSES

EDTC 4201. TECHNOLOGY APPLICATIONS. 2 Hours.

This course is for K-12 educators who are interested in integrating technology into teaching and learning. Its focus is on the technology applications Texas Essential Knowledge and Skills (TEKS). Participants should gain a greater understanding of the technology applications TEKS and how to introduce them into curriculum. Study and application of technology use in educational environments. Topics include: instructional learning and computer software.

EDTC 4301. TECHNOLOGY APPLICATIONS. 3 Hours.

This course is for K-12 educators who are interested in integrating technology into teaching and learning. Focus is on the technology applications Texas Essential Knowledge and Skills (TEKS). Participants should gain a greater understanding of the technology applications TEKS and how to introduce them into curriculum. Study and application of technology use in educational environments. Topics include: instructional learning and computer software.

EDTC 5190. SELECTED TOPICS IN EDUCATION. 1 Hour.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDTC 5191. INDEPENDENT RESEARCH. 1 Hour.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. May be repeated for credit with permission.

EDTC 5290. SELECTED TOPICS IN EDUCATION. 2 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDTC 5291. INDEPENDENT RESEARCH. 2 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. Can be repeated for credit with permission.

EDTC 5300. INTRODUCTION TO FOUNDATION OF EDUCATION INSTRUCTIONAL DESIGN AND TECHNOLOGY. 3 Hours.

Analysis of integrating TEKS, computers and related technologies in education. Topics include issues and concerns prior to integration, use of software in teaching and learning, identifying resources and strategies for use of the World Wide Web, and creating instructional activities into and across curriculum.

EDTC 5301. CURRENT APPLICATIONS OF TECHNOLOGY IN EDUCATION. 3 Hours.

Study of technology use in educational environments. Topics include: instructional, learning, assessment, and management applications; a review of current research on selection, evaluation, and integration of appropriate media; and computer hardware, software, and multimedia.

EDTC 5302. INTERNET IN EDUCATION. 3 Hours.

Course is designed to aid educators and training professionals in developing robust techniques for locating, utilizing, and creating Internet resources for professional productivity and research.

EDTC 5310. COMPUTER APPLICATIONS IN CURRICULUM AND INSTRUCTION. 3 Hours.

Designed for both elementary and secondary teachers; skills and methods necessary to implement computer applications within the curriculum. Methods for managing the computer in the classroom, courseware telecommunications within the curriculum.

EDTC 5320. WEB AUTHORING. 3 Hours.

Study of Web site planning, development and HTML tagging. Topics include: storyboards, content creation, Web site tagging with browser independent tags, use of color and fonts to communicate concepts, interactivity by design, ethical use of and respect for intellectual property, understand copyright, fair use, patent, and trademarks, the Master Technology Teacher Standards (EC-12) and the Standards for Basic Endorsement in Educational Computing and Technology Literacy.

EDTC 5330. DESKTOP PUBLISHING. 3 Hours.

Study of desktop publishing planning, development, and production. Topics include: desktop publishing terminology, basic design theory, principles of form and design, guidelines for desktop publishing, ethical use of and respect for intellectual property, understand copyright, fair use, patent, and trademarks, the Master Technology Teacher Standards (EC-12) and the Standards for Basic Endorsement in Educational Computing and Technology Literacy.

EDTC 5340. MULTIMEDIA. 3 Hours.

Study of multimedia planning, development, and implementation that maximize the use of technology, student learning, and teacher effectiveness. Topics include: methodologies for tutorials, hypermedia, drills, simulations, educational games, open-ended learning environments, testing, Web-based learning, interactivity by design, ethical use of and respect for intellectual property, understand copyright, fair use, patent, and trademarks, the Master Technology Teacher Standards (EC-12) and the Standards for Basic Endorsement in Educational Computing and Technology Literacy.

EDTC 5390. SELECTED TOPICS IN EDUCATION. 3 Hours.

An examination of different topics related to education. This seminar may be repeated for credit as the topic changes.

EDTC 5391. INDEPENDENT RESEARCH. 3 Hours.

Research for thesis substitute or equivalent over topic agreed upon between student and instructor. May be repeated for credit with permission.

Electrical Engineering (EE)

COURSES

EE 1000. FRESHMAN UNDERGRADUATE RESEARCH. 0 Hours.

Freshman level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

EE 1101. INTRODUCTION TO ELECTRICAL ENGINEERING. 1 Hour.

After an introduction to different branches of Engineering, we focus on Electrical Engineering to illustrate concepts, methods, problem solving approach, and tools common to all Engineering, and those unique to Electrical Engineering. Various areas within Electrical Engineering will be introduced, with examples from analog and digital electronic circuits, control and robotics, microwave and optical engineering, telecommunication, energy systems, and biosensors. Students will be introduced to skills they need to succeed in subsequent Engineering courses, and ethical responsibilities. The emphasis is to engage students in active learning through exercises, mini-projects, and team activities. Selected speakers from across the College of Engineering will make presentations and emphasize the interdisciplinary nature of Engineering. Some College of Engineering requirements are satisfied by the content of this course.

EE 1106. ELECTRICAL ENGINEERING FRESHMAN PRACTICUM. 1 Hour.

A project-based course focuses on basic methods for manipulating voltages and currents to achieve specific application objectives. Basic concepts covered include circuit elements and abstractions, circuit topology and analysis methods. Students will engage in laboratory experiments and learn how to conduct a variety of measurements including voltage, current, waveform, and frequency/spectrum measurements. Prerequisite: Grade of C or better in EE 1201 (or concurrent enrollment).

EE 1201. INTRODUCTION TO ELECTRICAL ENGINEERING. 2 Hours.

This course introduces basic concepts in electrical engineering (EE) and their applications through laboratory experiments and hands-on projects. The course provides some background of the respective subareas within EE, including overviews of and motivations for analytical tools that will be developed throughout EE curriculum. Prerequisite: Grade C or better in MATH 1426 (or concurrent enrollment).

EE 1311. COMPUTING SYSTEM AND ALGORITHMIC SOLUTIONS. 3 Hours.

This course focuses on algorithmic problem solving and implementation of the algorithm using C or Python Programming Language. Fundamental concepts covered in this course include computing system architecture, operating systems, program execution, algorithm and flowchart, data structure, numerical methods, and hardware interfacing. Prerequisite: Grade C or better in MATH 1426 (or concurrent enrollment).

EE 2000. SOPHOMORE UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research course. Prerequisites: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

EE 2181. CIRCUIT ANALYSIS LABORATORY. 1 Hour.

Circuits laboratory for non-electrical engineering majors. This is identical to the laboratory portion of EE 2440. Prerequisite: Grade C or better in MATH 2425. Corequisite: EE 2320 and PHYS 1444.

EE 2240. SOPHOMORE PROJECT LABORATORY. 2 Hours.

A project based experiential learning course that provides an opportunity for students to explore and develop comprehensive applications of electrical engineering concepts and technologies to address real-world needs. Students will work in teams and engage in project planning, management, presentation, reporting, and outcome assessment. Prerequisite: Grade of C or better in each of the following: EE 1311, EE 2315, EE 2303 (or concurrent enrollment), EE 2341 (or concurrent enrollment), and EE 2347 (or concurrent enrollment).

EE 2302. PRINCIPLES OF ACTIVE AND PASSIVE DEVICES. 3 Hours.

This course covers electric and magnetic properties of solid materials with applications in the design and fabrication of active and passive devices. Topics include charge carriers, drift and diffusion currents, electrostatics, magnetostatics, dielectric/conductor/semiconductor properties, magnetic domain, Hall effects, passive circuit elements, electronic energy band diagrams, p-n junction, diode, FET, LED, semiconductor lasers, sensor and device applications. Prerequisite: Grade of C or better in both CHEM 1465 and EE 2315.

EE 2303. ELECTRONICS I. 3 Hours.

Introduction to semiconductors, carrier statistics, drift and diffusion, and p-n junction. Electrical characteristics of diodes, bipolar junction transistors (BJTs), and field-effect transistors (FETs). Circuit applications: switches, square-law detector, and amplifier. Digital and analog electronic circuits. Logic circuits. Single and multistage electronic circuit analysis and design. Amplifier operating point and frequency response. Low frequency and high frequency analysis and design. Computer aided analysis and design. Prerequisite: Grade C or better in both EE 2315 and MATH 3319.

EE 2315. CIRCUIT ANALYSIS I. 3 Hours. (TCCN = ENGR 2305)

This course covers fundamental concepts and applications in manipulating voltage and current using passive and active circuit elements. Circuit models for passive (lumped) elements (resistor, capacitor, and inductor); independent and dependent sources; switches and active elements (diode and transistor). Circuit topology, governing laws (KCL and KVL), and node and mesh analysis methods. Time-varying and time-harmonic analyses of 1st order and 2nd order passive circuits. Steady-state alternating-current (AC) phasor analysis. Frequency domain analysis and Bode plots. Properties and applications of diode and transistor. Rectifier and switches. Higher level abstractions: Thevenin and Norton equivalents, and op-amps. Properties and applications of op-amps. Computer-assisted circuit analysis and design. Prerequisite: Grade C or better in each of the following: EE 1106, MATH 2425, MATH 3319 (or concurrent enrollment) and PHYS 1444 (or concurrent enrollment).

EE 2320. CIRCUIT ANALYSIS. 3 Hours.

For non-electrical engineering majors. Basic principles of R, L, and C components. Kirchhoff's laws, network analysis, loop and node equations, basic network theorems. Steady-state Alternating Current (AC) phasor analysis, operational amplifiers, filtering, and digital circuits. Prerequisite: Grade of C or better in each MATH 2425 or HONR-SC 2425 and PHYS 1444.

EE 2341. DIGITAL CIRCUITS AND SYSTEMS. 3 Hours.

An introduction to digital system design with hands-on projects. Number systems and codes. Boolean algebra; combinatorial logic and arithmetic. Digital electronics; CMOS logic gates; digital signals and noise margin; logic gates; and combinatorial logic circuits. Timing hazard and delay. Programmable logic devices; VHDL. State machines; sequential logic elements; counters and shift registers; sequential logic circuits. Arithmetic and computer logic circuits. Prerequisite: Grade C or better in each of the following: EE 1311 and EE 2315 (or concurrent enrollment).

EE 2347. MATHEMATICAL FOUNDATIONS OF ELECTRICAL ENGINEERING. 3 Hours.

This course focuses on mathematical modeling and algorithmic thinking to solve electrical engineering problems and interpret the results. Concepts covered in this course include mathematical representation of electrical signal and system behavior, complex analysis, Fourier series and Fourier transformations, computational modeling using MATLAB or Python, data processing and analysis. Prerequisite: Grade of C or better in each of EE 1311, MATH 2425, and MATH 3319.

EE 2403. ELECTRONICS I. 4 Hours.

Introduction to semiconductors, carrier statistics, drift and diffusion, semiconductor diodes, bipolar junction transistors (BJTs), and field-effect transistors (FETs). Circuit applications of diodes. Direct Current (DC) biasing and stability of circuits containing diodes, BJTs, and FETs. Introduction to mid-band single stage small signal analysis of BJT and FET circuits. Laboratory experiments to complement concepts learned in class. Prerequisite: Grade C or better in both EE 2415 and MATH 2326.

EE 2415. CIRCUIT ANALYSIS I. 4 Hours.

Basic circuit concepts of resistor, inductor, and capacitor (RLC) components. Kirchhoff's laws, resistive network analysis, power calculations, loop and node equations, topology, basic network theorems. Dependent sources and operational amplifiers. Computer-assisted solution of circuit problems. Elementary transient time-domain analysis. Introduction to frequency domain analysis and Bode plots. Steady state A-C phasor analysis, including element laws and phasor diagrams. Problems and experimental demonstrations will be covered during recitation and laboratory sessions. Prerequisite: Grade C or better in EE 1106 and MATH 2425. Co-requisite: MATH 3319 and PHYS 1444.

EE 2440. CIRCUIT ANALYSIS WITH LAB. 4 Hours. (TCCN = ENGT 1401)

For non-electrical engineering majors. Basic principles of R, L, and C components. Kirchhoff's laws, network analysis, loop and node equations, basic network theorems. Steady-state AC phasor analysis, operational amplifiers, filtering, and digital circuits. Concurrent laboratory experiments complement lecture topics. Prerequisite: Grade C or better in MATH 2425 and PHYS 1444.

EE 2441. DIGITAL DESIGN AND PROGRAMMABLE MICROCONTROLLERS. 4 Hours.

Theory and design of digital logic circuits. Number systems and binary arithmetic. Boolean algebra theorems. Optimization by algebraic and mapping methods. Logic gates, arithmetic logic units, decoders, analysis and synthesis of combinatorial logic circuits, sequential circuits. Synchronous and asynchronous state machines, hazards and races conditions with sequential circuits. Introduction of hardware description language (VHDL). Laboratory consists of "proof of concept" experiments using digital components. Prerequisite: Grade C or better in CSE 1311.

EE 3000. JUNIOR UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

EE 3140. JUNIOR PROJECT LABORATORY. 1 Hour.

Introduction to electrical engineering design concepts and strategies. Students must complete semester long projects from the areas of sensors, analog, digital, and mixed signal circuits, modules, and systems. Students are expected to use knowledge and skills previously obtained from lecture and laboratory courses (electronics, digital logic and microprocessors, and circuit analysis II) to complete their projects. The project must be well planned with clear performance objectives and constraints. Students are expected to show competency in technical writing and presentation. Prerequisite: Grade of C or better in EE 2403, EE 2441. Prerequisite or concurrent enrollment: EE 3446.

EE 3240. JUNIOR PROJECT LABORATORY. 2 Hours.

Introduction to electrical engineering design concepts and strategies, engineering ethics, and safety. Students must complete semester long projects from the areas of sensors, analog, digital, and mixed signal circuits, modules, and systems. Students are expected to use knowledge and skills previously obtained from lecture and laboratory courses to complete their projects. The project must be well planned with clear performance objectives, constraints, timeline, and deliverables. Students are expected to show competency in technical writing and presentation. Prerequisite: Must be in the professional EE program and Grade of C or better in each of the following: EE 2303, EE 2341, and EE 3346 (or concurrent enrollment).

EE 3302. FUNDAMENTALS OF POWER SYSTEMS. 3 Hours.

Introduction to power systems, three-phase circuit analysis, symmetrical components, transformer, polyphase induction motors, synchronous generators, synchronous motors, diode and diode circuits, thyristor and thyristor circuits, DC-DC switching converters, and DC-AC switching converters, Renewable energy sources. Concurrent laboratory experiments complement the course lecture topics. Prerequisite: Grade C or better in EE 3446. Corequisite: EE 3407.

EE 3310. ADVANCED MICROCONTROLLERS. 3 Hours.

Principles of operation for microcontroller, including assembly language programming, internal architecture of microcontroller, timing analysis, and interfacing techniques. Special emphasis will be placed on hardware-software interactions, design of memory systems for microcontroller and utilization of programmable peripheral devices. Prerequisite: Grade of C or better in EE 2441 and EE 2403.

EE 3314. FUNDAMENTALS OF EMBEDDED CONTROL SYSTEMS. 3 Hours.

Analyses of open-loop and close loop systems using frequency domain and state variable techniques. Analog and digital control design methods. System design requirements and specifications. Design and implementation of control system using programmable devices. Principles of operation for microcontroller, internal architecture, programming tools and techniques, timing analysis, interfacing with sensors and actuators. Real-time control applications. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2341, EE 3316, and EE 3318 (or concurrent enrollment).

EE 3316. CONTINUOUS AND DISCRETE SIGNALS AND SYSTEMS. 3 Hours.

Time-domain and frequency-domain analyses of periodic, aperiodic, continuous and discrete time signals. System abstraction, signal flow and block diagrams. Linear systems, time invariance, causality, stability, and state-space. Laplace transforms. Impulse and frequency responses of LTI systems. LTI system specification and design. Applications of LTI systems, filters and equalizers. Continuous time and discrete time (DT) signal conversion, sampling theorem, aliasing. DTFT. Time and frequency responses of LTI system to DT signals. Interpolation and LPF. Z-transform. Time and frequency domain analyses of discrete-time LTI systems. Causality and stability of DT LTI systems. Applications of DT LTI systems, FIR and IIR filters. Prerequisite: Must be in the professional EE program. Grade C or better in both EE 2347 and EE 2415.

EE 3317. LINEAR SYSTEMS. 3 Hours.

For non-electrical engineering majors. Time-domain transient analysis, convolution, Fourier Series and Transforms, Laplace Transforms and applications, transfer functions, signal flow diagrams, Bode plots, stability criteria, and sampling. Classes meet concurrently with EE 3417. ME Majors Prerequisite: Grade C or better in MATH 3330, ME Majors Corequisite: EE 2320 or equivalent. BE Majors Prerequisite: Grade C or better in MATH 3319.

EE 3318. ANALOG AND DIGITAL SIGNAL PROCESSING. 3 Hours.

Time and frequency domain analyses analog and digital signals. Time-delay and phase-shifting. Modulation and frequency shifting. ADC and DAC. System models, MA, AR, and ARMA. Analog filter specifications and design methods. Companding and matched filter. DTFT, DFT, FFT, and z-transform. Discrete time convolution. Amplitude, phase, and stability of digital filters. FIR and IIR digital filter design. Random signals and noise. Power spectral density and spectral estimation. SNR. Wiener filter. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 3316 and EE 3330 (or concurrent enrollment).

EE 3330. PROBABILITY AND STATISTICAL METHODS. 3 Hours.

Probability, random variables, functions of random variables, moments, random signals, noise, stochastic models and power spectral density. Data and statistics. Random sampling. Statistical analysis, hypothesis testing, goodness of fit test, and regression. Response of LTI systems to random signals. Rigorous mathematical concepts will be tied to engineering system issues such as characterizing uncertainty due to measurement error, component and system tolerances, and noise sources such as device noise, quantization noise, communication channel noise, and thermal noise. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2347 and EE 3316 (or concurrent enrollment).

EE 3346. CIRCUIT ANALYSIS II. 3 Hours.

Time-harmonic single-phase and poly-phase voltages and currents. Instantaneous, time-average, and complex powers. Power factor and maximum power transfer. Independent and dependent sources. Time and frequency domain analyses of open-loop and closed-loop circuits. Feedback configurations, poles and zeros, stability analysis. Oscillators and filters. Two-port networks and network parameters. Network theorems and analyses, superposition, reciprocity. Characteristics and applications of operation amplifiers. Amplifiers and active filters. Distributed networks and transmission lines. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2347 and EE 2315.

EE 3407. ELECTROMAGNETICS. 4 Hours.

Time varying electric and magnetic fields; electromagnetic (EM) sources. Laws governing EM fields and sources. Circuit and transmission line. Wave propagation on transmission line. Power flow and impedance matching. Dividers and couplers. Applications of EM theory in energy conversion. Antenna concept, EM wave radiation and polarization. Applications of EM theory in energy conversion. Waves in unbounded medium. Waves in medium with planar interfaces. Wave reflection, transmission, and scattering. Fundamentals and applications of rectangular waveguides. Fundamentals of antenna. Friis' transmission formula. Applications of EM theory in optical transmission, wireless communications, and radar. Prerequisite: Must be in the professional EE program and C or better in each of the following: EE 2347, PHYS 1444, and EE 3346 (or concurrent enrollment).

EE 3444. ELECTRONICS II. 4 Hours.

Low and high frequency characteristics and circuit models for diodes, bipolar junction transistors (BJTs), and field effect transistors (FETs). Analysis and design of full spectrum small signal BJT and FET circuits. Analysis and transistor level design of active filters, oscillators, feedback configurations, and multistage differential and operational amplifiers. Concurrent laboratory exercises in support of the topics covered in class. Prerequisite: Grade C or better in EE 2403 and EE 3446.

EE 3446. CIRCUIT ANALYSIS II. 4 Hours.

Analysis and design of filters, oscillators, feedback configurations, and operational amplifiers. Dependent sources, device models, two-port networks, and mutual inductance and transformers. Network response functions, poles and zeros, network theorems, resonance, and the analysis and design of active filters. Application of phasors in steady-state circuit analysis. Introduction to distributed networks and transmission lines. Introduction to single-phase and three-phase balanced and unbalanced power networks, complex power, power factor correction, and maximum power transfer. Concurrent laboratory experiments complement lecture topics. Prerequisite: Grade C or better in EE 2347 and EE 2415.

EE 4000. UNDERGRADUATE RESEARCH. 0 Hours.**EE 4149. ENGINEERING DESIGN PROJECT. 1 Hour.**

A practicum resulting in the design, construction, and evaluation of a device or system, building on electrical or electronic knowledge and skills acquired in earlier course work, and incorporating appropriate engineering standards. The application of project management techniques in order to meet design specifications through the effective allocation of team resources, scheduling, and budgetary planning. The demonstration of the finished product/prototype through both oral presentation and a written project report. Mode of Instruction: Practicum. Prerequisite: Must be in the professional EE program and Grade of C or better in EE 4240. Grade of C or better in all prior 3000 and 4000 level EE coursework.

EE 4240. CONCEPTS & EXERCISES IN ENGINEERING PRACTICE. 2 Hours.

Integration of technical knowledge and skills with project planning, teamwork, and communication skills (written and oral). A project-oriented approach is used including the preparation of literature-based research reports and project management plans. The differences between research and product development are taught and assessed through short proposal reports. Supporting topics: technical information resources, ethics, safety, intellectual property. Students will begin their engineering capstone design experience, including team formation, project selection, background research, and preparation of preliminary project plan. Must be taken in the semester prior to EE 4149. An EE Proficiency Test is administered during the class. Prerequisite: Must be in the professional EE program and C or better in each of the following: COMS 2302, EE 3330, EE 3346, EE 3407, and ECON 2305.

EE 4301. POWER SYSTEMS ANALYSIS AND CONTROL. 3 Hours.

This course includes an introduction to synchronous machines, power flow analysis, short circuit analysis, power system controls, and the fundamentals of transient stability analysis. Prerequisite: Grade of C or better in EE 3302.

EE 4302. ENGINEERING ENTREPRENEURSHIP. 3 Hours.

Topics include special problems of newly formed firms, planning, start-up business considerations, business strategy, management basics, and business plan design. Students will engage in business and entrepreneurship training and discussion, become aware of basic business operations, and learn about inventions, intellectual property, and the patenting process. Other topics include assessment of possible markets, venture feasibility, teambuilding, and leadership. Opportunities in university environments will be discussed including incubation centers and patent licensing. We address legal issues, Small Business Innovation Research (SBIR) proposal design, SBIR funding from the National Science Foundation (NSF), National Institutes of Health (NIH), and others. Additional topics include the proposal review process, grant reporting, local high-tech business accelerators, angel-group funding, venture plans, and venture capital. Classes will feature lectures from engineering and business faculty as well as presentations by successful entrepreneurs. Course taught as EE 4302, ENGR 4302 and ENGR 5302; credit will be granted only once. Prerequisite: Student must be in an engineering professional program.

EE 4308. POWER SYSTEM MODELING AND ANALYSIS. 3 Hours.

Fundamental concepts for modeling transmission lines, distribution lines, power system generators, power transformers and power system load. The method of symmetrical components is discussed. Simulation of power systems during normal and abnormal conditions are presented. The philosophy of deregulation regarding separation of power systems into generation, transmission and distribution companies is introduced. Prerequisite: Grade of C or better in EE 3302.

EE 4310. MICROPROCESSOR SYSTEMS. 3 Hours.

Hardware/software development techniques for microprocessors with emphasis on asynchronous and synchronous memory interfaces, optimizing data throughput, and modern bus architectures. Topics include DMA controller design, SDRAM controller design, and real-world interfacing. Prerequisite: Grade of C or better in EE 3310.

EE 4311. EMBEDDED MICROCONTROLLER SYSTEMS. 3 Hours.

Hardware/software development techniques for microcontroller systems with an emphasis on hardware-software interactions, programming internal peripherals, interfacing with external sensors and devices, and real-time control applications. Prerequisite: Grade of C or better in EE 3310.

EE 4312. ADVANCED MICROPROCESSOR SYSTEMS. 3 Hours.

Study of the advanced microprocessor architectures including 32/64-bit RISC and CISC families of microprocessors will be compared based on detailed architectural analysis of the selected devices. This course may also include: address/instruction pipelines, burst cycles, memory caching and cache coherency issues, register renaming, speculative instruction execution and other performance-oriented techniques. Prerequisite: EE 4311.

EE 4313. CONTROL SYSTEMS FOR NON-EE MAJORS. 3 Hours.

For non-electrical engineering majors. Analyses of closed loop systems using frequency response, root locus, and state variable techniques. Analog and digital control design methods. System modeling, identification, and control design based on analytic and computer methods. Classes meet at the same time as EE 4314. Prerequisite: Grade of C or better in either EE 3317 or MAE 3319.

EE 4314. CONTROL SYSTEMS. 3 Hours.

Analyses of closed loop systems using frequency response, root locus, and state variable techniques. Analog and digital control design methods. System modeling, identification, and control design based on analytic and computer methods. Use of laboratory experiments with mechatronic systems to complement the course lectures. Prerequisite: Grade of C or better in EE 3316. Co-requisite EE 3318.

EE 4315. INTRODUCTION TO ROBOTICS. 3 Hours.

Overview of industrial robots. Study of principles of kinematics, dynamics, and control as applied to industrial robotic systems; robotic sensors and actuators; path planning; programming of industrial robot in the laboratory; survey of robotic applications in various modern and traditional fields; and guidelines to robot arm design and selection. Prerequisite: Grade C or better in EE 4314.

EE 4316. OP AMPS IN ANALOG SIGNAL PATHS. 3 Hours.

The course covers fundamental concepts involved in the analysis and design of a wide variety of linear and non-linear circuits that use bipolar and CMOS integrated circuit operational amplifiers (op-amps). Applications of these components in practical circuit designs are emphasized. Prerequisite: Grade of C or better in EE 3446.

EE 4317. ANALOG CMOS IC DESIGN. 3 Hours.

Analysis and design of CMOS analog integrated circuits; MOS device structure and models; single-state and differential amplifiers; current mirror and Operational Amplifier design; noise analysis and feedback; comparators and voltage references. Prerequisite: grade of C or better in EE 2403 and in EE 3444.

EE 4318. DIGITAL SIGNAL PROCESSING. 3 Hours.

Discrete time convolution. Fast convolution using the fast Fourier transform (FFT). Amplitude and phase of digital filters. Stability analyses using the Z-transform. Design of finite impulse response (FIR) digital filters through windowing and optimization approaches. Infinite Impulse Response (IIR) digital filter design approaches using transformation and optimization. Prerequisite: Grade of C or better in EE 3316 and EE 3318.

EE 4320. DIGITAL VLSI DESIGN. 3 Hours.

Introduction to Very Large Scale Integration circuit design and fabrication technology. Metal-Oxide Semiconductor (MOS) device models and digital integrated circuit design with Metal-Oxide Semiconductor Field-Effect Transistor (MOSFETs). Computer Aided Drafting (CAD) tools for VLSI design. Processing models and process flow. MOS integrated circuits for logic gates and digital systems. Prerequisite: Grade of C or better in EE 3444.

EE 4327. THEORY AND DESIGN OF ANTENNAS. 3 Hours.

Basic theory of antennas with emphasis on design and engineering application. Prerequisite: Grade of C or better in EE 3407.

EE 4328. CURRENT TOPICS IN ELECTRICAL ENGINEERING. 3 Hours.

To introduce current topics into the curriculum prior to the creation of permanent course numbers. A notice listing a descriptive course title, a course description, and the name of the instructor will be posted on the departmental webpage each time the course contents are changed. Prerequisite: Consent of instructor.

EE 4329. SEMICONDUCTOR DEVICES. 3 Hours.

Introduction to semiconductors in terms of atomic bonding and electron energy bands. Equilibrium statistics of electrons and holes. Carrier dynamics; continuity, drift, and diffusion currents; generation and recombination processes, including important optical processes. Introduction to P-N junctions, metal-semiconductor junctions; bipolar junction transistors, junction and Metal-Oxide Semiconductor Field-Effect Transistors (MOSFETs). Introduction to optoelectronic devices, including LEDs, lasers, detectors, solar cells, modulators, etc. Prerequisite: Grade of C or better in EE 3407.

EE 4330. FUNDAMENTALS OF TELECOMMUNICATIONS SYSTEMS. 3 Hours.

Examines analog and digital communication techniques including amplitude modulation, frequency modulation, and pulse code modulation. Time domain and frequency domain multiplexing. Analog and digital noise analysis, information theory. Design of communications systems. Prerequisite: Grade of C or better in EE 3316 and EE 3330. Co-requisite EE 3318.

EE 4331. DATA COMMUNICATIONS ENGINEERING. 3 Hours.

Layered approach to data communications and networking will be presented. Network models such as TCP/IP and OSI will be introduced. Protocols and technologies related to each layer will be studied in depth. For physical layer, analog and digital signaling, modulation, bandwidth, multiplexing as well as line and block coding techniques. For data link layer, various MAC layer protocols involving multiple access, error detection (CRC), wired (Ethernet) versus wireless (Wi-Fi) LANs, switching. For network layer, internet protocol (IP) and routing principle. Underlying technologies learned from this course are applicable to wide range of traditional and current data communication protocols. Performance analysis of well-known protocols using probabilistic model will also be studied. Prerequisite: Grade of C or better in EE 4330.

EE 4333. WIRELESS COMMUNICATIONS AND IoT. 3 Hours.

Fundamental principles of radio system design and propagation. Basics of cellular systems, environment, propagation models, traffic models and spectral capacity. Multiple-access techniques including FDMA (frequency division multiple access), TDMA (time division multiple access), CDMA (code division multiple access). Internet of Things (IoT) system architecture, IoT enabling technologies such as sensors and sensor networks, IoT communication and networking protocols, IoT services and applications. IoT demands, impacts, and implications on sensors technologies, big data management, and future internet design for various IoT use cases, such as smart cities, smart environments, smart homes, etc. Prerequisite: Grade of C or better in EE 3316 and EE 3330. Prerequisite or concurrent enrollment in EE 3318.

EE 4334. PROGRAMMABLE LOGIC DESIGN. 3 Hours.

Design of digital systems using programmable logic devices and high-level techniques. The course emphasizes the understanding of state-of-the-art hardware devices as well as design and simulation tools. Hardware description language will be taught and used for digital system design. Various design options and compromises will be explored for typical tasks. Projects will be assigned to develop design proficiency. Prerequisite: Grade of C or better in EE 2341.

EE 4336. FOUNDATIONS OF MEDICAL IMAGING. 3 Hours.

This course introduces the engineering, physics, mathematics, and signal processing methods fundamental to medical image acquisition and processing. X-ray projection, X-ray computed tomography, magnetic resonance imaging, and ultrasound imaging. Brief introduction to optical and infrared imaging and nuclear imaging (SPECT/PET) will be included. Open to students in an engineering or science professional program. Prerequisite: EE 3316 or equivalent.

EE 4339. RADIO FREQUENCY CIRCUIT DESIGN. 3 Hours.

Analysis of waves on ideal transmission lines, assorted practical transmission line systems, and hollow waveguides. Circuit theory for transmission line systems involving scattering parameters and the Smith chart. Microwave impedance matching techniques. Design of lumped element amplifiers from VHF to microwave frequencies. Real world microwave characterization techniques. Prerequisite: Grade of C or better in EE 3444 and EE 3407.

EE 4340. CONCEPTS & EXERCISES IN ENGINEERING PRACTICE. 3 Hours.

Integration of technical knowledge and skills with project planning, teamwork, and communication skills (written and oral). A project-oriented approach is used including the preparation of literature-based research reports, research proposals, product development proposals, and project management plans. Supporting topics: technical information resources, ethics, safety, intellectual property. Students will begin their engineering capstone design experience, including team formation, project selection, background research, and preparation of preliminary project plan. Must be taken in the semester prior to EE 4349 (Engineering Design Project). An EE Proficiency Test will be administered on first day of class. Prerequisite: Grade of C or better in each of COMS 2302, EE 3330, EE 3446, and EE 3407. Corequisite ECON 2305.

EE 4344. INTRODUCTION TO MEMS AND DEVICES. 3 Hours.

Develops the basics for microelectromechanical devices and systems including microsensors, and micromotors, principles of operation, different micromachining techniques, and thin-film technologies as they apply to MEMS. Prerequisite: EE 3407.

EE 4349. ENGINEERING DESIGN PROJECT. 3 Hours.

A practicum resulting in the design, construction, and evaluation of a device or system, building on electrical or electronic knowledge and skills acquired in earlier course work, and incorporating appropriate engineering standards. The application of project management techniques in order to meet design specifications through the effective allocation of team resources, scheduling, and budgetary planning. The demonstration of the finished product/prototype through both oral presentation and a written project report. Mode of Instruction: Practicum. Prerequisite: Grade of C or better in EE 4340. Grade of C or better in all prior 3000 and 4000 level EE coursework.

EE 4357. INTRODUCTION TO MACHINE LEARNING. 3 Hours.

The course presents fundamental principles and techniques on detecting meaningful patterns in data. Supervised learning techniques with applications in regression and classification will be presented, as well as support vector machines in classification. Further, the toolbox of neural networks will be detailed with applications in classification problems. Unsupervised learning will be studied on clustering problems. Feature extraction and dimensionality reduction will also be covered. Boosting methods will also be covered. Prerequisite: Grade of B or better in EE 3330, EE 2347, MATH 2326, and MATH 3319.

EE 4362. DIGITAL COMMUNICATIONS. 3 Hours.

Fundamental principles underlying the transmission of digital data over noisy channels. Basics of source coding techniques including entropy coding, Lempel-Ziv. Channel capacity. Spectral analysis of digital modulation techniques. Optimum receiver design and error probability performance of commonly used modulation schemes. Applications to lightwave and wireless systems. Prerequisite: Grade of C or better in EE 3318 and in EE 4330.

EE 4364. INFORMATION THEORY AND CODING. 3 Hours.

Entropy, conditional entropy, relative entropy, mutual information, transfer entropy, entropy rates of stochastic process, data compression, Huffman coding, Shannon coding, compressive sensing, channel capacity, differential entropy, rate distortion, information theoretical foundations for wireless communications such as wireless channel capacity, opportunity communications, network information theory, etc. Prerequisite: Must be in the professional EE program and grade C or better in EE 3330.

EE 4375. INTRODUCTION TO POWER ELECTRONICS. 3 Hours.

This course discusses conceptualization, analysis, and design of power electronics components, circuits, and systems. It discusses different classes of switching converters (dc-dc, ac-dc, dc-ac) and elements of power electronics (magnetic design, loads, and capacitors). Applications of power electronics in renewable energy systems and vehicular electronics are discussed. Prerequisite: Grade of C or better in EE 2403 and EE 3446.

EE 4378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty.

EE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: EE 4378.

EE 4380. PRINCIPLES OF PHOTONICS AND OPTICAL ENGINEERING. 3 Hours.

Optical fields with applications to laser, optical fibers, and photonic signal processing. Encoding, manipulating, transmitting, storing, and retrieving information using light. Light propagation including isotropic and birefringent optical media, dielectric interfaces, interference and diffraction, Gaussian beams, optical cavities and principles of laser action, optical waveguides and fibers, electro- and acousto-optic modulation. Design, analysis and application of optical devices in communications and signal processing. Prerequisite: Must be in the professional EE program and grade of C or better in EE 3407.

EE 4382. OPTICAL BIOSENSORS. 3 Hours.

Introduction to modern biological and chemical sensing for in-vivo and in-vitro disease diagnosis. Photonics and nanotechnologies for biomolecular analysis. Bio/chemical sensor principle, instrumentation, and applications. Prerequisite: Grade of C or better in EE 3407, or PHYS 3445, or PHYS 4324.

EE 4391. ADVANCED PROBLEMS IN ELECTRICAL ENGINEERING. 3 Hours.

A research project under the direction of a faculty supervisor. May be taken as a technical elective with the permission of the department.

EE 5190. ELECTRICAL ENGINEERING GRADUATE SEMINAR. 1 Hour.

Topics vary from semester to semester. May be repeated for credit. Graded F, P. Prerequisite: graduate standing or consent of the department.

EE 5191. ADVANCED STUDY IN ELECTRICAL ENGINEERING. 1 Hour.

Individual research projects in electrical engineering. Prior approval of the EE Graduate Advisor is required for enrollment. A written report is required. Graded F, I, P.

EE 5302. RANDOM SIGNALS AND NOISE. 3 Hours.

Probability, random variables, and stochastic processes in physical systems. Topics include probability space, discrete and continuous random variables, density and conditional density functions, functions of random variables, mean-square estimation, random signals, system response, optimum system design, and Markov processes.

EE 5304. CYBER-PHYSICAL SYSTEMS. 3 Hours.

Cyber-physical system fundamentals; model-based designs; data-driven analytics; co-design techniques of integrated communication, control, and computing components; implementation considerations; and applications, such as internet of things, intelligent transportation, and robot networking. Topics include but are not limited to hybrid systems, stochastic networks, uncertainty quantification, experimental design, data fusion techniques, stochastic optimal control, networking and edge computing, network control, and related software, hardware, and middleware issues.

EE 5305. ANALOG INTEGRATED CIRCUIT DESIGN. 3 Hours.

Analysis and design of basic analog integrated circuits; device physics; single-stage and differential amplifiers; current mirror and biasing technique; feedback and operational amplifier; noise analysis.

EE 5306. ELECTROMAGNETIC THEORY. 3 Hours.

Advanced study of electromagnetic theory, its content, methods, and applications. Topics include theorems in electromagnetic theory, cylindrical and spherical wave functions, waveguides, integral equation methods, scattering and diffraction.

EE 5307. LINEAR SYSTEMS ENGINEERING. 3 Hours.

Topics include state-space description of dynamic systems, analysis and design of linear systems, similarity transformation, state feedback, state observers, and matrix characterization of multivariable systems.

EE 5308. POWER SYSTEM MODELING AND ANALYSIS. 3 Hours.

Fundamental concepts for modeling transmission lines, distribution lines, power system generators, power transformers and power system load. The method of symmetrical components is discussed. Simulation of power systems during normal and abnormal conditions are presented. The philosophy of deregulation regarding separation of power systems into generation, transmission and distribution companies is introduced.

EE 5309. TOPICS IN ELECTRICAL ENGINEERING. 3 Hours.

Material may vary from semester to semester. Topics are selected from current areas of electrical engineering interest. May be repeated when topic changes.

EE 5310. DIGITAL VLSI DESIGN. 3 Hours.

Introduction of VLSI digital circuit design methodology and processing technology. Application of various design software packages for circuit analysis and layout. Design of basic CMOS digital logic circuits. Implementation of digital logic design at the transistor level.

EE 5311. VLSI SIGNAL PROCESSING ARCHITECTURES. 3 Hours.

Design and synthesis of DSP and telecommunication systems using integrated modeling, design, and verification tools. Exploration of high-level architectural transformations that can be used to design families of DSP architectures for a given signal processing algorithm. Prerequisite: EE 5350.

EE 5312. CMOS RFIC DESIGN. 3 Hours.

Basic concept of RF design; CMOS transceiver architectures for wireless communications; low noise amplifiers; mixers; oscillators; phase-locked loops; frequency synthesizer; power amplifier. Prerequisite: EE 5305.

EE 5313. MICROPROCESSOR SYSTEMS. 3 Hours.

Hardware/software development techniques for microprocessors with emphasis on asynchronous and synchronous memory interfaces, optimizing data throughput, and modern bus architectures. Topics include DMA controller design, SDRAM controller design, and real-world interfacing.

EE 5314. EMBEDDED MICROCONTROLLER SYSTEMS. 3 Hours.

Hardware/software development techniques for microcontroller systems with an emphasis on hardware-software interactions, programming internal peripherals, interfacing with external sensors and devices, and real-time control applications.

EE 5315. SYSTEM ON CHIP (SOC) DESIGN. 3 Hours.

Programming and implementation of FPGA-based system on chip solutions, including processor subsystems, FPGA fabric, processor to FPGA bridges, and device drivers. Prerequisite: EE 5314.

EE 5316. CMOS MIXED SIGNAL IC DESIGN. 3 Hours.

Design of CMOS mixed signal ICs with emphasis on full custom chip design. Comparators, switched-capacitor circuits, converter architectures, analog-to-digital converters, digital-to-analog converters, integrator-based filters. A project is required, including design, simulation and layout using an IC design tool. Prerequisite: EE 5305 or EE 5318.

EE 5317. ADVANCED DIGITAL VLSI DESIGN. 3 Hours.

Design of logical gates using CMOS technologies; static and dynamic circuit techniques; advanced techniques in logic circuits; general VLSI system components design; arithmetic circuits in VLSI; low power design; chip layout strategies. A design project using computer tools is required. Prerequisite: EE 5310.

EE 5319. TOPICS IN DIGITAL SYSTEMS. 3 Hours.

Formal instruction in selected topics in digital systems and microcomputers. May be repeated when topic changes.

EE 5321. OPTIMAL CONTROL. 3 Hours.

Design of optimal control systems. Topics include optimization under constraints, linear quadratic regulators, Ricatti's equation, suboptimal control, dynamic programming, calculus of variations, and Pontryagin's minimum principle. A prior introductory systems course, such as EE 5307, is desirable.

EE 5322. INTELLIGENT CONTROL SYSTEMS. 3 Hours.

Principles of intelligent control including adaptive, learning, and self-organizing systems. Neural networks and fuzzy logic systems for feedback control. Mobile robots. Discrete event systems and decision-making supervisory control systems. Manufacturing work-cell control. Advanced sensor processing including Kalman filtering and sensor fusion. A prior introductory systems course, such as EE 5307, is desirable.

EE 5323. NONLINEAR SYSTEMS. 3 Hours.

Analysis and design of nonlinear systems. A general course in nonlinear systems with examples from multiple engineering and science disciplines. Topics include phase planes, Lyapunov's theory, describing functions, iterative maps, chaos and fractals, and nonlinear optimization methods. A prior introductory systems course, such as EE 5307, is desirable.

EE 5325. ROBOTICS. 3 Hours.

Principles of kinematics, dynamics, and control of robot manipulators and mobile robots. Analysis of dynamical equations and design of robot control systems using modern nonlinear systems techniques. Computer simulation of robotic and mobile robot systems. Path planning, workcell coordination and control. Also listed as ME 5337.

EE 5327. SYSTEM IDENTIFICATION AND ESTIMATION. 3 Hours.

Introduction to parametric and non-parametric modeling and identification and estimation methods for linear and nonlinear systems. Methods covered include linear and non-linear least squares, LTI (linear time-invariant) black-box models, empirical transfer function estimate, state-space and frequency domain model reduction methods, Kalman filtering and self-tuning adaptive control. Introductory systems and signals courses, such as EE 5302 and EE 5307, are desirable.

EE 5329. TOPICS IN SYSTEMS ENGINEERING. 3 Hours.

Formal instruction in selected topics in systems engineering, such as advanced controls, systems performance, manufacturing, graphics subsystems design, stochastic control, decision and information theory, hierarchical or distributed parameter control. May be repeated when topic changes.

EE 5330. DISTRIBUTED DECISION AND CONTROL. 3 Hours.

Topics include cooperative decision and control algorithms for networked teams of dynamical agents on communication graphs. Included are multi-agent local decision protocols that yield global team behavior, synchronization of dynamics including coupled oscillators and chaotic systems, analysis of stability and consensus convergence behaviors, and group decision and adversarial games on graphs. Applications are to engineering systems such as dynamical systems on communications networks, networked teams of autonomous systems and vehicles, and formation flight.

EE 5331. RF SYSTEMS ENGINEERING. 3 Hours.

Topics include design and performance analysis of transmitter and receiver systems for communications and radar, including digital and analog modulators, transmit lineups, power amplifiers and linearization techniques, feedline structures, antennas, RF propagation channels, receiver lineups, and demodulation techniques. Additional topics include frequency planning, noise and interference mitigation, and regulatory and compliance issues.

EE 5332. ANTENNA SYSTEM ANALYSIS. 3 Hours.

Fundamental study of antennas and antenna design techniques. Topics include analysis of wire antennas, aperture antennas, patch antennas, horns and reflector antennas, and selected novel antennas. Antenna synthesis and measurements. Prerequisite: EE 5306.

EE 5333. WAVE PROPAGATION AND SCATTERING. 3 Hours.

Fundamentals of electromagnetic wave propagation and scattering in radar and wireless communications. Propagation over irregular terrain, in built-up areas, and inside buildings. Scattering from objects and area extensive targets. Propagation and scattering modeling and their applications in wireless communications and remote sensing. Signal statistics. Prerequisites: EE 5302 and EE 5306.

EE 5334. FUNDAMENTALS OF RADAR REMOTE SENSING. 3 Hours.

Active and passive remote sensing systems, platforms for remote sensing, radar equation, interaction of electromagnetic waves with matter, radar cross section, scattering from area extensive targets, surface scattering, volume scattering, radiative transfer theory, radar data collection and analysis, retrieval of target parameters, and subsurface sensing.

EE 5335. FUNDAMENTALS OF RADAR IMAGING. 3 Hours.

Radar system, electromagnetic waves scattering from targets, radar signal and noise, detection and extraction of signal from noise or clutter, range and Doppler profiles, ambiguity function, radar image formation, real aperture radar imaging, SAR imaging, ISAR imaging, and superresolution radar imaging techniques.

EE 5336. FOUNDATIONS OF MEDICAL IMAGING. 3 Hours.

This course introduces the engineering, physics, mathematics, and signal processing methods fundamental to medical image acquisition and processing: X-ray projection, X-ray computed tomography, magnetic resonance imaging, and ultrasound imaging. Brief introduction to optical and infrared imaging and nuclear imaging (SPECT/PET) will be included. Open to graduate students in College of Engineering or College of Science.

EE 5338. COMPUTATIONAL METHODS IN ELECTRICAL ENGINEERING. 3 Hours.

Mathematical and computational methods to analyze physical phenomena in electrical engineering, including Fourier transformation, finite difference method, finite element method, and integral equation method.

EE 5339. TOPICS IN ELECTROMAGNETICS. 3 Hours.

Formal instruction in selected topics in electromagnetics. May be repeated when topic changes.

EE 5340. SEMICONDUCTOR DEVICE THEORY. 3 Hours.

Quantum mechanics applicable to semiconductor theory. Energy band theory, density of states and effective mass theory. Intrinsic and extrinsic semiconductors, equilibrium statistics for electrons and holes. Transport, generation and recombination of excess carriers. Device equations and physics. Theory and performance of p-n and Schottky diodes, bipolar and MOS transistor electronic devices, and optoelectronic devices.

EE 5341. ELECTRONIC MATERIALS: FUNDAMENTALS AND APPLICATIONS. 3 Hours.

Fundamental theory required for the study of electronic materials: waves and particles, quantum mechanics, crystal structures, chemical bonds, and band theory. Materials and properties considered will be metals, semiconductors, and dielectrics including effective mass, doping, and carrier statistics, and electronic, dielectric, magnetic, and optical properties of materials as applied to integrated circuits, wireless communication, optoelectronics, optical communication, and data storage.

EE 5342. SEMICONDUCTOR DEVICE MODELING AND CHARACTERIZATION. 3 Hours.

Device models and characterization procedures for the pn junction and Schottky diodes, the BJT, JFET, MOSFET, HBT, and optical sources and detectors. SPICE derived and higher level circuit simulator models will be presented. Prerequisite: EE 5340 or EE 5341.

EE 5343. SILICON INTEGRATED CIRCUIT FABRICATION TECHNOLOGY. 3 Hours.

Basic integrated circuit fabrication processes: crystal growth (thin film and bulk), thermal oxidation, dopant diffusion/implantation, thin film deposition/etching, and lithography. Introduction to process simulators, such as SUPREM. Fabrication and characterization of resistors, MOS capacitors, junction diodes and MOSFET devices. Prerequisite: Pass the NanoFAB Safety and Clean Room Protocol test.

EE 5344. INTRODUCTION TO MICROELECTROMECHANICAL SYSTEMS (MEMS) AND DEVICES. 3 Hours.

Develops the basics for microelectromechanical devices and systems including microsensors, and micromotors, principles of operation, different micromachining techniques, and thin-film technologies as they apply to MEMS.

EE 5345. INTRODUCTION TO BIO-NANOTECHNOLOGY. 3 Hours.

Introduction to the area of bio-nanotechnology. Basics of nanotechnology as applicable to biological and biomedical sensing, therapy and diagnostics. Theory, fabrication, techniques and uses of nano-scale devices and objects in biomedical and biology.

EE 5346. MICROWAVE DEVICES. 3 Hours.

Device physics and applications of microwave semiconductor devices and vacuum tubes. Topics include operation, modeling and characterization of MESFETs and HEMTs, microwave diodes, and microwave vacuum tubes. Prerequisite: EE 5340 and EE 5341.

EE 5348. RADIO-FREQUENCY CIRCUIT DESIGN. 3 Hours.

Design of lumped- and distributed-element radio-frequency circuits; scattering parameters; impedance-matching circuits; transmission line theory and design; low noise amplifiers; power amplifiers; resonant circuits; noise analysis; RF filter design. Prerequisite: EE 5305.

EE 5349. TOPICS IN INTEGRATED CIRCUIT TECHNOLOGY. 3 Hours.

Formal instruction in selected topics in integrated circuit technology. May be repeated when topic changes.

EE 5350. DIGITAL SIGNAL PROCESSING. 3 Hours.

Time and frequency domain analyses of linear time invariant systems. Stability analyses of causal and non-causal systems using the Z-transform. FIR digital filter design. Design of frequency selective IIR digital filters using frequency transformations and the bilinear transform. Design of infinite and finite impulse response filters.

EE 5351. DIGITAL VIDEO CODING. 3 Hours.

Fundamentals, principles, concepts and techniques of data compression such as Huffman, Lempel-Ziv, Arithmetic, Facsimile, Transform, DPCM, VQ, and Hybrid coding and applications in ITU, ISO, and IEC standards related to audio, video, and image compression.

EE 5352. STATISTICAL SIGNAL PROCESSING. 3 Hours.

Estimation of autocorrelations, cross-correlations and power spectral densities. Least squares filter design via Toeplitz recursion and autoregressive modeling. Steepest descent applications in adaptive noise cancellation and signal recovery. Algorithm development using maximum likelihood and minimum mean square error approaches. Lower bounds on estimation error variance. Prerequisites: EE 5350 or equivalent.

EE 5353. NEURAL NETWORKS AND DEEP LEARNING. 3 Hours.

First and second order training algorithms for both shallow and deep neural networks. Initialization lemmas. Approximation of continuous functions and Bayes discriminants using feedforward networks. Structure and training of convolutional networks, and their relationship to conventional pattern recognition systems. Analyses of drop out and mini-batches. Methods for evaluating network performance. Applications in pattern recognition, estimation and forecasting.

EE 5354. MACHINE LEARNING. 3 Hours.

Fundamental principles and techniques on detecting meaning patterns in data. Supervised learning with applications in regression and classification. Kernel methods and nonlinear spaces along with support vector machines in classification and training of neural networks. Clustering techniques in unsupervised learning. Feature extraction and dimensionality reduction. Graphical models and Hidden Markov models for sequential data and latent variables. Advanced boosting methods, recommended systems as well as online and reinforcement learning techniques.

EE 5355. DISCRETE TRANSFORMS AND THEIR APPLICATIONS. 3 Hours.

Principles and properties of discrete transforms such as discrete Fourier, discrete cosine, Walsh-Hadamard, slant, Haar, discrete sine, discrete Hartley, LOT and Wavelet transforms, and their applications in signal and image processing.

EE 5356. DIGITAL IMAGE PROCESSING. 3 Hours.

Digital image processing as applied to image sampling and quantization, image perception, image enhancement, image restoration, image reconstruction from projections, and filtering and image coding.

EE 5357. STATISTICAL PATTERN RECOGNITION. 3 Hours.

Theories of optimal feature extraction for statistical pattern recognition. Feature extraction using transform based methods, convolutional and other block based approaches. The relationships of Bayes discriminants to neural net, nearest neighbor, SVM, and deep classifiers. Sensor fusion in conventional and convolutional systems. Feature selection using transformation and subsetting approaches.

EE 5358. COMPUTER VISION. 3 Hours.

Techniques for the interpretation, analysis, and classification of digital images. Methods for segmentation, feature extraction, object recognition, stereo vision and 3-D modeling. A research project will be assigned.

EE 5359. TOPICS IN SIGNAL PROCESSING. 3 Hours.

Formal instruction in selected topics in signal processing. May be repeated when topic changes.

EE 5360. DATA COMMUNICATIONS ENGINEERING. 3 Hours.

Layered approach to data communications and networking will be presented. Network models such as TCP/IP and OSI will be introduced. Protocols and technologies related to each layer will be studied in depth. For physical layer, analog and digital signaling, modulation, bandwidth, multiplexing as well as line and block coding techniques. For data link layer, various MAC layer protocols involving multiple access, error detection (CRC), wired (Ethernet) versus wireless (Wi-Fi) LANs, switching. For network layer, internet protocol (IP) and routing principle. Underlying technologies learned from this course are applicable to wide range of traditional and current data communication protocols. Performance analysis of well-known protocols using probabilistic model will also be studied.

EE 5362. DIGITAL COMMUNICATIONS. 3 Hours.

The course presents fundamental principles underlying the transmission and reception of digital information, and studies the different parts of a modern digital communication system. Specifically, the course will touch upon different digital modulation schemes, as well as the design and performance analysis of optimum receivers for additive white Gaussian noise (AWGN) channels. Some concepts of information theory and channel coding will also be studied. Further, techniques for carrier and symbol synchronization will be presented. Communication over bandlimited channels will also be explored, and the effects of intersymbol interference (ISI), as well as channel equalization techniques will be considered.

EE 5364. INFORMATION THEORY AND CODING. 3 Hours.

Entropy, conditional entropy, relative entropy, mutual information, transfer entropy, entropy rates of stochastic process, data compression, Huffman coding, Shannon coding, compressive sensing, channel capacity, differential entropy, rate distortion, information theoretical foundations for wireless communications such as wireless channel capacity, opportunity communications, network information theory, low density parity check (LDPC) codes, etc.

EE 5365. FIBER OPTIC TRANSMISSION SYSTEMS. 3 Hours.

Propagation in optical fibers, characteristics and manufacture of fibers, semiconductor lightwave sources and detectors, optical transmitters and receivers, lightwave transmission systems for wide area and local area networks.

EE 5368. WIRELESS COMMUNICATION AND IoT. 3 Hours.

Fundamental principles of radio system design and propagation. Basics of cellular systems, environment, propagation models, traffic models and spectral capacity. Multiple-access techniques including FDMA (frequency division multiple access), TDMA (time division multiple access), CDMA (code division multiple access). Machine learning for wireless communications. Internet of Things (IoT) system architecture, IoT enabling technologies such as sensors and sensor networks, IoT communication and networking protocols, IoT services and applications. IoT demands, impacts, and implications on sensors technologies, big data management, and future internet design for various IoT use cases, such as smart cities, smart environments, smart homes, etc.

EE 5369. TOPICS IN COMMUNICATIONS. 3 Hours.

Formal instruction in selected topics in communications. May be repeated when topic changes.

EE 5370. ELECTRIC MOTOR DRIVES. 3 Hours.

Fundamentals of electromechanical energy conversion devices and systems; Principles of inductors, transformers, force/torque formulation, and reference frame transformation; induction motors and permanent magnet machines; Inverter topologies and switching strategies; Scalar and vector control methods for machine drive systems.

EE 5371. POWER SYSTEM PLANNING, OPERATION, AND CONTROL IN A DEREGULATED ENVIRONMENT. 3 Hours.

Current market structure and practices are discussed. The issues of system planning, operation, and control in a deregulated environment are addressed. Prerequisite: EE 5308.

EE 5372. CONGESTION MANAGEMENT. 3 Hours.

Phenomena of congestion and transmission pricing are presented. Thermal related congestion, such as power flow, and stability related congestion, such as voltage stability, transient stability, and dynamic stability, are covered. The effects of reactive power are discussed. Reliability and security issues of power transmission systems are presented. Congestion management and congestion relief measures are discussed. Prerequisite: EE 5308.

EE 5373. UNBUNDLING SERVICES OF A DEREGULATED POWER SYSTEM. 3 Hours.

The fundamental operating functions of a deregulated power system are presented. Unbundling of these functions and cost allocations are discussed. Topics of ancillary services, power marketing, price forecasting, and load forecasting are covered. Prerequisite: EE 5308.

EE 5374. POWER SYSTEM PROTECTIVE RELAYING. 3 Hours.

Fundamental understanding of symmetrical components, applications of symmetrical components in system protection, philosophy of power system protection, various protective relay systems, and the special considerations in applying the microprocessor based relays are covered. Experiments utilizing the Power System Simulation Laboratory are required.

EE 5375. POWER SYSTEM DISTRIBUTION. 3 Hours.

The basic functions of a Distribution Company are presented. Load representation, distribution load flow and the philosophy of simulation for a distribution system are discussed in detail.

EE 5376. POWER SYSTEM RELIABILITY IN PLANNING AND OPERATION. 3 Hours.

Loss of Load indices, Loss of Energy indices, Frequency and Duration methods, Interconnected Reliability methods, and Composite Generation and Transmission Reliability methods will be covered.

EE 5377. PROGRAMMABLE LOGIC CONTROLLERS IN INDUSTRIAL AUTOMATION. 3 Hours.

The application of Programmable Logic Controllers (PLC) in industrial automation and energy systems monitoring will be covered. Transducers, Supervisory Control and Data Acquisition (SCADA) systems, and Distributed Control Systems (DCS) will be discussed. Material covered is also applicable to various mechanical and civil engineering fields, thus enrollment of graduate engineering students from other disciplines is welcome. Experiments utilizing the Power System Simulation Laboratory are required.

EE 5378. POWER QUALITY. 3 Hours.

Principles of harmonics and filtering, source of voltage surges and surge protection, causes of voltage sags, flickers, and interruptions, and voltage supporting devices, and utility and end-user strategies for improving power quality are covered.

EE 5379. TOPICS IN POWER SYSTEM ENGINEERING. 3 Hours.

Formal instruction in selected topics in power system engineering. May be repeated when topic changes.

EE 5380. PRINCIPLES OF PHOTONICS AND OPTICAL ENGINEERING. 3 Hours.

Optical fields with applications to laser, optical fibers, and photonic signal processing. Encoding, manipulating, transmitting, storing, and retrieving information using light. Light propagation including isotropic and birefringent optical media, dielectric interfaces, interference and diffraction, Gaussian beams, optical cavities and principles of laser action, optical waveguides and fibers, electro- and acousto-optic modulation. Design, analysis and application of optical devices in communications and signal processing.

EE 5381. FOUNDATIONS IN SEMICONDUCTORS. 3 Hours.

Electronic properties of semiconductors affecting semiconductor devices: quantum behavior; Kronig-Penny model; energy bands; carrier statistics; density of states; one, two, and three dimensional systems; carrier transport; thermoelectric effects; surface and bulk generation-recombination statistics; continuity equations and their solutions; optical properties; semiconductor characterization techniques.

EE 5382. OPTICAL DETECTORS AND RADIATION. 3 Hours.

Basic principles of optical detectors used in imaging and communications. The course focuses on infrared detectors. Geometric optics, blackbody radiation, radiometry, photon detection mechanisms, thermal detection mechanisms, noise in optical detectors, figures of merit for detectors, photovoltaic detectors, photoconductive detectors, bolometers, pyroelectric detectors, and quantum well detectors.

EE 5383. SOLAR ELECTRICITY & PHOTOVOLTAICS. 3 Hours.

Solar radiation and other forms of renewable energy: wind, tide, biomass and hydropower. Fundamental theory of photovoltaics: crystal structures, band theory, semiconductors, doping, carrier statistics, optical absorption, and p-n junctions. Status of solar cell, including cost, optical design, system engineering, silicon solar cells and thin film solar cells. Prospects of solar cells, regarding low-cost and high-efficiency solar cells. Prerequisite: EE 5340 or EE 5341.

EE 5384. OPTOELECTRONIC DEVICES FOR COMMUNICATION. 3 Hours.

Electronic and optical processes in semiconductors. Light emitting diodes. Laser diodes: structures, properties and operating principles. Photodetectors and solar cells. Noise and the photoreceiver. Optoelectronic modulators and switching devices. Systems needs and new device challenges.

EE 5385. NONLINEAR OPTICS. 3 Hours.

Nonlinear optical processes and applications in crystals, optical fibers and waveguides. Second- and third- order nonlinear susceptibility, symmetry properties, coupled-wave propagation, phase-matching techniques, sum- and difference-frequency generation, parametric amplification, four-wave mixing, self- and cross-phase modulation, soliton propagation, and Raman scattering.

EE 5386. INTEGRATED OPTICS. 3 Hours.

Theory and techniques of integrated optics including optical waveguiding, coupling, modulation, grating diffraction, detection and integrated systems.

EE 5387. FOURIER OPTICS AND HOLOGRAPHY. 3 Hours.

Theory of Fourier optics and holography including scalar diffraction theory, Fresnel and Fraunhofer diffraction, Fourier transforming properties of lenses, optical imaging systems, spatial filtering, and the theory and applications of holography. Prerequisite: EE 5306.

EE 5388. LASERS. 3 Hours.

Propagation of optical rays and waves, Gaussian laser beams, laser resonators, atomic systems, lasing and population inversion, laser amplifiers, practical gas and solid-state lasers including continuous-wave and pulsed lasers, mode locking, Q-switching, frequency doubling, tunable lasers, semiconductor lasers, vertical-cavity lasers and applications of lasers.

EE 5389. TOPICS IN OPTICS. 3 Hours.

Formal instruction in selected topics in optics. May be repeated when topic changes.

EE 5391. ADVANCED STUDY IN ELECTRICAL ENGINEERING. 3 Hours.

Individual research projects in electrical engineering. Prior approval of the EE Graduate Advisor is required for enrollment. A written report is required. Graded F,P,R.

EE 5392. PROJECT IN ELECTRICAL ENGINEERING. 3 Hours.

Individual research projects performed for fulfilling the requirements of the thesis substitute option. Prior approval of the EE graduate advisor is required for enrollment. A written and oral report is required. Graded F, P, R.

EE 5398. THESIS. 3 Hours.

Graded F, P, R. Prerequisite: Graduate standing in electrical engineering.

EE 5698. THESIS. 6 Hours.

Graded F, P, R. Prerequisite: Graduate standing in electrical engineering.

EE 6313. ADVANCED MICROPROCESSOR SYSTEMS. 3 Hours.

Study of the advanced microprocessor architectures including 32/64-bit RISC and CISC families of microprocessors will be compared based on detailed architectural analysis of the selected devices. Topics include: address/instruction pipelines, burst cycles, memory caching and cache coherency issues, register renaming, speculative instruction execution and other performance-oriented techniques. Prerequisite: EE 5313.

EE 6314. ADVANCED EMBEDDED MICROCONTROLLER SYSTEMS. 3 Hours.

Study of advanced microcontroller system designs with an emphasis on multi-tasking, real-time control of devices. Topics include: design of real-time control systems, design of bootloaders, USB peripherals, and Ethernet applications. Prerequisite: EE 5314.

EE 6321. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty.

EE 6322. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: EE 6321.

EE 6342. ADVANCED QUANTUM DEVICES. 3 Hours.

Advanced concepts in quantum theory of semiconductors. Epitaxial growth and characterization of heterostructures, quantum wells, and superlattices including strained layers; electronic and optical properties of these structures; electronic and optoelectronic devices based on quantum wells and superlattices. Prerequisite: Graduate standing.

EE 6343. QUANTUM WELL LASERS. 3 Hours.

Introduction to semiconductor heterostructures and quantum wells. Quantum theory of optical processes and laser operation. Threshold, spectral, and dynamical behavior. Modern laser structures and technologies, including strained-layer and surface emitting lasers. Prerequisite: EE 5340 and EE 5341.

EE 6344. NANOSYSTEMS AND QUANTUM ELECTRONIC DEVICES. 3 Hours.

Design, analysis, and techniques for conceptualizing and fabricating nanoscale systems. Role of quantum confinement and mesoscopic behavior, phase coherence, quantum transport, single electron devices, semiconductor heterostructures, self-assembly and molecular electronic schemes, lithographic methods, atomic epitaxy, and surface analysis techniques. Prerequisite: EE 5340 and EE 5341.

EE 6345. ADVANCED MEMS -- MICROELECTROMECHANICAL SYSTEMS. 3 Hours.

Microelectromechanical systems (MEMS) and devices including micro-actuators and optical MEMS. Application strategy of MEMS; fabrication and design; actuation mechanism and architectures; optical sensor and communication applications. Mask layout and hands-on design, fabrication procedures, design rules, demonstrated examples, and integration architectures. Prerequisite: EE 5344.

EE 6353. CONVEX OPTIMIZATION FOR ENGINEERS. 3 Hours.

This course presents an overview of standard methods in convex optimization with applications to real-world problems from multiple areas of engineering and sciences including, signal processing, machine learning, control, networks, power system analysis, mechanical and aerospace, and circuit design. Course materials include advanced linear algebra, numerical algorithms, constrained and unconstrained optimization, duality theory, semidefinite programming, nonlinear and mixed-integer optimization, convex algebraic geometry, and several engineering applications.

EE 6356. IMAGE AND VIDEO CODING. 3 Hours.

Fundamentals, principles, concepts, and techniques of data (image/video/audio) compression such as Huffman coding, arithmetic coding, Lempel-Ziv coding, facsimile coding, scalar and vector quantization, DPCM, PCM, sub-band coding, transform coding, hybrid coding and their applications. Prerequisite: EE 5350.

EE 6364. ADVANCED DATA NETWORKS. 3 Hours.

Network performance analysis, link and upper layer. Internet and ATM protocols, Internet routing and traffic management, ATM switch design and ATM traffic management. Prerequisite: EE 5360.

EE 6365. ADVANCED FIBER OPTICS SYSTEMS. 3 Hours.

Course reviews the modern WDM systems and methods of their design. Topics include architecture of state-of-the-art WDM systems; design of optical amplifiers; signal-to-noise-ratio budget; estimation of various system impairments; popular modulation formats; transmitter and receiver design issues; balancing optical nonlinearity and dispersion; optical networking; and characterization of WDM system's performance. Familiarity with fiber optics and telecommunications is desirable.

EE 6367. ADVANCED AND NEXT-G WIRELESS COMMUNICATIONS. 3 Hours.

Performance analysis of wireless communication systems with multiple input multiple output (MIMO). Space time coding design criteria, space time trellis codes, space time block codes. The next-G wireless communications including mm-wave communications, advanced channel coding, BCJR decoding, Turbo codes, Polar codes, and selected topics in Next-G wireless communications.

EE 6373. RENEWABLE ENERGY SYSTEMS. 3 Hours.

Wind energy harvest, solar energy sources and harvesting, hydropower resources, geothermal, fuel cell and hydrogen economy, power grid interface and distributed generation, microscopic energy harvest from vibration and thermal, role of power electronics in integration of renewable energy systems. Familiarity with the principles of power electronics and electric power recommended.

EE 6375. POWER ELECTRONICS ENGINEERING. 3 Hours.

The course presents selected topics in modeling and analysis of power electronics devices and systems, including dc-dc and dc-ac converters, studies different converter topologies, and investigates various control techniques. The course content helps graduate students to develop and/or improve their research skills in power and energy systems.

EE 6381. NANOPHOTONICS. 3 Hours.

Introduction to nanophotonic materials, devices, systems integration, and applications. Principles of nanoscale structures, quantum dots, photonic crystals, near field optics, plasmonics and metamaterials. Design, modeling, synthesis and fabrication of nano-structures and devices. Scaling of photonic components and optoelectronic integration.

EE 6382. OPTICAL BIOSENSORS: INSTRUMENTATION AND TECHNIQUES. 3 Hours.

Introduction to modern biological and chemical sensing for in-vivo and in-vitro disease diagnosis. Photonics and nanotechnologies for biomolecular analysis. Bio/chemical sensor principle, instrumentation, and applications.

EE 6397. RESEARCH IN ELECTRICAL ENGINEERING. 3 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of electrical engineering. Graded F, P, R.

EE 6399. DISSERTATION. 3 Hours.

Graded F, R.

EE 6697. RESEARCH IN ELECTRICAL ENGINEERING. 6 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of electrical engineering. Graded F, P, R.

EE 6699. DISSERTATION. 6 Hours.

Graded F, R, P, W.

EE 6997. RESEARCH IN ELECTRICAL ENGINEERING. 9 Hours.

Individually approved research projects leading to a doctoral dissertation in the area of electrical engineering. Graded F, P, R.

EE 6999. DISSERTATION. 9 Hours.

Graded F, P, R.

EE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Elementary Education (ELED)

COURSES

ELED 4311. TEACHING MATHEMATICS IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Principles of integration of mathematics concepts in relation to cognitive development. Emphasis on developing dispositions promoting scientific investigation and appropriate objects, materials, activities and programs to assist in assimilation of mathematics concepts. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural and multilingual classrooms for this content area; 20 hours field-based experiences required. Prerequisite: ELED 4312, ELED 4314. Taken concurrently with BEEP 4384.

ELED 4312. TEACHING SCIENCE AND HEALTH IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Principles of integration of science and health concepts in relation to cognitive, socio-emotional, and psychomotor development. Emphasis on developing dispositions promoting scientific investigation and appropriate objects, materials, activities and programs to assist in assimilation of science and health concepts. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural and multilingual classrooms for this content area; 20 hours field-based experiences required. Prerequisite: Taken concurrently with ELED 4314.

ELED 4314. TEACHING SOCIAL STUDIES AND FINE ARTS IN EARLY AND ELEMENTARY EDUCATION. 3 Hours.

Examination of materials, methods, content, and assessment learning experiences associated with elementary social studies and fine arts. Content areas include history, geography, economics, government, citizenship, culture, science, technology and society. Opportunities to demonstrate applications in field settings. Course will also address the instructional needs and appropriate assessment of all students in inclusive, multicultural, and multilingual classrooms for this content area; 20 hours field experiences required. Prerequisites: Taken concurrently with ELED 4312.

ELED 4317. GROWTH, DEVELOPMENT, AND LEARNING THEORY. 3 Hours.

Examination of the relationship between major theories and principles of cognitive, socio-emotional, and psychomotor development and EC-6 student learning, home-school connections, and behavior in the classroom. Emphasis on environmental and cultural influences on children's development and learning, prenatal through age 12. Prerequisite: ELED 4311, ELED 4312, ELED 4314.

ELED 4321. CLASSROOM MANAGEMENT, PEDAGOGY, AND PRACTICES IN EC-6 EDUCATION. 3 Hours.

A study of developmentally appropriate curriculum and methods for elementary classrooms, including diversity, assessment, behavior guidance and management, planning instruction, and creating a positive learning environment. Course will also address instructional needs and appropriate assessment of all students in inclusive, multicultural, and multilingual classrooms. Field observations required. Prerequisites: EDUC 4316, ELED 4317.

ELED 4687. CLINICAL TEACHING IN EARLY AND ELEMENTARY EDUCATION. 6 Hours.

Full-day, Monday - Friday, supervised and directed clinical teaching in university-approved EC-6 classrooms. Candidates will have two placements: one in PK-2 and one in grade 3-6. Clinical teaching must immediately follow the field-based experiences semester. Candidates will follow the school district's calendar, and report to the classroom all day and each day of the semester. Prerequisites: ELED 4311, ELED 4312, ELED 4314, ELED 4317, BEEP 4306, BEEP 4384; LIST 4373, LIST 4374, LIST 4376, EDUC 3301, EDUC 4318, EDUC 4319.

ELED 5309. TRENDS AND ISSUES IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION. 3 Hours.

In-depth analysis of current research and practical articles on trends and issues in early childhood and elementary education. Emphasis on the evaluation and impact of historical, political, and social policy; overview of legislation and advocacy on behalf of young children.

ELED 5312. EC6: INSTRUCTIONAL STRATEGIES IN SCIENCE. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on science concepts and cognitive development. Emphasis on developing dispositions toward scientific inquiry and the use of appropriate objects, materials, activities, and programs to assist in the learning of science concepts.

ELED 5315. CLINICAL TEACHING. 3 Hours.

Clinical teaching in candidate's certification area(s). This semester-long experience will help candidates apply theory and research to practice.

ELED 5317. THEORIES OF CHILD DEVELOPMENT AND LEARNING. 3 Hours.

Human growth and development, including developmental anomalies, from birth through middle childhood with emphasis on cognitive, social, emotional, and physical growth. Attention is given to current research regarding establishment of learning environments that foster development of the child's self-concept, cognitive competencies, oral language and literacy development, and positive social behaviors including appreciation of diversity among individuals and groups.

ELED 5318. FOUNDATIONS IN EC6 EDUCATION. 3 Hours.

An overview of historical and philosophical influences and current research in early and elementary education on promoting educational environments that support development of the whole child. Attention is given to the development and implementation of appropriate EC-6 curricula and programs that extend and integrate learning experiences of children, including the home-school relationship; 20 hours field experiences required.

ELED 5319. EC6 EDUCATION: INSTRUCTIONAL STRATEGIES IN MATHEMATICS. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on mathematics concepts and cognitive development. Emphasis on developing dispositions toward the use of appropriate objects, materials, activities, and programs to assist in learning of mathematics concepts.

ELED 5320. EC6 EDUCATION: INSTRUCTIONAL STRATEGIES IN SOCIAL STUDIES AND THE CREATIVE ARTS. 3 Hours.

Study of principles of integration of content in EC-6 classrooms with focus on social studies, the creative arts, and cognitive and socio-emotional development. Emphasis on developing dispositions promoting awareness of self and others, and the study of group dynamics involved in the socialization process in a diverse community. Strategies for enhancing creativity and risk-taking characteristics in EC-6 classrooms.

ELED 5321. EC-6: CLASSROOM MANAGEMENT & INSTRUCTIONAL STRATEGIES. 3 Hours.

This course explores a variety of effective classroom management and instructional strategies which include developmentally appropriate, research-based, and anti-biased curricular and materials to teach the core content subjects of English language arts, mathematics, science, and social studies in ESL elementary classrooms. This course also examines challenges to inquiry-based instruction, including those related to assessment, behavior guidance and management, planning instruction, and diversity; 20 hours of field observations are required.

ELED 5390. SELECTED TOPICS IN ELEMENTARY EDUCATION. 3 Hours.

An examination of different topics related to elementary education. This course may be repeated for credit with permission.

ELED 5391. INDEPENDENT RESEARCH. 3 Hours.

Research over a topic agreed upon between the student and instructor. May be repeated for credit with permission.

Eng for Speakers of Other Lang (ESOL)

COURSES

ESOL 4300. ACADEMIC WRITING. 3 Hours.

Development of academic writing practices common to advanced study and research environments in American universities. Include review of relevant points of English grammar and development of argumentation styles common to academic writing. Open only to students for whom English is not their native language. This course may not be used for credit toward any degree program.

ESOL 4301. ACADEMIC SPEAKING AND LISTENING SKILLS. 3 Hours.

Development of presentation skills useful for advanced study and research in American universities. Topics include public speaking and pronunciation, use of visual aids in oral presentations, abstract writing, and CV development. Open only to students for whom English is not their native language. This course may not be used for credit toward any degree program.

ESOL 4302. ACADEMIC READING. 3 Hours.

Development of reading and comprehension skills useful for advanced study and research in American universities. Topics include reading strategies for textbooks, research articles, and other academic publications. Open only to students for whom English is not their native language. This course may not be used for credit toward any degree program.

ESOL 5300. ACADEMIC WRITING. 3 Hours.

Development of academic writing practices common to advanced study and research environments in American universities. Include review of relevant points of English grammar and development of argumentation styles common to academic writing. Open only to graduate students for whom English is not their native language. This course may not be used for credit toward any degree program.

ESOL 5301. ACADEMIC SPEAKING AND LISTENING. 3 Hours.

Development of speaking and listening skills useful for advanced study and research in American universities. Topics include public speaking, pronunciation, use of visual aids in oral presentations, note-taking skills, and discussion strategies. Open only to graduate students for whom English is not their native language. This course may not be used for credit toward any degree program.

ESOL 5302. ACADEMIC READING. 3 Hours.

Development of reading and comprehension skills useful for advanced study and research in American universities. Topics include reading strategies for textbooks, research articles, and other academic publications. Open only to graduate students for whom English is not their native language. This course may not be used for credit toward any degree program.

ESOL 5315. ENGLISH FOR ACADEMIC PURPOSES. 3 Hours.

Development of academic writing practices common to advanced study and research environments in American universities. Include review of relevant points of English grammar and development of argumentation styles common to academic writing. Open only to graduate students for whom English is not their native language. This course may not be used for credit toward any degree program.

Engineering (ENGR)

COURSES

ENGR 0251. PROBLEM SOLVING IN ENGINEERING PRACTICUM. 2 Hours.

Supplementary material to ENGR 1251, and student success activities, including Peer-Led Team Learning. Corequisite: ENGR 1251.

ENGR 1099. UNDERGRADUATE INDEPENDENT STUDY. 0 Hours.

Independent study related to Engineering.

ENGR 1101. ENTRANCE TO ENGINEERING FOR TRANSFER STUDENTS. 1 Hour.

Entrance to Engineering for Transfer Students welcomes transfer students to the College of Engineering. Topics include engineering student life, fields of study, ethics, design, and preparing for a successful career.

ENGR 1199. ENGINEERING PROBLEM SOLVING BRIDGE. 1 Hour.

Expanding on prior knowledge of engineering topics, this course enhances problem solving skills in preparation for subsequent engineering courses. Prerequisite: permission of instructor.

ENGR 1204. ENGINEERING FIRST YEAR SEMINAR. 2 Hours.

Introduction to basic engineering concepts, engineering and its many subfields, ethical responsibilities, creativity and design. Self-management and academic skills necessary for academic and professional success.

ENGR 1250. PROBLEM SOLVING IN ENGINEERING. 2 Hours.

Broad introduction to engineering through the process of applying the principles of mathematics to solve real-life engineering problems. Math topics are presented within the context of engineering applications and reinforced through examples from engineering courses. Also introduces algorithm development through the use of the engineering analysis software MATLAB. Prerequisite: C or better in MATH 1426 (or concurrent enrollment), or C or better in (or concurrent enrollment in) a subsequent mathematics course (MATH 2425, MATH 2326, MATH 3319, HONR-SC 1426, HONR-SC 2425), or a qualifying score on the Math Placement Test (MPT).

ENGR 1251. PROBLEM SOLVING IN ENGINEERING FOR PRECALCULUS STUDENTS. 2 Hours.

Broad introduction to engineering through the process of applying the principles of mathematics to solve real-life engineering problems. Math topics are presented within the context of engineering applications and reinforced through examples from engineering courses. Also introduces algorithm development through the use of the engineering analysis software MATLAB. Available only to students taking Math 1421 (Preparation for Calculus) in the same semester. Additional student success activities will be required. Corequisite: ENGR 0251, and concurrent enrollment in Math 1421.

ENGR 1300. ENGINEERING PROBLEM SOLVING. 3 Hours.

Broad introduction to the profession of engineering and its different disciplines, through the process of applying the principles of mathematics to solve real-life engineering problems and technical writing assignments. Math topics are presented within the context of engineering applications and reinforced through examples from engineering courses. Also introduces algorithm development through the use of the engineering analysis software MATLAB. Prerequisite: C or better in MATH 1421 (or concurrent enrollment), or C or better in (or concurrent enrollment in) a subsequent mathematics course (Math 1426, Math 2425, Math 2326, Math 3319, HONR-SC 1426, HONR-SC 2425), or a qualifying score on the Math Placement Test (MPT).

ENGR 2100. SUPERVISED ENGINEERING WORK EXPERIENCE. 1 Hour.

Course is for cooperative education students in engineering to be taken in the semester or summer they are employed. Each student will prepare a technical report based upon their work experience. Students who complete the cooperative program will receive certificates and this will be entered on their transcript. Prerequisite: acceptance into and continuance in the Engineering Cooperative Education Program.

ENGR 3000. SUPERVISED ENGINEERING WORK EXPERIENCE. 0 Hours.

Course is for cooperative education students in engineering to be taken in the semester or summer they are employed. Each student will prepare a technical report based upon their work experience. Students who complete the cooperative program will receive certificates and this will be entered on their transcript. Prerequisite: acceptance into and continuance in the Engineering Cooperative Education Program. May be repeated.

ENGR 3100. SUPERVISED ENGINEERING WORK EXPERIENCE. 1 Hour.

Course is for cooperative education students in engineering to be taken in the semester or summer they are employed. Each student will prepare a technical report based upon their work experience. Students who complete the cooperative program will receive certificates and this will be entered on their transcript. Prerequisite: acceptance into and continuance in the Engineering Cooperative Education Program.

ENGR 4100. SUPERVISED ENGINEERING WORK EXPERIENCE. 1 Hour.

Course is for cooperative education students in engineering to be taken in the semester or summer they are employed. Each student will prepare a technical report based upon their work experience. Students who complete the cooperative program will receive certificates and this will be entered on their transcript. Prerequisite: acceptance into and continuance in the Engineering Cooperative Education Program.

ENGR 4302. ENGINEERING ENTREPRENEURSHIP. 3 Hours.

Topics include special problems of newly formed firms, planning, start-up business considerations, business strategy, management basics, and business plan design. Students will engage in business and entrepreneurship training and discussion, become aware of basic business operations, and learn about inventions, intellectual property, and the patenting process. Other topics include assessment of possible markets, venture feasibility, teambuilding, and leadership. Opportunities in university environments will be discussed including incubation centers and patent licensing. We address legal issues, Small Business Innovation Research (SBIR) proposal design, SBIR funding from the National Science Foundation (NSF), National Institutes of Health (NIH), and others. Additional topics include the proposal review process, grant reporting, local high-tech business accelerators, angel-group funding, venture plans, and venture capital. Classes will feature lectures from engineering and business faculty as well as presentations by successful entrepreneurs. Course taught as EE 4302, ENGR 4302 and ENGR 5302; credit will be granted only once. Prerequisite: Student must be in an engineering professional program.

ENGR 4395. SUSTAINABLE ENGINEERING DESIGN PROJECT. 3 Hours.

Following the engineering design process, students will brainstorm, evaluate, and select among engineering alternatives. Students will evaluate the alternatives based on sustainability criteria, including environmental, economic, and social impacts. Life cycle assessment will be used to quantify environmental and economic impacts of the design alternatives. Students will use decision-making methods and optimization in selecting among alternatives. Prerequisites: ENGR 2300, IE 3315, ECON 2305 or IE 2308.

ENGR 5302. ENGINEERING ENTREPRENEURSHIP. 3 Hours.

Topics include special problems of newly formed firms, planning, start-up business considerations, business strategy, management basics, and business plan design. Students will engage in business and entrepreneurship training and discussion, become aware of basic business operations, and learn about inventions, intellectual property, and the patenting process. Other topics include assessment of possible markets, venture feasibility, teambuilding, and leadership. Opportunities in university environments will be discussed including incubation centers and patent licensing. We address legal issues, Small Business Innovation Research (SBIR) proposal design, SBIR funding from the National Science Foundation (NSF), National Institutes of Health (NIH), and others. Additional topics include the proposal review process, grant reporting, local high-tech business accelerators, angel-group funding, venture plans, and venture capital. Classes will feature lectures from engineering and business faculty as well as presentations by successful entrepreneurs.

Engineering Mechanics (EM)

COURSES

EM 2311. STATICS. 3 Hours.

English (ENGL)

COURSES

ENGL 0100. INTEGRATED READING AND WRITING WORKSHOP. 1 Hour.

A corequisite developmental course that focuses on the rhetorical knowledge, critical thinking skills, and writing and revising processes required in ENGL 1301. Students work with an instructor to review assigned readings and revise essays. This course fulfills Texas Success Initiative (TSI) requirements for reading and/or writing. This course may not substitute for any other English course, and credit in this course does not fulfill any degree requirements. Prerequisite: Concurrent enrollment in the associated section of ENGL 1301 required.

ENGL 0300. INTRODUCTION TO CRITICAL READING AND WRITING. 3 Hours.

Offers additional preparation in academic reading and writing. Focus is on comprehending college-level reading material and writing academic essays in standard written English. Fulfills Texas Success Initiative (TSI) requirements. This course may not substitute for any other English course, and credit in this course does not fulfill any degree requirement.

ENGL 0301. INTEGRATED READING AND WRITING FUNDAMENTALS. 3 Hours.

A corequisite developmental course that focuses on the rhetorical knowledge, critical thinking skills, and writing and revising processes required in ENGL 1301. Students work with an instructor to closely analyze assigned readings and assignment prompts, thoroughly revise and edit essays, and review ENGL 1301 lectures. This course fulfills Texas Success Initiative (TSI) requirements for reading and/or writing. This course may not substitute for any other English course, and credit in this course does not fulfill any degree requirements. Prerequisite: Concurrent enrollment in the associated section of ENGL 1301 required.

ENGL 1200. ENGLISH STUDIES PROFESSIONALIZATION AND STUDENT SUCCESS. 2 Hours.

Introduces students to the profession of English Studies at the college level. Teaches student success skills that will assist new students in their transition to college. Helps students identify their individual needs, determine what resources are appropriate to address those needs, recognize the role faculty play in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Will be taught by Peer Academic Leaders (PALS) and faculty, staff, and/or graduate students, who will provide guidance, raise awareness and understanding of the English and English with Teaching Certification majors and related minors, and help support collaborative and co-curricular opportunities available within the College of Liberal Arts. Reserved exclusively for students planning to major in the English BA or English BA with Teacher Certification degree tracks. Fulfills the University requirement for UNIV 1131.

ENGL 1301. RHETORIC AND COMPOSITION I. 3 Hours. (TCCN = ENGL 1301)

Introduction to college reading and writing. Emphasizes recursive writing processes, rhetorical analysis, synthesis of sources, and argument.

ENGL 1302. RHETORIC AND COMPOSITION II. 3 Hours. (TCCN = ENGL 1302)

Continues ENGL 1301, but with an emphasis on advanced techniques of academic argument. Includes issue identification, independent library research, analysis and evaluation of sources, and synthesis of sources with students' own claims, reasons, and evidence. Prerequisite: Grade of C or better in ENGL 1301.

ENGL 1350. WRITING ABOUT FILM. 3 Hours.

Introduces students to the technical language and elements specific to film criticism. Develops appreciation of two artistic crafts: making film and writing about it. Considers how both professional critics and academics watch and write about what they see on their screens and fosters critical engagement with ethical and social issues by teaching students how to appraise and analyze film in innovative ways in order to communicate a specific argument or point of view.

ENGL 1375. INTRODUCTION TO CREATIVE WRITING. 3 Hours.

This course introduces students to genres of creative writing through modes that are common to all of them, including language, sound, character, setting, exposition, and voice. Students will learn to appreciate, synthesize, and analyze contemporary poetry, short fiction, and creative non-fiction essays, first by learning to closely read these works as writers and then by using these learned techniques to compose creative writings of their own in various genres. Individual and class criticism of these works in a workshop setting, as well as lecture on and discussion of literary forms and techniques, will allow students to more fully comprehend revision techniques. This course satisfies the University of Texas at Arlington core curriculum requirement in creative arts.

ENGL 2303. TOPICS IN LITERATURE. 3 Hours. (TCCN = ENGL 2341)

Focuses on a particular genre, theme, or issue to enable comparison and analysis of several texts. Emphasizes critical thinking, reading, and writing. Topics may include disability in comics, working-class literature, magical realism, or environmental literature and film. May be repeated for credit when course content changes. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisite: C or better in ENGL 1301.

ENGL 2309. WORLD LITERATURE. 3 Hours. (TCCN = ENGL 2331)

Covers significant works of world literature chosen from various national and cultural traditions, focusing on cross-cultural issues. Topics may include moral ambiguities across cultures, the transition from colonial to postcolonial literatures, or the nature of translation; the course may also be structured as a chronological survey. Examines at least three genres and six authors. Emphasizes critical thinking, reading, and writing. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisite: C or better in ENGL 1301.

ENGL 2319. BRITISH LITERATURE. 3 Hours. (TCCN = ENGL 2321)

Concentrates on how cultural, geographic, and political issues shape and are shaped by British literature. Topics may include the nature of empire, Romantic conceptions of heroism, or literary representations of the sciences; the course may also be structured as a chronological survey. Examines at least three genres and six authors. Emphasizes critical thinking, reading, and writing. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisite: C or better in ENGL 1301.

ENGL 2329. AMERICAN LITERATURE. 3 Hours. (TCCN = ENGL 2326)

Concentrates on how cultural, geographic, and political issues shape and are shaped by American literature. Topics may include the struggle to discover a national identity, the transition from war to postwar periods, or the tensions of a multicultural society; the course may also be structured as a chronological survey. Examines at least three genres and six authors. Emphasizes critical thinking, reading, and writing. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. Prerequisites: C or better in ENGL 1301.

ENGL 2338. TECHNICAL WRITING. 3 Hours. (TCCN = ENGL 2311)

Covers the processes of researching, drafting, designing, editing, and revising technical reports, proposals, instructions, resumes, and professional correspondence for specific audiences. Prerequisites: C or better in ENGL 1301 and ENGL 1302.

ENGL 3300. TOPICS IN LITERATURE. 3 Hours.

May include such topics as Utopian literature, the American short story, literature and philosophy, introduction to theatre, and modern British fiction. May be repeated for credit when content changes. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Russian authors during the period from the beginning of Russian literature until the 1917 Revolution, focusing on the interrelationship of various literary movements and philosophies. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3301 and RUSS 3301; credit will be granted in only one department. Prerequisites: ENGL 3301-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3306. TOPICS IN SOVIET AND POST-SOVIET LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Soviet and post-Soviet authors from 1917 to the present against the background of unfolding social and political development in the USSR and post-USSR. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3306 and RUSS 3306; credit will be granted in only one department. Prerequisites: ENGL 3306-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3333. DYNAMIC TRADITIONS IN LITERATURE. 3 Hours.

An introduction to literary study that focuses primarily on changes over time to a movement, genre, or motif, such as Romanticism, detective fiction, or animals. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3339. CLASSICAL BACKGROUNDS. 3 Hours.

Literature of the Greco-Roman world including, but not limited to, The Odyssey, selected Greek tragedies, The Aeneid, Metamorphoses, and selected lyrics, epigrams, and satires. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3340. HISTORY OF AMERICAN LITERATURE. 3 Hours.

American literature from its beginnings as related to the development of American culture; may include the study of canon formation. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3342. AMERICAN POETRY. 3 Hours.

Examines the forms, traditions, and cultural contexts of the poetry of the United States. May include the relationship between American poetry and poetry written in English elsewhere, and/or poetry written in other languages. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3343. LATINO/A LITERATURE. 3 Hours.

Explores Latino/a literature of the United States from the nineteenth century through the present as conditioned by the intersections of race, class, gender, sexuality, and regional variation. Texts may include novels, poetry, drama, short fiction, and non-fiction by and about peoples in the U.S. with heritage from South America, Central America, the Caribbean, and Mexico. Offered as ENGL 3343 and MAS 3343; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3344. NATIVE AMERICAN LITERATURES. 3 Hours.

Examines selected oral and written texts composed by Native peoples of North America. Includes selections of oral narratives, autobiography, fiction, and poetry, and may include drama and film. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3345. AFRICAN-AMERICAN LITERATURE. 3 Hours.

Examines African-American literature in its various traditions, forms, and cultural and historical contexts. Offered as AAST 3345 and ENGL 3345; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3346. MEXICAN AMERICAN AND CHICANO/A LITERATURE. 3 Hours.

Surveys Mexican American literature from 1848 to the present, including literature of the Chicano movement, focusing on important genres, themes, and historical developments. Offered as ENGL 3346 and MAS 3346; credit will be granted in only one department. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3347. TOPICS IN MULTICULTURAL AMERICAN LITERATURES. 3 Hours.

Focuses on literature produced within one or more ethnic communities in the U.S. in order to trace a theme or to explore issues such as intersectionality, hybridity/mestizaje, diaspora, or immigrant experiences. Topics may include Afro-Latino poetry, third-world feminist writing, multicultural literature of the Southwest, cultural memory and the Jewish literary tradition, or Asian-American fiction. Offered as ENGL 3347, AAST 3347, and MAS 3347; credit will be granted in only one department, and credit for MAS 3347 will be granted only once. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3350. ANALYSIS AND INTERPRETATION. 3 Hours.

Teaches students to identify characteristics of genres, to recognize and understand critical and literary terms, and to develop and use methods and strategies for analyzing and interpreting texts. Required for English and English/Education majors. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3351. HISTORY OF BRITISH LITERATURE I. 3 Hours.

Examines British literature from its origins through the eighteenth century, focusing on the relationship between literature and its social and historical contexts. Covers the emergence of major genres and modes of the time period, which may include epic, pastoral, lyric, sonnets, drama, and satire. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3352. HISTORY OF BRITISH LITERATURE II. 3 Hours.

Examines British literature from Romanticism to the present, focusing on the relationship between literature and its social and historical contexts. Texts may include poetry, novels, plays, essays, and short stories. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3353. GOTHIC LITERATURE. 3 Hours.

Examines the established conventions, cultural contexts, and theoretical underpinnings of gothic literature. May focus on a particular region and/or time period, such as the gothic literature of the British Empire during the fin de siècle, or on a major theme, such as identity construction in gothic literature. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3355. POST-COLONIAL LITERATURE IN ENGLISH. 3 Hours.

Examines twentieth and twenty-first-century literature produced in formerly colonized nations. May include literature from the Indian subcontinent; various countries in Africa; Korea; Australia; New Zealand; Canada; and/or Latin America. Emphasizes critical and theoretical methods, examining such themes as identity, belonging, exile, place, language, sovereignty, and hybridity, and considers the pervasive artistic, psychological, and political impacts of colonization. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3361. HISTORY OF WORLD LITERATURE I. 3 Hours.

Examines major texts from early oral and manuscript traditions through the first centuries of printing. Texts and authors studied may include the Bible, Homer, the Greek dramatists, Vergil and other Roman poets, medieval epic and romance, Dante, Petrarch, Ariosto, Montaigne, and Cervantes. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3362. HISTORY OF WORLD LITERATURE II. 3 Hours.

Examines major literary texts from the mid-seventeenth century to the present. Material might cover Neoclassicism, Romanticism, Realism, Modernism, Postcolonial literature, Magical Realism, and the literature of globalization, as well as various theoretical problems involved in such a study of world literature, including delimiting the field, translation, and English as a global language. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3363. BOOK HISTORY AND PRINT CULTURE. 3 Hours.

Examines the creation, production, distribution, and reception of books, serials, and ephemera across history, with a focus on the shifts from orality to literacy, writing to printing, and analog to digital media. Draws upon theories and concepts from rhetoric, material culture, sociology, economics, and graphic design, as well as studies in reading, literacy, and the creation and transmission of meaning. Introduces students to principles of bibliographical description and analysis. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3364. TOPICS IN LGBTQIA+ LITERATURE AND THEORY. 3 Hours.

Studies representations of the sexual and/or gender identities of LGBTQIA+ people and the intersectionality among them through a variety of texts. Specific topics may include the history of marginalized sexualities, crossdressing in literature, or transvestite saints; the texts may be philosophical, political, literary, and/or scientific. Offered as ENGL 3364 and WOMS 3364; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3366. TOPICS IN LITERATURE AND ENVIRONMENT. 3 Hours.

Investigates the relationship between literature and the environment, considering how texts and other cultural practices represent and engage with the natural world. Topics may include nature writing, animal studies, plant studies, environmental justice, climate change, or posthumanism. May be repeated for credit when course content changes. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3368. TOPICS IN FEMINIST THEORY, GENDER, AND SEXUALITY. 3 Hours.

Examines issues of gender and sexuality through literary, theoretical, and philosophical texts that foreground questions feminist theory raises about desire, sexual identity, and gender asymmetry. Considers how gender and sexuality shape and are shaped by race, ethnicity, class, ability/disability, religion, and age. May be repeated for credit as course content changes. Offered as ENGL 3368 and WOMS 3368; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3370. HISTORY OF WOMEN'S WRITING. 3 Hours.

Examines women's writing in English from the Medieval period to the present. Offered as ENGL 3370 and WOMS 3370; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3371. ADVANCED EXPOSITION. 3 Hours.

An advanced writing course emphasizing writing that explains, demonstrates, or explores a subject. Attention given to audience, invention, arrangement, style, and revision. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3372. COMPUTERS AND WRITING. 3 Hours.

An advanced writing course taught in a computer classroom. Emphasizes rhetorical analyses of electronic discourse and writing in electronic environments. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3373. ADVANCED TECHNICAL WRITING. 3 Hours.

An advanced writing course, taught in a computer classroom, that focuses on writing in technical, scientific, and/or professional subject matters. Examines technical writing theory and style for producing documents for genre-specific audiences. Assignments may include the creation of a knowledge base, a data visualization, a reference guide, a usability testing report, and/or a video or multimedia tutorial. Prerequisite: C or better in ENGL 2338.

ENGL 3374. WRITING, RHETORIC, AND MULTIMODAL AUTHORING. 3 Hours.

Analyzes the rhetorical structure of multimodality (linguistic, visual, oral, gestural, and spatial modes of communication). Emphasizes composing writing-intensive and research-oriented projects for academic, business, and/or creative audiences. Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 3375. FORMS IN CREATIVE WRITING. 3 Hours.

Covers the craft of creative writing in the genres of poetry, fiction, and creative non-fiction. Prerequisites: C or better in ENGL 1301.

ENGL 3376. BUSINESS AND PROFESSIONAL WRITING. 3 Hours.

An advanced writing course, taught in a computer classroom, that focuses on writing in the workplace. Emphasizes producing business and professional documents based on current, standardized formats; considering the role of audience; writing in a clear, concise, and appropriate style; and revising texts to improve their effectiveness. Prerequisite: C or better in ENGL 2338 or concurrent enrollment in ENGL 2338.

ENGL 3377. TECHNICAL EDITING. 3 Hours.

Editing at different scales of document design, including copyediting, proofreading, and developmental editing. Editing and designing drafts of technical and professional documents. Applying rules and style guides governing technical writing for organizations. Prerequisite: C or better in ENGL 2338 or concurrent enrollment in ENGL 2338.

ENGL 3378. TECHNICAL PROCEDURES AND MANUALS. 3 Hours.

Principles of technical communications for developing procedural documentation and manuals. Extensive practice in writing technical procedures and manuals. Students are encouraged to take ENGL 2338: Technical Writing before enrolling. Prerequisite: C or better in ENGL 2338.

ENGL 3379. GRANT AND PROPOSAL WRITING. 3 Hours.

Explores how foundational principles of technical communication for user-centered design and document design may be applied to writing persuasive grant applications and proposals relevant for business, philanthropy, the humanities, and/or the sciences, including medicine. Individual and collaborative assignments may include identifying elements of successful and unsuccessful grant applications and proposals, creating a proposal for a client, writing a mock grant application, and/or engaging in service-learning for a local non-profit organization to assist its preparation of a grant application. Prerequisite: C or better in ENGL 2338.

ENGL 3380. RHETORIC AND WRITING WITH SOUND. 3 Hours.

An introduction to rhetorical engagement with recorded sound. Includes work with digital audio tools for writing with sound, critical writing about sound recordings, and readings in the interdisciplinary field of sound studies. May also consider histories and ethnographies of listening, studies of built and natural soundscapes, sound media, sound art, and the nature of listening. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 3381. RHETORICAL MAKING. 3 Hours.

Examines the rhetorical impact of designing and developing objects using makerspaces (collaborative technological workshops). Uses modern rhetorical theory to analyze the persuasive and communicative dimensions of fabrication and coding. Projects may include making objects using the university's FabLab, technical writing about and rhetorical analysis of those objects, and website coding and design. Emphasizes student-led collaboration throughout iterative design cycles. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 3382. LISTENING TO LITERATURE. 3 Hours.

Focuses on literary works in the form of audiobooks and podcasts. These increasingly popular and influential forms invite us to consider how the longstanding traditions of oral storytelling and performance are sustained and reimagined through new media. Whether written works of literature that are adapted to audio formats, in the case of audiobooks, or original audio productions, in the case of short- and longform fiction podcasts, this body of literature demands new interpretive strategies. In this course, we explore how listening to literature compares to reading literature, including learning and applying the analytical method of critical listening or close listening. Moreover, students will learn the skills of making audiobooks or podcasts, in order to produce their own audio interpretations or performances of literary texts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 3383. INFORMATION DESIGN. 3 Hours.

Covers the theory and practice of information design for professional and technical projects. Focuses on developing critical and rhetorical digital literacies in order to analyze and create effective information design. Students will analyze, design, and redesign print and web materials. Intermediate computer proficiency required for learning the basics of the industry standard software for desktop publishing. Prerequisite: C or better in ENGL 2338 and permission of instructor.

ENGL 3384. STRUCTURE OF MODERN ENGLISH. 3 Hours.

Explores Modern English grammar at the level of the word, phrase, and sentence, not to teach "proper" English but to discover and understand the unique structure of the language. Required for English and English/Education majors. Prerequisites: C or better in ENGL 1301 and ENGL 1302.

ENGL 3385. TOPICS IN RHETORIC AND COMPOSITION. 3 Hours.

Examines a topic in the history, theory, and practice of rhetoric and composition, such as digital rhetoric and composition, environmental rhetoric, history of writing instruction, rhetoric of science, and rhetoric of sound. May be repeated for credit as course content changes. Prerequisites: C or better in ENGL 1301 and ENGL 1302.

ENGL 3386. WRITING ABOUT MUSIC. 3 Hours.

Provides a foundation in sound studies, lyric theory, and close-listening practices that students will use to analyze and produce various genres and modalities of writing about music, including music criticism, liner/album notes, and/or music in literature. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 4191. LITERATURE CONFERENCE COURSE. 1 Hour.

Requires permission of the department chair and the instructor.

ENGL 4301. HISTORY OF THE ENGLISH LANGUAGE. 3 Hours.

Examines the sounds and structure of the English language from pre-history to the present. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4311. EARLY AMERICAN LITERATURE. 3 Hours.

Investigates the earliest literature and cultures of the peoples inhabiting the North American continent from prehistory to the end of the eighteenth century. May focus on oral and written narratives by Native Americans, Puritans, and/or other non-indigenous settlers who colonized the North American continent. Genres may include oral tales, letters, autobiography, fiction, poetry, drama, journalism, and/or scientific writing. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4312. NINETEENTH-CENTURY AMERICAN LITERATURE. 3 Hours.

Covers American literature across the nineteenth century, including such literary topics as sentimental fiction, the American Renaissance, Gothic fiction, realism, and regionalism. The course may address various historical contexts, such as slavery and abolition, the Civil War, the women's rights movement, immigration and urbanization, and westward expansion and the frontier. Genres may include fiction, poetry, essays, autobiography, and letters. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4313. TWENTIETH- AND TWENTY-FIRST-CENTURY AMERICAN LITERATURE. 3 Hours.

Examines literature written in the United States from the turn of the twentieth century to the present. Focuses on major figures and literary movements such as Realism, Modernism, and Postmodernism as they were shaped by historical, cultural, and political contexts including the World Wars, movements for civil rights, the Cold War, and globalization. Genres may include the novel, poetry, and drama, as well as emerging genres such as graphic fiction. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4321. MEDIEVAL LITERATURE. 3 Hours.

Examines various aspects of Western literature from the fifth to the end of the fifteenth century. May focus on major figures and their cultural and historical contexts or on particular genres, themes, or topics. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4322. EARLY MODERN LITERATURE. 3 Hours.

Investigates Western European literature and culture of the sixteenth and seventeenth centuries. May focus on Petrarchan and anti-Petrarchan, Platonic and anti-Platonic poetry and essays; meditative poetry; epic poetry; drama by Shakespeare or his contemporaries; manuscript or coterie writing; women's writing; early scientific writing; or the relationship between literature and the arts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4324. RESTORATION AND EIGHTEENTH-CENTURY LITERATURE. 3 Hours.

Examines literature from the 1660s through the end of the eighteenth century. Focuses on the tenets of Neoclassicism, the rise of the Enlightenment, and the emergence of Romanticism, expressed in genres that may include drama, coterie writing, satire, essays, journals and diaries, poetry, and epic works. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4325. CHAUCER. 3 Hours.

Examines the works of the fourteenth-century English poet Geoffrey Chaucer, their historical and cultural contexts, and his literary influences. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4326. SHAKESPEARE. 3 Hours.

Examines selected plays and poetry by Shakespeare in their historical, cultural, and literary contexts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4328. J. R. R. TOLKIEN. 3 Hours.

Examines the mythology created in the fantasy writings of J. R. R. Tolkien, especially *The Lord of the Rings* and *The Silmarillion*, along with its roots in culture, history, language, literature, and religion. May cover some of Tolkien's lesser-known creative or critical texts as well as recent appropriations of Tolkien's work, such as in film, music, fan fiction, and gaming. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4330. TOPICS IN CREATIVE WRITING. 3 Hours.

A creative writing course that focuses on a topic spanning one or more literary genres. Topics may include flash fiction, memoir, narrative poetry, speculative fiction, or screenwriting. May be repeated for credit as course content changes. When the topic is screenwriting, 4330 will be cross-listed with ART 3350: Screenwriting I; credit will be granted in only one department. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4331. BRITISH ROMANTICISM. 3 Hours.

Covers the British Romantic period (roughly 1789-1837), with special attention to the relationship between literature and culture. Genres may include lyric and epic poetry; novels and romances; essays and journals; science fiction and the Gothic. Topics may include nature and the imagination, science and industry, travel and empire, and revolutions in politics, culture, and the arts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4332. THE VICTORIAN ERA. 3 Hours.

Covers the literature of Britain from 1837 to 1901, a period shaped by the literary movements of Realism and Naturalism. Genres may include the novel, poetry, drama, scientific writing, or essays. Focuses on major themes or issues in social, ethical, and aesthetic thought, such as Darwinism, democracy, class conflict, and empire. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4333. LITERARY GENRES. 3 Hours.

Examines one or more literary genres, such as the epistolary novel, the epic, the diary, or historical fiction. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4334. TOPICS IN BRITISH LITERATURE. 3 Hours.

Concentrates on a topic, on a particular historical era, or on significant British authors. May address important themes, movements, regions, genres, or cross-cultural comparisons. Examples include country and city, the Bloomsbury Group, and Jane Austen. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4335. TOPICS IN NATIVE AMERICAN LITERATURES. 3 Hours.

May focus on a period, women writers, film studies, transnational indigenous comparative studies, or a genre of written or oral literature. Topics may include the challenges of translation and mediation, as well as the identity politics of "Indian" authorship. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4336. TOPICS IN AMERICAN LITERATURE. 3 Hours.

Concentrates on a topic, on a particular historical era, or on one to three significant American authors. May address important themes, movements, regions, genres, or cross-cultural comparisons. Examples include work and the workplace, the Beat Generation, and Henry James and Edith Wharton. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4337. TOPICS IN COMPARATIVE LITERATURE. 3 Hours.

Concentrates on a topic, a genre, a particular historical era, a movement, or a group of significant authors in order to illuminate cross-cultural comparisons. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4338. TWENTIETH- AND TWENTY-FIRST-CENTURY BRITISH LITERATURE. 3 Hours.

Covers the literature of Britain, and possibly the Republic of Ireland, from the turn of the twentieth century. Focuses on major figures, literary movements, and the social and political developments that continue to preoccupy writers, such as women's rights, class conflict, and postcolonialism. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4339. TOPICS IN AFRICAN-AMERICAN LITERATURE. 3 Hours.

Concentrates on a topic or theme within the canon of African-American literature, such as a particular genre or era, significant authors, or a philosophical movement. Examples include the Harlem Renaissance, the Civil-Rights/Black-Power era, African-American autobiography, short fiction, and Afrofuturism. Offered as AAST 4339 and ENGL 4339; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4340. TOPICS IN WOMEN'S WRITING. 3 Hours.

Focuses on women's writing in a particular genre or historical period or on a concept or issue of importance to women writers. May be repeated for credit as course content changes. Offered as ENGL 4340 and WOMS 4340; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4341. RHETORIC AND COMPOSITION: HISTORY, THEORY, AND PRACTICE I. 3 Hours.

Surveys the history of rhetorical theory and practice from their earliest formulations in Greek and Roman antiquity to the early modern period. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4342. RHETORIC AND COMPOSITION: HISTORY, THEORY AND PRACTICE II. 3 Hours.

Surveys the history of rhetorical theory and practice from the early modern period to the present. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4343. TOPICS IN SOUND STUDIES. 3 Hours.

Investigates culture and the environment through sound. Topics may include histories and ethnographies of listening, studies of built and natural soundscapes, machine listening, sound media, sound art, and the nature of listening. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in ENGL 1301 and ENGL 1302.

ENGL 4344. TOPICS IN ENGLISH LANGUAGE STUDY. 3 Hours.

Examines texts primarily for their use of language or their engagement with linguistic issues. May include such topics as Old English, the emergence of the vernacular, literature and dialect, global English, or slang. May be repeated for credit when course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4345. TOPICS IN CRITICAL THEORY. 3 Hours.

May include the study of major figures (e.g., Agamben, Barthes, Derrida, Foucault, Heidegger, Levinas, Said, Spivak) or topics (e.g., aesthetics, digital technology, disability studies, feminist views of science, film theory). May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4346. TOPICS IN THEORIES OF LANGUAGE AND DISCOURSE. 3 Hours.

May include the study of a major theorist or a broader survey of related theories (e.g., discourse analysis; evolutionary theories of language and mind; integrational linguistics; speech-act theory) that investigate "language-in-general" and/or "language-in-use" and that question the limitations of these terms. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4347. ADVANCED CREATIVE WRITING: FICTION. 3 Hours.

A workshop-intensive course on writing fiction. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4348. ADVANCED CREATIVE WRITING: POETRY. 3 Hours.

A workshop-intensive course on writing poetry. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4349. ADVANCED CREATIVE WRITING: CREATIVE NON-FICTION. 3 Hours.

A workshop-intensive course on writing creative non-fiction. Prerequisite: C or better in ENGL 1301, ENGL 1302, and ENGL 3375.

ENGL 4350. TOPICS IN FILM AND LITERATURE. 3 Hours.

Studies film and the methods for comparing films to literary or other texts, considering them in relation to history, critical theory, and culture. May include such topics as ecohorror, adaptations of Shakespeare and/or Austen, or Native American cinema. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4351. THE BUSINESS OF WRITING. 3 Hours.

Prepares students for the professional and practical aspects of being a creative writer, such as submitting work for publication, organizing and conducting public readings, and developing effective daily writing practices. Students must already have a preliminary portfolio of prose (a minimum of 30 pages) or poetry (a minimum of 15 pages) ready to be intensively workshoped and edited in small peer groups, culminating in the production of a polished final collection. Prerequisite: May be taken only by Creative Writing minors who have earned a grade of C or above in 15 hours of advanced creative writing courses and who have the permission of the instructor or the Coordinator of the Creative Writing minor.

ENGL 4352. ADVANCED CREATIVE WRITING: SCREENWRITING. 3 Hours.

Focuses on the format, styles, structures, and syntax of writing narrative film for television, online, and theatrical platforms. Students will study screenplays, analyze films, and learn about the conventions of various narrative film genres as well as principles for film adaptations. Students will complete one or more original screenplays, including at least one feature-length screenplay, as well as other assignments. Offered as ART 4378; credit will be granted in only one department. Prerequisite: C or better in ENGL 1301.

ENGL 4355. LITERARY CRITICISM AND THEORY I. 3 Hours.

Examines classics of literary criticism from Greek antiquity through the nineteenth century, focusing on the nature, function, and history of criticism. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4356. LITERARY CRITICISM AND THEORY II. 3 Hours.

Examines twentieth-century and contemporary methodologies, such as New Criticism; formalism; structuralism; poststructuralism; hermeneutics; semiotics; reader response; psychoanalysis; Marxism; theories of gender, sexuality, and race; and cultural studies. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4365. CHILDREN'S LITERATURE. 3 Hours.

Examines literature for children, with attention to theoretical perspectives and cultural contexts. May present a history of the genre or focus on specific issues, such as gender, social class, disability, or the environment. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4366. YOUNG ADULT LITERATURE. 3 Hours.

Examines literature for young adults, with attention to theoretical perspectives and cultural contexts. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4370. RHETORIC AND COMPOSITION FOR SECONDARY SCHOOL TEACHERS. 3 Hours.

Surveys recent scholarship in rhetoric and composition as it applies to middle school and high school settings. Focuses on the development of reading and writing assignments, formative response to student writing, and assessment of student writing. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4371. ADVANCED ARGUMENTATION. 3 Hours.

Examines classical and contemporary theories of argumentation and applies them to academic and nonacademic writing. Assignments focus on the analysis and production of argumentative discourse in various forms (e.g., academic essays, advertising, editorials, political speeches, etc.). Prerequisite: C or better in ENGL 1301 and ENGL 1302.

ENGL 4372. PROFESSIONAL PRACTICE IN TECHNICAL COMMUNICATION. 3 Hours.

Covers the professional practices of technical and professional writers and designers, as informed by histories, theories, and methods of the field. Addresses historical and current trends in technical communication, including communicating for transnational audiences, writing for social justice, and multimodal design. Includes professionalization for careers in the field of professional and technical communication. Assignments may include a professional portfolio, a professional development plan, or a case study of an historical or current issue relevant to the field. Prerequisite: C or better in ENGL 2338.

ENGL 4375. TOPICS IN DIGITAL STUDIES. 3 Hours.

Advanced, theoretical work in digital studies in areas such as data analytics, social networking, videogame studies, or sound studies. May be repeated for credit when course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4376. DESIGNING TECHNICAL DOCUMENTS. 3 Hours.

Builds on the topics of designing and creating effective technical documents as taught in Technical Writing (ENGL 2338). Covers foundations of user centered design, including both single and multipage design, using professional design software (e.g. Adobe InDesign, Photoshop), typography, color theory, basic information architecture (IA), and user experience (UX). Assignments could include identifying successful design elements in sample texts, selecting appropriate colors and typefaces to enhance document content and message, producing a single and multi-page redesign, editing raster graphics in an ethical manner, editing vector graphics for publication, and producing a professional portfolio. Prerequisite: C or better in ENGL 2338.

ENGL 4377. TOPICS IN SCIENCE AND TECHNOLOGY. 3 Hours.

Explores issues in the rhetorical, cultural, and aesthetic dimensions of science and technology. May include such topics as the medical humanities, speculative fiction, or theories of cultural spaces. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4385. MODERNISM. 3 Hours.

Covers major works of the early and mid-twentieth century in Europe and/or the Americas that belong to the movement known as Modernism. May also include the study of Freud and literature, Impressionism, Surrealism, and Existentialism. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4387. CONTEMPORARY LITERATURE. 3 Hours.

Examines contemporary literary movements and forms such as postmodernism, magical realism, dystopian fiction, and the graphic novel. Works may be from a single national tradition or several. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4390. INTERNSHIP IN ENGLISH. 3 Hours.

Provides an opportunity to apply academic skills learned in English classes to practical situations by working in a business, government, or non-profit organization in a role related to the discipline. May be repeated once for credit if internship duties change. Prerequisite: English majors: C or better in ENGL 3333, ENGL 3350, and ENGL 3384 and permission of instructor. Non-majors: C or better in ENGL 1301 and ENGL 1302, 60 hours toward their degree, and permission of instructor.

ENGL 4391. LITERATURE CONFERENCE COURSE. 3 Hours.

An independent study of a topic not otherwise available. Requires permission of the department chair and the instructor. May be repeated once for credit as long as the topics differ. Prerequisites: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

ENGL 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department.

ENGL 4399. SENIOR SEMINAR. 3 Hours.

Capstone course for English majors. A writing-intensive, seminar-style, in-depth study of a topic. Content may consist of a figure or figures, a period, a literary movement, a theme, or a critical theory. Offerings have included modern American poetry, Heidegger, existentialism, Negro expressionism, early modern manuscripts, race in science fiction, and American literature and animal studies. Prerequisite: C or better in ENGL 3333, ENGL 3350, and ENGL 3384 and completion of 18 hours of required 3000 - 4000 level English courses.

ENGL 5191. INDEPENDENT STUDY. 1 Hour.

Supervised independent study at the M.A. or Ph.D. level.

ENGL 5300. THEORY AND PRACTICE IN ENGLISH STUDIES. 3 Hours.

Core graduate course, introduction to graduate study in English. Covers a wide range of methodological and theoretical approaches to, as well as current issues in, criticism, rhetoric, and literary studies. Enrollment requires the approval of the Graduate Advisor in English.

ENGL 5301. MEDIEVAL ENGLISH LITERATURE. 3 Hours.

English literature of the period before 1500. May include Old English poetry, Anglo-Latin prose, William Langland, the alliterative revival, romances, Malory, and Chaucer.

ENGL 5302. 16TH CENTURY BRITISH LITERATURE. 3 Hours.

Non-dramatic literature of the 16th century, including works by Thomas More, Sir Philip Sidney, Sir Walter Raleigh, John Skelton, Edmund Spenser, and Elizabeth I.

ENGL 5303. 17TH CENTURY ENGLISH LITERATURE. 3 Hours.

Poetry and prose of the 17th Century. May include a study of Milton and/or a study of writers and motifs of the period.

ENGL 5304. RESTORATION AND 18TH CENTURY BRITISH LITERATURE. 3 Hours.

Drama, poetry, fiction, and essays from 1660 to 1798. Includes writers such as John Dryden, Aphra Behn, Alexander Pope, Samuel Johnson, Henry Mackenzie, Ignatio Sancho, and Maria Edgeworth, as well as issues of the period such as the nature of reason.

ENGL 5305. ROMANTIC BRITISH LITERATURE. 3 Hours.

Poetry and fiction from 1798 to 1837. Includes writers such as William and Dorothy Wordsworth, Mary and Percy Shelley, Felicia Hemans, and Walter Scott, as well as issues such as the meaning of nature.

ENGL 5306. VICTORIAN ENGLISH LITERATURE. 3 Hours.

Concepts and problems in texts by Victorian novelists, poets, and essayists (writers will vary). Attention to historical and cultural as well as literary issues.

ENGL 5307. 19TH CENTURY BRITISH LITERATURE AND CULTURE. 3 Hours.

An overview of the writings and culture of the long 19th century in Britain from 1798 to 1914. Makes connections between Romantic and Victorian periods, covers literary and other relations with the empire, and includes significant non-literary figures such as Darwin and Freud.

ENGL 5308. STUDIES IN SHAKESPEARE. 3 Hours.

Representative works of Shakespeare and contemporary Shakespeare criticism. May vary from comprehensive readings in the dramatic literature to intensive examination of certain plays, or to other related topics and plays of the period.

ENGL 5311. FOUNDATIONS OF RHETORIC AND COMPOSITION. 3 Hours.

An intellectual and institutional history of rhetoric and composition studies. Special attention will be given to the history and ethics of writing instruction; the importation of classical rhetoric into contemporary composition classrooms; the institutional formation of the field and its ambiguous status in the academy; and the major contemporary pedagogical approaches (e.g., expressivism, cognitivism, social constructionism). May also address recent topics that have attracted the attention of the field (e.g., dialogism, institutional critique, plagiarism, post-process theory, service learning, writing across and beyond the curriculum).

ENGL 5313. 20TH CENTURY BRITISH LITERATURE. 3 Hours.

A study of English and Irish writing in the 20th Century; may focus on major authors, themes, or topics.

ENGL 5320. EARLY AMERICAN LITERATURE. 3 Hours.

Explores significant authors, texts, and movements within literary, historical, and cultural contexts. Writers examined may include established figures as well as noncanonical authors, and a range of topics and genres, such as Native American and comparative Indigenous literatures, Puritan writing, captivity narratives, early national literature, the rise of the novel, and autobiographical narrative.

ENGL 5322. 19TH CENTURY AMERICAN LITERATURE. 3 Hours.

Considers significant authors, texts, and movements within literary, historical, and cultural contexts. Writers examined may include established figures as well as noncanonical authors, and a range of topics and genres, such as the domestic novel, nineteenth-century American poetry, the American Renaissance, slave narratives, realism, and naturalism.

ENGL 5323. 20TH CENTURY AMERICAN LITERATURE. 3 Hours.

Explores significant authors, texts, and movements within literary, historical, and cultural contexts. Writers examined may include established figures as well as noncanonical authors, and a range of topics and genres, such as modern American poetry and fiction, the Harlem Renaissance, regionalism, the Beats, and post-war fiction.

ENGL 5324. TOPICS IN AMERICAN LITERARY GENRES. 3 Hours.

Concentrates on a significant genre within American literary history. Genres examined may include, but are not limited to, poetry, fiction, autobiography, oral narratives, and American Gothic literature. May be repeated when content changes.

ENGL 5326. TOPICS IN AMERICAN LITERATURE BEFORE 1900. 3 Hours.

May focus on one to three writers such as Whitman and Dickinson, or Douglass, Stowe, and Melville, or a significant topic such as realism, African American literature, gender and sexuality, American literature and the environment, sentimental fiction, or women's writing. May be repeated when content changes.

ENGL 5327. TOPICS IN AMERICAN LITERATURE AFTER 1900. 3 Hours.

May focus on one to three writers such as Wharton, Faulkner, or Morrison, or a significant topic such as modernism and postmodernism, Mexican American literature, multicultural narrative, or feminist theory/feminist fiction. May be repeated when content changes.

ENGL 5330. TOPICS IN CRITICISM. 3 Hours.

Studies in critical topics such as textual criticism, psychoanalytic criticism, philosophy and criticism, Renaissance poetics and literature, critical movements, or focus on a major theorist in criticism. May be repeated when content changes.

ENGL 5331. TOPICS IN LANGUAGE OR DISCOURSE STUDIES. 3 Hours.

Concentration on historical and theoretical approaches to the study of language and the specific discursive practices of its users. May be repeated for credit when content changes.

ENGL 5337. SEMINAR IN TEACHING LITERATURE. 3 Hours.

Study of recent scholarship in English Studies and other disciplines pertaining to the teaching of literature. Comparative analysis of methods and objectives for the teaching of literature. Course will include a practicum component in which students observe the teaching of experienced faculty, teach particular texts, design syllabi and write statements of teaching philosophy. The course is intended to prepare graduate students to teach literature courses at the university, college or community college level, and to provide a range of pedagogical models to enhance the skills of secondary school teachers.

ENGL 5340. CRITICAL THEORY: THE MAJOR TRADITIONAL TEXTS. 3 Hours.

A study of literary and cultural theory and practice from the Greco-Roman period to the early 20th Century. May include such theorists as Plato, Aristotle, Horace, Longinus, Dante, Sidney, B. Jonson, Dryden, Pope, Johnson, Coleridge, Arnold, Richards, Eliot, and others.

ENGL 5350. HISTORY OF RHETORIC I: CLASSICAL RHETORIC. 3 Hours.

A study of the theory and practice of Greco-Roman rhetoric from its pre-Socratic origins to the Second Sophistic. Attention will be given to major theorists, such as Gorgias, Protagoras, Plato, Aristotle, Isocrates, Hermagoras, Hermongenes, Cicero, Quintilian and the transitional figure of St. Augustine.

ENGL 5351. HISTORY OF RHETORIC II: MEDIEVAL AND RENAISSANCE RHETORIC. 3 Hours.

A study of the theory and practice of western rhetoric from the early medieval period through the Renaissance. Attention will be given to major theorists, such as St. Augustine, Geoffrey of Vinsauf, Robert of Basevorn, Christine de Pizan, Desiderius Erasmus, Baldesar Castiglione, Juan Luis Vives, Sir Philip Sidney, Peter Ramus and Francis Bacon.

ENGL 5352. HISTORY OF RHETORIC III: MODERN AND CONTEMPORARY RHETORIC. 3 Hours.

A study of the theory and practice of western rhetoric from the 18th century to the present. Attention will be given to major theorists, such as Whatley, Blair, Bain, Campbell, Spencer, Richards, Burke, Weaver, Toulmin, Perelman, Bitzer, Vatz, Harriman, Leff, Farrell, McGee, Gaonkar, Kinneavy, Scott, Crosswhite, Meyer, Gross, Miller, Fuller and Kent.

ENGL 5353. RHETORIC AND SOUND. 3 Hours.

An introduction to rhetorical engagement with recorded sound. Includes critical engagement with sound recordings (sonic data and archives, podcasting, field recording, etc.), work with digital audio tools for writing with sound, as well as studies in the interdisciplinary field of sound studies. May also consider work in areas that include histories and ethnographies of listening, studies of built and natural soundscapes, sound media, sound art, and the nature of listening.

ENGL 5355. STUDIES IN ENGLISH DISCOURSE. 3 Hours.

Analysis of English grammatical structures above the level of the clause, including the sentence, the paragraph, and the whole text; examination of the work of major discourse theorists Dik, Harris, Halliday, Longacre, Pike and van Dijk.

ENGL 5356. COMPOSING PROCESSES. 3 Hours.

Study of research about writing processes and examination of the available methods of conducting research; special attention given to major researchers and theorists.

ENGL 5357. READING PROCESSES. 3 Hours.

Contemporary theories of interpretation and empirical research into reading processes; special attention given to major researchers and theorists.

ENGL 5358. WRITING ASSESSMENT, EVALUATION, AND RESPONSE. 3 Hours.

Study of the methods and ethics of assessing, evaluating, and responding to the writing of students individually or collectively.

ENGL 5359. ARGUMENTATION THEORY. 3 Hours.

Emphasis on theories of argumentation and persuasion that further the rhetorical aims of convincing or achieving agreement through identification and consensus. Attention to classical and contemporary approaches to issue analysis, invention, audience analysis, building common ground, stasis theory, types of proofs and tests of validity, organizational strategies, and style. Special attention to argument on the Internet. Assignments may include constructing Web sites related to argument. Study of such theorists as Aristotle, Perelman, Toulmin, Ong, K. Burke, Brockreide and Ehninger, Bitzer, Young, Becker and Pike, and others.

ENGL 5360. CONTEMPORARY CRITICAL THEORY. 3 Hours.

Study of contemporary theories of interpretation, concentrating on one or more schools of critical and cultural theory may include, New Criticism, the Neo-Aristotelians, Marxist Critical Theory, Hermeneutics, psychoanalysis, Russian Formalism, semiotics, speech-act theory, phenomenology, structuralism, and post-structuralism. May be repeated when content changes.

ENGL 5370. SCHOLARLY ARGUMENT. 3 Hours.

An introduction to the research for the writing of argumentative scholarly essays. Surveys research skills, materials, forms of scholarly argument, and involves the writing of a research-based essay.

ENGL 5380. TEXTUAL THEORIES OF CULTURE. 3 Hours.

Study of the interpretations of culture yielded by the traditions of semiotics and hermeneutics and cultural studies may include works by the following: Lyotard, Foucault, Habermas, Derrida, Pierce, Barthes, Deleuze, Gadamer, Levi-Strauss, Butler, Haraway, and Hall.

ENGL 5381. PRIVACY MATTERS WITH DIGITAL TECHNOLOGIES. 3 Hours.

Examines the critical, ethical, and rhetorical dimensions of surveillance and privacy due to digital technologies and data analytics. May focus on the effects of bias, discrimination, fairness, manipulation, and transparency.

ENGL 5382. THE LIFE AND TIMES OF S. CARTER. 3 Hours.

Explores the trajectory of Jay-Z's musical career and connects him to a larger continuum of African American literary expression. Building on earlier generations of computational approaches to humanities research, this course uses Jay-Z as a model to structure different types of data in order to analyze his career from a digital perspective. Students will compile quantitative and qualitative datasets on Jay-Z in order to produce thematic data visualizations, literary timelines, and a list of key terms that pinpoint intellectual and cultural components of rap music.

ENGL 5383. DATA MINING BLACK SHORT FICTION. 3 Hours.

Illuminates an important mode of Black literary art by interpreting writers' depictions of characters navigating distinct social and physical environments. Examines the role of anthologies in the transmission of these literary works. Teaches students technical skills associated with data analytics methodologies, such as formulating useful research questions, scraping data from websites, organizing and cleaning data, analyzing data, and creating useful data visualizations.

ENGL 5388. GTA PREPARATION. 3 Hours.**ENGL 5389. TOPICS IN TEACHING COMPOSITION. 3 Hours.**

Seminar for investigating problems of and approaches to teaching composition. Special attention given to current compositional theorists. May be repeated when content changes.

ENGL 5391. INDEPENDENT STUDY. 3 Hours.

Supervised independent study at the M.A. or Ph.D. level.

ENGL 5398. THESIS. 3 Hours.

The graduate student must be registered for this course (a) when in consultation over the thesis with the supervisory committee, and (b) in the semester or term in which the Master of Arts degree will be conferred.

ENGL 5698. THESIS. 6 Hours.

The graduate student must be registered for this course (a) when in consultation over the thesis with the supervisory committee, and (b) in the semester or term in which the Master of Arts degree will be conferred.

ENGL 5998. THESIS. 9 Hours.

The graduate student must be registered for this course (a) when in consultation over the thesis with the supervisory committee, and (b) in the semester or term in which the Master of Arts degree will be conferred.

ENGL 6191. INDEPENDENT STUDY. 1 Hour.

Independent study at the M.A. or Ph.D. level. May be repeated as needed. Prerequisite: permission of instructor.

ENGL 6329. TOPICS AND THEMES IN COMPARATIVE LITERATURE. 3 Hours.

The study of a theme or topic, such as primitivism, utopianism, representations of the unconscious, or the quest, within different literary traditions. May be repeated as content changes.

ENGL 6330. GENRE STUDIES IN BRITISH LITERATURE. 3 Hours.

Intensive study of a genre in any period(s) of British Literature; may focus on autobiography, history of the novel, Restoration and eighteenth-century drama, nineteenth-century British fiction, or other. May be repeated when course content changes.

ENGL 6333. GENRES IN COMPARATIVE LITERATURE. 3 Hours.

Theory of literary forms or types and the conventions they embody. May focus on the epic, the novel, lyric poetry, autobiography, drama, or magical realism, across different literary traditions. May be repeated as course content changes.

ENGL 6335. TOPICS IN ENGLISH LITERATURE. 3 Hours.

Focus on writers or issues in literature written in English, including colonial and postcolonial literatures. May include poetry, drama, fiction, or non-fiction. May be repeated when content changes.

ENGL 6339. TOPICS IN AMERICAN LITERATURE. 3 Hours.

Topics not bound by particular historical periods, for example, women's writing, canon formation, Native American and comparative Indigenous literatures, African American literature, Latina/o literature, utopian literature, science fiction, popular literature and culture, and queer literature. May be repeated when content changes.

ENGL 6340. METACRITICAL THEORY. 3 Hours.

A study of theories of literature from the point of view of their systems-theoretical character. Focuses on the writing of selected metatheorists such as Barbour, Braithwaite, Bruss, Harr, Lakotos, Popper, Rescher, and others, on questions of the genesis, nature, function, validity, and potential of literary theory. May be repeated for credit as course content changes.

ENGL 6350. TOPICS IN THE HISTORY AND THEORY OF RHETORIC. 3 Hours.

An intensive study of specific problems or issues in classical, medieval, Renaissance, modern, or contemporary rhetoric, (e.g., civic functions of rhetoric, logic and rhetoric, rhetoric of science, theories of invention), especially those that involve the connections and collisions between rhetoric and other intellectual traditions (e.g., critical theory, cultural studies, feminist theory, history, literary studies, non-western rhetoric, philosophy). May focus on the work of a major theorist. May be repeated for credit when content changes.

ENGL 6351. TOPICS IN COMPOSITION STUDIES. 3 Hours.

An intensive study of specific problems or issues in contemporary composition studies (e.g., authorship and intellectual property, computers and composition, the ideologies of writing instruction, the role of empirical research, service learning), especially those that involve connections and collisions between composition studies and other intellectual traditions (e.g., cognitive science, critical theory, cultural studies, feminist theory, hermeneutics, history, linguistics, literary study, rhetoric, philosophy, psychology, sociology). May focus on the work of a major researcher or theorist. May be repeated for credit when content changes.

ENGL 6360. TOPICS IN FEMINIST THEORY. 3 Hours.

Study of interdisciplinary feminist theories of language, power, knowledge, culture, identity, gender, and sexuality. Course may focus on Marxist feminism, postmodern/poststructuralist feminism, feminist cultural studies, postcolonial feminism, material feminisms, feminist science studies, queer theory, or other topics. Course may include such theorists as Wollstonecraft, Woolf, Beauvoir, Irigaray, Spillers, Spivak, Anzaldúa, Bordo, Haraway, Butler, Grosz, Sedgwick, Wynter, and Halberstam.

ENGL 6370. TOPICS IN LITERATURE AND THE ENVIRONMENT. 3 Hours.

Introduces interdisciplinary theories and methods of the environmental humanities while investigating how literature, film, and other cultural texts, media, and practices represent and engage with the natural world. Topics may include animal studies, plant studies, food studies, environmental science studies, science fiction, environmental justice, post-humanism, extinction, climate change, and the anthropocene. May be repeated for credit when course content changes.

ENGL 6375. TOPICS IN CREATIVE WRITING. 3 Hours.

A workshop course in creative writing focusing on the study of craft, the works of published writers, and the production of original creative works. In addition, the course will cover pedagogical and professional concerns. The course may focus on a single genre, such as poetry, fiction, creative nonfiction or drama, or may be taught as a multi-genre course. May be repeated as content changes.

ENGL 6389. TECHNICAL WRITING ACROSS THE DISCIPLINES. 3 Hours.

Offers an integrated-language approach to technical writing across the disciplines designed to improve critical reading, writing, and thinking skills. Provides ESL-integrated feedback for writing projects. Focuses on writing research or grant proposals, but may also include writing abstracts, summaries, reports, and/or literature reviews. ENGL 6389 cannot be counted toward completing the requirements of any graduate degree plan in English.

ENGL 6391. GRADUATE READINGS. 3 Hours.

Supervised reading for the Ph.D. exam.

ENGL 6399. DISSERTATION. 3 Hours.

The graduate student must be registered for this course (a) when in consultation over the dissertation with the supervisory committee, and (b) in the semester or term in which the Ph.D. will be conferred. A minimum of 9 hours of dissertation credit is required for the Ph.D. Graduate teaching assistants must take ENGL 6699. ENGL 6999 must be taken during the final semester of the Ph.D.

ENGL 6691. GRADUATE READINGS. 6 Hours.

Independent Reading for the Comprehensive Exam.

ENGL 6699. DISSERTATION. 6 Hours.

The graduate student must be registered for this course (a) when in consultation over the dissertation with the supervisory committee, and (b) in the semester or term in which the Ph.D. will be conferred. A minimum of 9 hours of dissertation credit is required for the Ph.D. Graduate teaching assistants must take ENGL 6699. ENGL 6999 must be taken during the final semester of the Ph.D.

ENGL 6991. GRADUATE READINGS. 9 Hours.

Independent Reading for the Comprehensive Examination.

ENGL 6999. DISSERTATION. 9 Hours.

The graduate student must be registered for this course (a) when in consultation over the dissertation with the supervisory committee, and (b) in the semester or term in which the Ph.D. will be conferred. A minimum of 9 hours of dissertation credit is required for the Ph.D. Graduate teaching assistants must take ENGL 6699. ENGL 6999 must be taken during the final semester of the Ph.D.

ENGL 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Environmental and Sustainability (ESST)

COURSES

ESST 2300. INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES. 3 Hours.

Introduces major topics, questions, issues and methods within interdisciplinary and cross-disciplinary environmental studies. Includes a study of some of the most significant texts, studies, practices, and creative works from at least four different fields as they pertain to questions of environment, ecology, and sustainability. Prerequisite: Acceptance in the Environmental and Sustainability Studies Minor.

ESST 3300. INDEPENDENT STUDY. 3 Hours.

Consent of instructor and Director of Environmental and Sustainability Studies Minor required. Independent study required. Independent study on a specific topic related to sustainability and environmental studies. The student and the instructor will design the readings, research, and requirements. The supervising instructor may be from any department. The Director of Environmental and Sustainability Studies must approve of the topic and requirements. This course is open only to students minoring in Environmental and Sustainability Studies. Prerequisite: ESST 2300 and acceptance in the Environmental and Sustainability Minor.

ESST 3350. INDEPENDENT PROJECT. 3 Hours.

Consent of instructor and Director of Environmental and Sustainability Studies Minor required. Independent Study Required. Independent research project or design project related to sustainability and environmental studies. The project may be scientific or artistic, involving experiments, engineering, planning or design. Format will be designed by instructor and student. The supervising instructor may be from any department. The Director of Environmental and Sustainability Studies must approve of the project and requirements. This course is open only to students minoring in Environmental and Sustainability Studies. Prerequisite: ESST 2300 and acceptance in the Environmental and Sustainability Studies Minor.

ESST 4300. INTERNSHIP IN ENVIRONMENTAL AND SUSTAINABILITY STUDIES. 3 Hours.

Practicum Required. Consent of the Director of Environmental and Sustainability Studies required. Provides the student with the opportunity to apply academic skills learned in environmental and sustainability studies to campus operations, or business, community, or nonprofit organizations. Students will work a certain number of hours and submit a written account of their experience and accomplishments to the Director of Environmental and Sustainability Studies. This course is open only to students minoring in Environmental and Sustainability Studies. Prerequisite: ESST 2300 and acceptance in the Environmental and Sustainability Studies Minor.

Environmental Science (ENVR)

COURSES

ENVR 1301. INTRODUCTION TO ENVIRONMENTAL SCIENCE. 3 Hours.

This course provides an introduction to the basic principles of environmental science. Environmental science, as a discipline, along with key chemical, physical, geological, and biological aspects and relevant societal issues will be examined.

ENVR 1330. GLOBAL WARMING. 3 Hours.

Global environmental challenges confronting humanity such as pollution, depletion of natural resources, ecosystem deterioration, food production, and population growth. Offered as ENVR 1330 and GEOL 1330. Credit will not be given for both.

ENVR 2414. THE GLOBAL ENVIRONMENT AND HUMAN HEALTH. 4 Hours.

This course will assess the impact on human health of: 1) population growth and available resources; 2) exposure to man-made harmful substances; and 3) environmental degradation.

ENVR 3387. ENVIRONMENTAL SCIENCE FIELD METHODS. 3 Hours.

Measurement and analysis of environmental data collected in the field. Special fee covers cost of transportation and equipment. Prerequisite: CHEM 1442.

ENVR 3454. STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of statistics and helps students apply statistics to analyze data and interpret results from the perspective of Earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in Earth and environmental sciences. Offered as ENVR 3454 and GEOL 3454, credit will not be given for both. Prerequisite: GEOL 3454: MATH 1426.

ENVR 3457. ENVIRONMENTAL ANALYTICAL CHEMISTRY. 4 Hours.

This course offers an introduction to chemical and biochemical phenomena that occur in water, air, terrestrial and living environments, and the effects of human activity on them. Environmental chemistry can broaden as much as atmospheric chemistry, aquatic chemistry, chemistry of soil/geosphere, toxicological chemistry and industrial ecology. In this course, mainly chemical substances in diverse environmental compartments and interactions and exposure impact to human and wildlife receptors will be focus based on analytical chemistry principles and perspective. Prerequisite: CHEM 1442.

ENVR 4189. RESEARCH IN ENVIRONMENTAL SCIENCE. 1 Hour.

Supervised undergraduate research in some aspect of environmental science. Prerequisite: Permission from Instructor.

ENVR 4190. ENVIRONMENTAL SCIENCE INTERNSHIP. 1 Hour.

Work in environmental sciences for a commercial concern at least 20 hours per week for three months. Requirements include: writing a resume, learning how to interview and function on the job, and a report describing the work.

ENVR 4199. TECHNICAL SESSIONS. 1 Hour.

Forum for presentation of results of undergraduate and graduate students and faculty research. Offered as ENVR 4199 and GEOL 4199. Credit will not be given for both. Prerequisite: For ENVR: ENVR 1301 or equivalent. For GEOL: GEOL 1301 or equivalent.

ENVR 4289. RESEARCH IN ENVIRONMENTAL SCIENCES. 2 Hours.

Supervised undergraduate research in any one of the various fields of environmental sciences. May be repeated but will not meet Environmental Science degree requirements. Prerequisite: permission from instructor.

ENVR 4303. TOPICS IN SUSTAINABILITY. 3 Hours.

Governmental and regulatory issues as they relate to sustainability. Course offered as SUST 5303 and EVSE 5303. Credit will be granted only once.

ENVR 4305. SELECTED TOPICS IN ENVIRONMENTAL SCIENCES. 3 Hours.

Environmental science topics not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for Environmental Science elective credit as different topics are offered. Prerequisite: Determined by instructor.

ENVR 4312. ENVIRONMENTAL RISK BASED ACTION. 3 Hours.

This course offers an introduction to environmental risk-based actions including environmental laws and regulations, hazard identification, toxicology, common contaminants, chemical intake models, chemical fate and transport models, and vapor intrusions. Prerequisite: ENVR 1301 or GEOL 1301 or equivalent.

ENVR 4313. ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS. 3 Hours.

This course offers an introductory knowledge about regulations and management of environmental and life quality in relation to chemical pollution, waste disposal, energy/resources sustainability, public health threats, and food/consumer product safety. Prerequisite: CHEM 1441 or equivalent.

ENVR 4314. TOXICOLOGY FOR ENVIRONMENTAL SCIENTISTS. 3 Hours.

This course offers an introduction to environmental toxicology and methods of measuring and using data on the adverse effects of chemical substances in line with understanding chemical and biochemical phenomena that occur in water, air, terrestrial and living environments, and the impact to human population. Prerequisite: CHEM 1441 or equivalent.

ENVR 4315. INTRODUCTION TO ENVIRONMENTAL STUDIES. 3 Hours.

This course serves as an introduction to and covers broad aspects of environmental studies. It is designed to foster an increased understanding of physical, chemical and biological systems of terrestrial and aquatic environments, their complex connections and patterns, and human interactions. In this course emphasis is placed on a holistic approach to environmental studies using case studies, learning activities, and discussions to reinforce scientific principles. Students will examine the relationship between humankind and nature in order to gain a broad understanding of issues, causes, and possible solutions to the array of environmental challenges faced in today's world. Prerequisite: Junior standing, core complete.

ENVR 4323. ISSUES IN ENVIRONMENTAL HEALTH. 3 Hours.

An introduction to health issues of current concern resulting from environmental exposures. Topics include: environmental asthma, endocrine disruptors, climate change and health, emerging contaminants, nanotechnology and health, airborne particles and pediatric health. Offered as ENVR 4323 and GEOL 4323. Credit will not be given for both.

ENVR 4330. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software. Prerequisite: Junior Standing.

ENVR 4389. RESEARCH IN ENVIRONMENTAL SCIENCES. 3 Hours.

Supervised undergraduate research in any one of the various fields of environmental sciences. May be repeated but will not meet Environmental Science degree requirements.

ENVR 4455. MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS. 4 Hours.

This course is designed to introduce the process principles that govern contaminant transport and transformations in multimedia environments. This course will cover application of fate and transport models to evaluate pollutant interactions with the biosphere, particularly in the context of human exposure modeling and health risk assessment. Offered as ENVR 4455 and GEOL 4455. Credit will not be given for both.

ENVR 4456. ENVIRONMENTAL RISK ASSESSMENT. 4 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization. Offered as ENVR 4456 and GEOL 4456. Credit will not be given for both.

ENVR 4458. MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of machine learning and helps students apply machine learning to analyze data, predict outcomes and interpret results from the perspective of earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in earth and environmental sciences. Offered as GEOL 4458 and ENVR 4458. Credit will be not given for both. Prerequisite: GEOL 3454 or ENVR 3454 or equivalent.

Environmental Science and Engineering (EVSE)

COURSES

EVSE 5100. SELECTED TOPICS IN ENVIRONMENTAL SCIENCE AND ENGINEERING. 1 Hour.

May be repeated for credit when topic changes.

EVSE 5120. ENVIRONMENTAL PROFESSIONAL MENTORING & BUSINESS ETHICS. 1 Hour.

Provides credit to students participating in an approved mentoring program with an experience environmental professional. May be repeated once for credit.

EVSE 5199. SEMINAR IN ENVIRONMENTAL & EARTH SCIENCES. 1 Hour.

Topics presented by faculty, students, and invited lecturers.

EVSE 5200. SELECTED TOPICS IN ENVIRONMENTAL & EARTH SCIENCES. 2 Hours.

May be repeated for credit when topic changes.

EVSE 5294. INDIVIDUAL PROBLEMS IN ENVIRONMENTAL & EARTH SCIENCES. 2 Hours.

Individual research projects supervised by a faculty member.

EVSE 5300. SELECTED TOPICS IN ENVIRONMENTAL & EARTH SCIENCE. 3 Hours.

May be repeated for credit when topic changes.

EVSE 5303. SUSTAINABILITY ISSUES SEMINAR III. 3 Hours.

Governmental and regulatory issues as they relate to sustainability.

EVSE 5309. ENVIRONMENTAL SYSTEMS-BIOLOGICAL ASPECTS. 3 Hours.

An introduction to the biological components of environmental systems. Population dynamics, species interactions, community structure, biodiversity, bioenergetics, nutrient cycling and human impacts are reviewed. Focus will be on natural processes and their engineering applications.

EVSE 5310. ENVIRONMENTAL SYSTEMS-CHEMICAL ASPECTS. 3 Hours.

An introduction to the chemistries of air at different altitudes, of water systems and of soils. Chemical and physico-chemical processes at phase boundaries, modeling for kinetics and mass transport, analytical techniques and disposal and recycling are included as well as their impact on engineering decisions.

EVSE 5311. ENVIRONMENTAL SYSTEMS-GEOLOGICAL ASPECTS. 3 Hours.

Introduction to the tectonic, volcanic, atmospheric, climatic, hydrologic and geochemical processes and natural hazards of the earth, and their interaction with political, economic and engineering decisions.

EVSE 5312. ENVIRONMENTAL RISK BASED ACTION. 3 Hours.

This course offers an introduction to environmental risk-based actions including environmental laws and regulations, hazard identification, toxicology, common contaminants, chemical intake models, chemical fate and transport models, and vapor intrusions.

EVSE 5313. ENVIRONMENTAL REGULATION OF CHEMICAL HAZARDS. 3 Hours.

This course offers an introductory knowledge about regulations and management of environmental and life quality in relation to chemical pollution, waste disposal, energy/resources sustainability, public health threats, and food/consumer product safety. Prerequisite: CHEM 1441 or equivalent.

EVSE 5314. TOXICOLOGY FOR ENVIRONMENTAL SCIENTISTS. 3 Hours.

This course offers an introduction to environmental toxicology and methods of measuring and using data on the adverse effects of chemical substances in line with understanding chemical and biochemical phenomena that occur in water, air, terrestrial and living environments, and the impact to human population. Prerequisite: CHEM 1441 or equivalent.

EVSE 5315. PROFESSIONAL EXPERIENCE. 3 Hours.

Provides credit to students participating in an approved internship or part-time work experience.

EVSE 5320. TOXICOLOGY. 3 Hours.

An introduction to the general principles of toxicology with an emphasis on certain classes of toxic agents, their sources and toxic effects, as well as their environmental fate. Prerequisite: CHEM 2322.

EVSE 5321. HEALTH RISK ASSESSMENT. 3 Hours.

An introduction to health considerations relevant to environmental projects. Prepares students to take the Registered Environmental Health Specialist Examination.

EVSE 5322. ENVIRONMENTAL RISK ASSESSMENT. 3 Hours.

An introduction to the health assessment process, presenting methodologies and guidelines for conducting health assessments.

EVSE 5323. ISSUES IN ENVIRONMENTAL HEALTH. 3 Hours.

An introduction to health issues of current concern resulting from environmental exposures. Topics include: environmental asthma, endocrine disruptors, climate change and health, emerging contaminants, nanotechnology and health, airborne particles and pediatric health.

EVSE 5350. CONTAMINANT HYDROGEOLOGY. 3 Hours.

Sources and types of various organic and inorganic contaminants; the physical, chemical, and biological factors and processes that affect the transport and fate of contaminants in the subsurface; non-aqueous phase liquids and multiphase flow; and various remedial techniques of contaminated sites. Prerequisite: GEOL 4320 or GEOL 5328 (or concurrent enrollment).

EVSE 5351. GEOMORPHOLOGY AND QUATERNARY STRATIGRAPHY OF SEDIMENTARY SYSTEMS. 3 Hours.

This course examines those physical processes that sculpt the surface of the Earth and result in deposition of sediments. Surface systems covered include weathering, mass wasting, rivers, shorelines, eolian processes, and glaciers. The course also examines the stratigraphic techniques used to decode the recent (2 million to present) stratigraphic record of these systems. Course is designed for geologists, biologists, and other fields concerned with interpreting and/or managing modern environments.

EVSE 5357. MEDICAL GEOLOGY. 3 Hours.

Introduction to geoscience and health. Students will learn how the geologic and geochemical environment can impact health. The historic background to geoscience and health will be presented followed by discussions on the natural abundance of elements in the earth, and the nature of essential and toxic elements (dose-response). Students will then learn about health responses following exposures in specific geologic/geochemical situations.

EVSE 5394. INDIVIDUAL PROBLEMS IN ENVIRONMENTAL & EARTH SCIENCES. 3 Hours.

Individual research projects supervised by a faculty member. Prerequisite: consent of instructor.

EVSE 5395. MASTER'S PROJECT. 3 Hours.

May be used as elective for students in non-thesis program. Graded F, P.

EVSE 5398. THESIS. 3 Hours.

Graded F, R.

EVSE 5405. METEOROLOGY AND CLIMATOLOGY. 4 Hours.

A quantitative approach to the study of the structure, energy, and motions of the atmosphere.

EVSE 5454. STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of statistics and helps students apply statistics to analyze data and interpret results from the perspective of Earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in Earth and environmental sciences. Offered as EVSE 5454 and GEOL 5454. Credit will not be given for both.

EVSE 5455. MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS. 4 Hours.

This course is designed to introduce the process principles that govern contaminant transport and transformations in multimedia environments. This course will cover application of fate and transport models to evaluate pollutant interactions with the biosphere, particularly in the context of human exposure modeling and health risk assessment. Offered as EVSE 5455 and GEOL 5455. Credit will not be given for both.

EVSE 5456. ENVIRONMENTAL RISK ASSESSMENT. 4 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization. Offered as EVSE 5456 and GEOL 5456, credit will not be given for both.

EVSE 5457. ENVIRONMENTAL ANALYTICAL CHEMISTRY. 4 Hours.

This course offers an introduction to chemical and biochemical phenomena that occur in water, air, terrestrial and living environments, and the effects of human activity on them. Environmental chemistry can broaden as much as atmospheric chemistry, aquatic chemistry, chemistry of soil/geosphere, toxicological chemistry and industrial ecology. In this course, mainly chemical substances in diverse environmental compartments and interactions and exposure impact to human and wildlife receptors will be focus based on analytical chemistry principles and perspective. Prerequisite: CHEM 1442 or equivalent courses.

EVSE 5458. MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of machine learning and helps students apply machine learning to analyze data, predict outcomes and interpret results from the perspective of earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in earth and environmental sciences. Prerequisite: ENVR 3454 or GEOL 3454 or EVSE 5454 or GEOL 5454 or equivalent.

EVSE 5465. PHYSICAL OCEANOGRAPHY AND LIMNOLOGY. 4 Hours.

An introduction to physical processes in lakes and oceans. Changes in lakes and oceans influence heat, and momentum fluxes at the aquatic/oceanic and atmospheric interface. Topics include ocean/lake structure and circulation, and the impact of global climate change on lakes and oceans. Field excursions to nearby lakes combine theoretical knowledge and field measurements. Prerequisite: PHYS 1441 or PHYS 1443; and MATH 2425.

EVSE 5698. THESIS. 6 Hours.

Graded F, P, R.

EVSE 5998. THESIS. 9 Hours.

Graded F, P, R.

EVSE 6197. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCES. 1 Hour.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6297. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCES. 2 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6397. RESEARCH IN ENVIRONMENTAL AND EARTH SCIENCES. 3 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6399. DISSERTATION. 3 Hours.

Graded F, R.

EVSE 6697. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCE. 6 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6699. DISSERTATION. 6 Hours.

Graded F, R, P, W.

EVSE 6997. RESEARCH IN ENVIRONMENTAL & EARTH SCIENCE. 9 Hours.

Individually approved research projects. May be repeated for credit. Graded F, P, R.

EVSE 6999. DISSERTATION. 9 Hours.

Graded F, P, R.

EVSE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Exchange Courses (EXCH)

COURSES

EXCH 1191. EXCHANGE COURSE. 1 Hour.

EXCH 1291. EXCHANGE COURSE. 2 Hours.

EXCH 1391. EXCHANGE COURSE. 3 Hours.

EXCH 1491. EXCHANGE COURSE. 4 Hours.

EXCH 1591. EXCHANGE COURSE. 5 Hours.

EXCH 2191. EXCHANGE COURSE. 1 Hour.

EXCH 2291. EXCHANGE COURSE. 2 Hours.

EXCH 2391. EXCHANGE COURSE. 3 Hours.

EXCH 2491. EXCHANGE COURSE. 4 Hours.

EXCH 2591. EXCHANGE COURSE. 5 Hours.

EXCH 3191. EXCHANGE COURSE. 1 Hour.

EXCH 3291. EXCHANGE COURSE. 2 Hours.

EXCH 3391. EXCHANGE COURSE. 3 Hours.

EXCH 3491. EXCHANGE COURSE. 4 Hours.

EXCH 3591. EXCHANGE COURSE. 5 Hours.

EXCH 4191. EXCHANGE COURSE. 1 Hour.

EXCH 4291. EXCHANGE COURSE. 2 Hours.

EXCH 4391. EXCHANGE COURSE. 3 Hours.

EXCH 4491. EXCHANGE COURSE. 4 Hours.

EXCH 4591. EXCHANGE COURSE. 5 Hours.

EXCH 4691. EXCHANGE COURSE. 6 Hours.

EXCH 5191. EXCHANGE COURSE. 1 Hour.

EXCHANGE COURSE.

EXCH 5291. EXCHANGE COURSE. 2 Hours.

EXCH 5391. EXCHANGE COURSE. 3 Hours.

EXCH 5491. EXCHANGE COURSE. 4 Hours.

EXCH 5691. EXCHANGE COURSE. 6 Hours.

Study Abroad Program.

EXCH 6391. EXCHANGE COURSE. 3 Hours.

Executive Master of Business Administration (EMBA)

COURSES

EMBA 5101. BUILDING HIGH PERFORMANCE LEADERS AND ORGANIZATIONS (LL2). 1 Hour.

1.5 CREDITS. Explores key characteristics of high-performing leaders and organizations and weaves these into a single integrated model that students can easily apply to improve their individual and organizational effectiveness. Leadership Laboratory Module 2.

EMBA 5102. PRICING STRATEGIES AND TACTICS. 1 Hour.

1.5 CREDITS. Often, managers treat pricing as a tactical problem. By pricing to cover costs, they undermine profit. By pricing for competitive advantage, they undermine value. In fact, pricing products and services is a strategic challenge that requires insight, analysis, and perspective. This course will introduce senior managers and executives responsible for pricing decisions and approvals to the theory and techniques needed to understand strategic pricing. The course will focus on how to use price to achieve strategic objectives, including successfully introducing new products to the market, responding to significant price competition, and achieving prices that reflect the true value of your products.

EMBA 5105. CORPORATE GOVERNANCE, SOCIAL RESPONSIBILITY, AND ETHICAL ISSUES (LL4). 1 Hour.

1.5 CREDITS. This module explores and develops key competencies that leaders need in a complex global economy. Issues to be explored may include: the impact of ethics on managerial decision making, developing and maintaining sustainable business practices, cross cultural communication, crisis management and the consequences of unethical behavior. pressures. This course explores such issues with emphasis on the impact of ethics on managerial decision making, creating ethical environments for employees, establishing expected norms of behavior, and topical issues such as environmental sustainability, and the consequences of unethical behavior. Leadership Laboratory Module 4.

EMBA 5111. PROFESSIONAL COMMUNICATION. 1 Hour.

Professional writing and presentation will be explored and practiced throughout the program. Lectures are provided by experts in business communication.

EMBA 5112. BUILDING HIGH PERFORMANCE TEAMS (LL1). 1 Hour.

1.5 CREDITS. This course introduces students to a leadership and organizational effectiveness framework, assesses individual competencies using a comprehensive leadership 360 analysis and focuses on developing talented individuals into a high-performance cohort. Students will learn the skills and techniques required to be both an effective team member and leader. Leadership Laboratory Module 1.

EMBA 5121. STRATEGIC HUMAN RESOURCE MANAGEMENT (LL3). 1 Hour.

1.5 CREDITS. This Leadership Lab module focuses on various human capital competencies that firms and individuals can use to enhance organizational capabilities and achieve strategic objectives. The course details how the acquisition, deployment, assessment, and retention of an organization's workforce impacts productivity and firm performance in various contexts. Leadership Laboratory Module 3.

EMBA 5123. NEGOTIATIONS. 1 Hour.

1.5 CREDITS. Effective Leadership requires strong communication and negotiation skills. The course will cover techniques and tools for effective negotiating.

EMBA 5125. FOUNDATIONS OF QUANTITATIVE ANALYSIS. 1 Hour.

1.5 CREDITS. This course is designed to introduce foundational statistical building blocks used in applied managerial reasoning and decision making. Coverage will include (1) the computation, interpretation, and visualization of descriptive statistics (e.g., quantities reported as key performance indicators and/or metrics on dashboards), (2) tests of statistical differences (e.g., period over period, segment vs. segment, comparisons, etc.), (3) tests for statistical association (e.g., correlations, associations among categorical variables), and (4) an introduction to predictive modeling using multiple regression. In addition to gaining working knowledge of foundational statistics, an intended outcome is to equip organizational leaders to evaluate analysis results prepared by others; a critical skill for modern data-rich business contexts with expanding applications of business analytic techniques.

EMBA 5192. CAPSTONE: SPECIAL TOPICS IN INTERNATIONAL BUSINESS. 1 Hour.

The course combines class discussion of lessons learned from the international project experience with case-based analysis. Discussion merges diverse functional business perspectives with student presentations on concepts covered in the EMBA program.

EMBA 5199. STRATEGIC SALES MANAGEMENT AND PROFESSIONAL SELLING. 1 Hour.

1.5 CREDITS. This course will focus on two key areas: building and managing a superior sales organization and understanding the professional selling process with an emphasis on B2B sales. Topics to be covered include strategic decisions such as sales force structure and deployment, key account and sales territory management, and sales leadership and evaluation of sales organization effectiveness. The second component of the course will cover key selling steps (e.g., prospecting, customer needs development and discovery, objection handling) as well as hands-on skills/techniques for building strong customer relationships in the consultative selling process.

EMBA 5211. COMPETING IN A GLOBAL ENVIRONMENT. 2 Hours.

With an ever-growing number of industries becoming global in scope, managers are being increasingly challenged to manage strategies within a global perspective. This course provides participants with the skills, knowledge and sensitivity required to successfully manage organizations and organizational units within a multinational environment.

EMBA 5299. SPECIAL TOPICS IN EXECUTIVE BUSINESS EDUCATION. 2 Hours.

New topics or independent study options to be offered as needed.

EMBA 5303. STRATEGIC COST MANAGEMENT. 3 Hours.

Tools for cost management to meet strategic as well as tactical organizational goals are examined. Emphasis is on leveraging accounting information for decision making, strategic management, and for the control of processes and organizations.

EMBA 5304. MAKING STRATEGIC DECISIONS WITH FINANCIAL DATA. 3 Hours.

A review of the elements of accounting measurement principles and practical analytical skills needed to manage the resources of a firm. This includes exposure to the fundamentals of financial statement analysis with a focus on profitability, liquidity, solvency and risk management. Reporting incentives and disclosure requirements are explored within this framework.

EMBA 5306. DIGITAL TRANSFORMATION OF THE ENTERPRISE. 3 Hours.

In the modern economy, digital and technological literacy are of key importance for any top executive. Modern executives and business leaders must be able to leverage technology to reimagine their businesses and unlock value through data-driven decision making. In this course, students will be exposed to transformative technological areas that are changing business and are key for leaders to understand and master: AI/ML, IoTs, Cybersecurity, Blockchain, and Cloud Computing with a particular emphasis on analytics (AI, ML, Visualization, NLP).

EMBA 5307. DESIGNING GLOBAL SUPPLY CHAINS FOR COMPETITIVE ADVANTAGE. 3 Hours.

The course focuses on coordination and integration of global logistics, purchasing, operations and market channel strategies. Issues on global supply chains include: forecasting demand and technology and market growth; likelihood of regulation or political instability; activities to do in-house as opposed to outsourcing; global facility location; and managing a geographically dispersed supply chain including relations with vendors.

EMBA 5308. MARKETING AND CUSTOMER VALUE CREATION. 3 Hours.

This course focuses on marketing strategies and tactics to create customer value and build long term relationships to meet organizational goals. Students are exposed to tools that enable managers to understand the ever-changing marketplace and then build an effective marketing strategy to meet corporate goals. Not all customers are profitable or even desirable. Customer management strategies to build marginal buyers into valued customers are also covered.

EMBA 5309. FINANCIALMANAGEMENT FOR EXECUTIVES. 3 Hours.

This course provides an overview of strategic financial management for executives. The first module begins by introducing the tools needed for financial analysis at the executive level. We examine the strategic concept of opportunity cost by analyzing how to use bond yields to model the net present value of business projects. The second module adds advanced financial modeling skills for corporate financial analysis, applied to decisions on capital structure, payout policy, and M&A opportunities. The third module concludes by expanding the executive's perspective to incorporate international financial management and corporate real estate.

EMBA 5310. COMPETITIVE STRATEGY, INTRAPRENEURIAL AND ENTREPRENEURIAL. 3 Hours.

This course broadens student perspectives on strategy and competitive advantage. Strategic vision is developed for mature businesses and entrepreneurial startups. Conceptual tools associated with industry dynamics and the assessment of core competencies are presented. Students learn how to evaluate key competitors to formulate and implement winning strategies.

EMBA 5311. STRATEGIC MARKETING MANAGEMENT. 3 Hours.

The course focuses on how to develop and deliver products and services with meaningful customer value. Students learn to evaluate market potential, price products optimally, and evolve marketing strategies to capitalize on business shifts.

EMBA 5313. EXPERIENCING THE GLOBAL ENVIRONMENT: INTERNATIONAL PROJECT. 3 Hours.

A key factor in understanding how a business may operate in the global marketplace is to understand the culture, business practices, laws and regulations, and logistical challenges that exist in another country. This is particularly true for one as important to the world economy (let alone the U.S.) as China has become. The class will travel to China and participate in a two-week immersion into the cultural and economic aspects of how business is conducted there. Through our extensive network, that has been developed through the graduates of our China EMBA program, we are able to provide an experience like no other program of its kind can offer.

EMBA 5399. SPECIAL TOPICS IN EXECUTIVE BUSINESS EDUCATION. 3 Hours.

New topics or independent study options to be offered as needed.

EMBA 5415. EXPERIENCING THE INTERNATIONAL ENVIRONMENT: SPECIAL PROJECT. 4 Hours.

Key factors in how business operates in the global marketplace means understanding the culture, business practices, laws, and logistical challenges that exist in another country. The class travels to an international destination and participate in a two-week immersion into the cultural and economic aspects of how business is conducted there. This course is an alternative to EMBA 5413 with destinations and itineraries specially designed.

EMBA 5417. EXPERIENCING THE BUSINESS ENVIRONMENT: INDUSTRY PROJECT. 4 Hours.

Understanding the challenges of management by experiencing the dynamics of industry and company culture, business practices, laws and regulations, and logistical challenges that confront today's business enterprises. This course is an alternative to EMBA 5413, with domestic destinations and itineraries specially designed.

EMBA 5499. SPECIAL TOPICS IN EXECUTIVE BUSINESS EDUCATION. 4 Hours.

New topics or independent study options to be offered as needed.

Exercise and Sport Activity (EXSA)

COURSES

EXSA 0101. ARCHERY. 1 Hour.

EXSA 0105. BADMINTON. 1 Hour.

EXSA 0106. BRAZILIAN JIU-JITSU. 1 Hour.

This course is designed to provide students instruction in the art of Brazilian jiu-jitsu as popularized in the Ultimate Fighting Championship (UFC). Techniques, as well as live grappling in both the Gi (traditional martial arts uniform) and No-Gi (shorts and T-shirt) format will be taught. Males and females of all skill levels are welcome. Come learn one of the most dynamic and effective martial arts in a comfortable and welcoming atmosphere with a national and international competitor.

EXSA 0107. MARTIAL ARTS. 1 Hour.

EXSA 0108. BASKETBALL. 1 Hour.

EXSA 0120. BOWLING. 1 Hour.

EXSA 0140. GOLF. 1 Hour.

EXSA 0145. BEGINNING FENCING. 1 Hour.

EXSA 0154. FITNESS WALK. 1 Hour.

EXSA 0156. JOGGING FOR FITNESS. 1 Hour.

EXSA 0157. AEROBIC DANCE. 1 Hour.

EXSA 0159. EXERCISE AND SPORT FOR THE HANDICAPPED. 1 Hour.

EXSA 0160. STEP AEROBICS. 1 Hour.

EXSA 0163. YOGA. 1 Hour.

EXSA 0164. CARDIO KICKBOXING. 1 Hour.

EXSA 0165. PILATES. 1 Hour.

This course is designed to improve muscular strength, endurance, flexibility, posture and overall joint mobility as well as stress reduction techniques. Students will be provided with a basic working knowledge of Pilates positions, the benefits associated with Pilates, and knowledge to all students the basic skills needed to pursue independent training as part of their lifetime fitness program.

EXSA 0166. RACQUETBALL. 1 Hour.

EXSA 0167. SOCCER. 1 Hour.

EXSA 0168. INTERMEDIATE YOGA. 1 Hour.

Previous yoga experience preferred but not required.

EXSA 0169. ADVANCED PILATES. 1 Hour.

This course is designed to improve muscular strength, endurance, flexibility, posture, and overall joint mobility as well as stress reduction techniques. Students will be provided with an advanced working knowledge of Pilates positions, the benefits associated with Pilates, and knowledge of the advanced skills needed to pursue independent training as part of a lifetime fitness program.

EXSA 0170. SWIMMING: BEGINNING. 1 Hour.

EXSA 0171. WATER POLO. 1 Hour.

EXSA 0172. SWIMMING FOR FITNESS. 1 Hour.

EXSA 0174. WATER AEROBICS. 1 Hour.

EXSA 0175. BODY SCULPTING/CORE STRENGTH. 1 Hour.

This course is designed to improve total body muscular strength and flexibility. This is an all over body workout using a variety of exercise equipment such as hand weights, tubing, stability balls, balance boards, bosu, and bars. Students will be provided with a basic working knowledge of proper biomechanics, anatomy, nutrition, and the benefits associated with long term strength training.

EXSA 0176. ZUMBA INTERVAL TRAINING. 1 Hour.

Zumba fuses hypnotic Latin rhythms and easy to follow moves to create a dynamic workout system. Zumba students achieve long term benefits while experiencing an absolute blast in one exhilarating class of caloric-burning, heart-racing, muscle-pumping, body-energizing, awe-inspiring movements meant to engage and captivate for life!

EXSA 0177. TENNIS. 1 Hour.

EXSA 0178. TENNIS: ADVANCED. 1 Hour.

EXSA 0180. VOLLEYBALL. 1 Hour.

EXSA 0181. VOLLEYBALL: ADVANCED. 1 Hour.

EXSA 0184. WEIGHT TRAINING. 1 Hour.

EXSA 0189. INTERCOLLEGIATE ATHLETICS. 1 Hour.

EXSA 0191. DESIGNATED ACTIVITIES. 1 Hour.

EXSA 1116. PACE: EXERCISE AT YOUR OWN PACE. 1 Hour.

Exercise and conditioning class for all levels of activity emphasizing individual physical needs and adapting exercise to meet those needs. For additional information: pmaxmwell@uta.edu.

EXSA 1118. BOOT CAMP AEROBICS. 1 Hour.

Boot camp aerobics.

EXSA 1119. CO-ED SELF DEFENSE. 1 Hour.

Co-ed Self Defense.

EXSA 1220. LIFEGUARD TRAINING. 2 Hours.

EXSA 1246. SELF DEFENSE FOR WOMEN. 2 Hours.

EXSA 1247. EXERCISE & WEIGHT MANAGEMENT. 2 Hours.

This class is designed to provide students with the practical skills and knowledge involving exercise and weight management. Along with a variety of fun and exciting exercise activities, fundamental nutrition and behavior/environmental modification techniques will also be discussed. Additional information: mevans@uta.edu.

EXSA 1249. SCUBA DIVING. 2 Hours. (TCCN = PHED 1251)

EXSA 1259. ADVANCED SCUBA. 2 Hours. (TCCN = PHED 1252)

Exercise and Sport Studies (EXSS)

COURSES

EXSS 1117. PHYSICAL COND. 1 Hour.

EXSS 1120. TRACK & FIELD. 1 Hour.

EXSS 1214. BIOPH PR HU MV. 2 Hours.

EXSS 1225. APP EXER & MVT. 2 Hours.

EXSS 2220. LIFEGRD INSTR. 2 Hours.

EXSS 2287. RHYTHMS & DANCE. 2 Hours.

EXSS 2288. DEVELOP MTR ACT. 2 Hours.

EXSS 2289. TRANS MTR ACT. 2 Hours.

EXSS 2290. EX SPT ACT PRC. 2 Hours.

EXSS 2331. STAGE MOVEMENT. 3 Hours.

EXSS 3210. DANCE IMPROVIS. 2 Hours.

EXSS 3220. LIFEGRD TRAING. 2 Hours.

EXSS 3312. DANCE HISTORY. 3 Hours.

EXSS 4121. PRAC ADOLESNTS. 1 Hour.

EXSS 4196. SPEC TOP EX SP. 1 Hour.

EXSS 4210. CHOREOGRAPHY. 2 Hours.

EXSS 4310. DANCE PRODUCTN. 3 Hours.

EXSS 4312. INTEG DNC PRNS. 3 Hours.

EXSS 4332. CHOREOGRAPHY. 3 Hours.

Finance (FINA)

COURSES

FINA 2330. MONEY, FINANCE AND THE MODERN CONSUMER. 3 Hours.

An analysis of consumer and financial behavior in present-day society. Against this backdrop, students understand how consumption choices define one's identity in society and understand the importance of value-oriented financial goals for the wellbeing of individuals, families, and society at large. Students also develop the critical-thinking and quantitative decision-making skills needed for responsible spending and financial choices.

FINA 3313. BUSINESS FINANCE. 3 Hours.

Emphasizes the financing and investment decisions of the corporate manager. Topics include financial statement analysis, working capital management, capital budgeting, financing costs, financial planning, leverage, and how diversity affects firm valuations and access to financing. Prerequisite: ECON 2306, ACCT 2302, MATH 1316 (or permission of instructor), and 30 credit hours.

FINA 3315. INVESTMENTS. 3 Hours.

Principles governing the proper investment of personal and institutional funds, information sources, security analysis, exchanges and regulations. Formerly FINA 4313; credit will be granted only once. Prerequisite: ECON 2306, ACCT 2302, FINA 3313 (or concurrent enrollment) and 60 credit hours.

FINA 3317. FINANCIAL INSTITUTIONS AND MARKETS. 3 Hours.

The structure of financial institutions and markets in the United States and their interactions. How and why the institution has evolved, how it fits within the financial system, how it operates, what is its current impact, and what may its future role be. Formerly FINA 4314; credit will be granted only once. Prerequisite: ECON 2306, ACCT 2302, and 60 credit hours.

FINA 4191. STUDIES IN FINANCE. 1 Hour.

Advanced studies, on an individual basis, in the various fields of finance. Prerequisite: 90 credit hours and permission of department. May be repeated for credit with consent of department chair.

FINA 4291. STUDIES IN FINANCE. 2 Hours.

Advanced studies, on an individual basis, in the various fields of finance. Prerequisite: 90 credit hours and permission of department. May be repeated for credit with consent of department chair.

FINA 4311. MONEY AND CAPITAL MARKETS. 3 Hours.

This in-depth analysis of the development, characteristics, and significance of money and capital markets explores how the markets interrelate, interact, and impact the financing/investment decisions that are the basis of finance. Prerequisite: FINA 3313.

FINA 4315. ADVANCED BUSINESS FINANCIAL ANALYSIS. 3 Hours.

To develop an ability to recognize financial problems, analyze financial data, formulate alternative solutions, and render financial decisions. Case materials are used in studying financial problems. Management of investment in current and fixed assets, planning of profits, forecasting of cash requirements, capital budgeting, planning of methods of financing and capital structure, dividend policy, valuation of assets, and mergers. Prerequisite: FINA 3313 and FINA 3315.

FINA 4318. PORTFOLIO MANAGEMENT AND SECURITY ANALYSIS. 3 Hours.

This course develops an understanding of portfolio management and security analysis by focusing on the analytical techniques and empirical results of investment theorists and practitioners. Risk, efficiency, diversification, fundamental analysis, and technical analysis as they apply to corporate finance, international finance, and investments will be examined. Prerequisite: FINA 3313.

FINA 4319. FINANCIAL DERIVATIVES. 3 Hours.

Topics included in this course are an introduction to options and futures markets, investment and risk management strategies using these derivative products, and pricing of options and futures contracts. Additional coverage includes basic swap agreements, exotic options, and corporate risk management. Prerequisite: FINA 3313.

FINA 4320. CAPITAL BUDGETING. 3 Hours.

Development of the logic and methodology of the capital budgeting decision. Measurement of cash flows, present value techniques, evaluation of capital investments, ranking of capital investments, analysis of risk, and administration of capital investments. Prerequisite: FINA 3313.

FINA 4324. INTERNATIONAL CORPORATE FINANCE. 3 Hours.

Issues and questions which concern financial management of international corporations. Analysis of the financing of investment abroad and the management of assets in differing financial environments. The foreign investment decision, cost of capital and financial structure for multinational decision making, management of foreign subsidiary working capital, and financial control of multinational operations. Prerequisite: FINA 3313.

FINA 4326. WEALTH AND EXCHANGE. 3 Hours.

This course provides students with an introduction to the principles of financial management in the setting of a philanthropic organization. The focus is on the primary financial topics of capital budgeting, capital structure, and working capital management which have been modified to consider the philanthropy setting. The study of capital budgeting examines how modifications to traditional NPV analysis can be implemented and justified in a setting without corporate income taxes. The study of capital structure examines how the traditional choice between debt and equity is replaced with a choice between fundraising or debt issuance. Debt issuance is further explored through an analysis of the characteristics of muni bond markets and how muni markets differ from corporate bond markets. The study of liquidity management and financial analysis focuses on those measures that are most useful and available for studying the financial condition of philanthropic organizations. Throughout the course, a focus is put on applied analysis using excel spreadsheets and incorporating real world data drawn from the financial statements, bond quotes, and regulatory filings of local philanthropic institutions. Prerequisite: This course is open only to non-finance majors, 30 credit hours.

FINA 4328. STUDENT MANAGED INVESTMENT FUND. 3 Hours.

This course provides a conceptual and theoretical foundation for the activities of selected student managers involved with the on-going operations of the student managed investment fund (SMIF). Using a blend of academic- and practitioner-oriented readings, projects, and group analytical sessions, managers will be introduced to both the conventional wisdom and state-of-the-art methods used in performing many of the Fund's functional tasks, including security research, security trading, and economic forecasting. After establishing a background in the technical aspects of managing a security portfolio, we will focus on developing a solid intuition about what an investment professional in each of these positions must know to do his or her job well. Prerequisite: FINA 3315 and departmental permission.

FINA 4331. SEMINAR IN FINANCE. 3 Hours.

Readings and discussion of special topics in Finance. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

FINA 4351. FINANCIAL MODELING. 3 Hours.

The focus is on computer applications in the major areas of finance. Financial Modeling integrates financial theory and practice through software-driven hands-on experience. Students will learn how to utilize financial concepts and practice within a software framework. Core concepts are drawn from corporate finance, investments, and financial institutions and markets. Examples of topics include: financial statement forecasting and consolidation, mergers and acquisitions, statistical approaches in finance, the Capital Asset Pricing Model, portfolio analysis, predictive models of different risk categories, bond and stock valuation, and market interest rate behavior. Learning is enhanced using a lecture-lab format. Prerequisite: FINA 3313.

FINA 4391. STUDIES IN FINANCE. 3 Hours.

Advanced studies, on an individual basis, in the various fields of finance. Prerequisite: 90 credit hours and permission of department. May be repeated for credit with consent of department chair.

FINA 4393. FINANCE INTERNSHIP. 3 Hours.

Practical training in finance. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: FINA 3313, 60 credit hours, and consent of department internship advisor.

FINA 5182. INDEPENDENT STUDIES IN FINANCE. 1 Hour.

Extensive analysis of a finance topic. Prerequisite: consent of instructor and department chair.

FINA 5199. GRADUATE FINANCE INTERNSHIP. 1 Hour.

Practical training in finance. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

FINA 5299. GRADUATE FINANCE INTERNSHIP. 2 Hours.

Practical training in finance. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

FINA 5311. BUSINESS FINANCIAL MANAGEMENT. 3 Hours.

Study of providing the organization with funds necessary for its operation and of achieving effective utilization of funds. Primary emphasis on financial decision-making within organizations, and techniques of financial analysis and forecasting. Prerequisite: ACCT 5301 or departmental permission.

FINA 5315. HEALTH CARE FINANCIAL MANAGEMENT. 3 Hours.

Analysis of financial problems with an emphasis on the application of financial management principles and concepts to health care organizations.

FINA 5323. INVESTMENTS. 3 Hours.

Application of economic theory and principles to investment decisions of individuals and financial institutions. Considers how psychological influences, diversity, and biases affect wealth creation. Students who successfully complete the course will have the knowledge to be productive in a diverse professional environment where state-of-the-art investment models and techniques are implemented. Prerequisite: FINA 5311 or departmental permission.

FINA 5327. FINANCIAL DERIVATIVES. 3 Hours.

Nature and functions of the various futures and options markets; hedging for risk reduction, speculative trading for profit; the role of futures and options in overall portfolio strategy, along with fundamental concepts such as basis, spreading, normal and inverted markets and money management. Prerequisite: FINA 5311 and FINA 5323.

FINA 5328. STUDENT MANAGED INVESTMENT FUND. 3 Hours.

This course provides a conceptual and theoretical foundation for the activities of selected student managers involved with the on-going operations of the student managed investment fund (SMIF). Using a blend of academic- and practitioner-oriented readings, projects, and group analytical sessions, managers will be introduced to both the conventional wisdom and state-of-the-art methods used in performing many of the Fund's functional tasks, including security research, security trading, and economic forecasting. After establishing a background in the technical aspects of managing a security portfolio, we will focus on developing a solid intuition about what an investment professional in each of these positions must know to do his or her job well. Prerequisite: A course in investments and departmental permission.

FINA 5329. PORTFOLIO AND SECURITY ANALYSIS. 3 Hours.

The use of economic and accounting data in the selection of securities. Examination of current and traditional techniques used by investment practitioners. Prerequisite: FINA 5311 and FINA 5323.

FINA 5330. REAL OPTIONS. 3 Hours.

Option approaches to evaluating firm capital budgeting decisions. Techniques for making investment decisions involving physical assets of nonfinancial firms. Prerequisite: FINA 5311.

FINA 5331. INTERNATIONAL FINANCE. 3 Hours.

Examines ways in which financial decision-making processes are altered by operation in a multinational environment. Includes the effects of devaluation expectations, foreign exchange and investment controls. Also, case study materials related to actual decisions by multinational firms. Prerequisite: FINA 5311.

FINA 5334. FINANCIAL INSTITUTIONS AND MARKETS. 3 Hours.

An examination of major financial institutions and markets with emphasis on trends affecting the current operations, competitive position, and overall future of the primary financial intermediaries and the financial markets. Prerequisite: FINA 5311.

FINA 5340. FINANCIAL APPLICATIONS. 3 Hours.

Analysis of financial problems of business concerns, presented in case materials. Considers determination of capital needs, choosing among alternative capital investments, planning methods of financing new capital expenditures, and planning recapitalizations, mergers, and reorganizations. Prerequisite: FINA 5311.

FINA 5350. MATHEMATICAL FINANCE. 3 Hours.

Intensive review of the mathematics necessary for graduate work in finance, with application to selected areas of business finance, investment analysis and financial markets. Prerequisite: FINA 5311.

FINA 5351. FINANCIAL MODELING FOR INVESTMENTS. 3 Hours.

Study of common financial modeling techniques are explored in this course. The primary focus is on portfolio optimization models and models used for pricing and analyzing derivative stock options, although most of these techniques have other applications. Students are provided with the opportunity to develop the skills needed to build financial models of their own. Prerequisite: FINA 5311 or departmental permission.

FINA 5352. FINANCIAL MODELING FOR CORPORATE ANALYSIS. 3 Hours.

This course focuses on the financial modeling in the major areas of corporate finance, including financial statement forecasting, bond and stock valuation, and merger and acquisition analysis using computer software such as Excel. A lecture-lab format will be used to integrate financial theory and practice through software-driven hands-on experience. Prerequisite: FINA 5311 or departmental permission.

FINA 5376. FINANCIAL DATA ANALYTICS. 3 Hours.

This course is a hands-on introduction to the application of data science techniques to visualize, condition, transform, and model financial data using R. Topics include: the layered grammar of graphics, security and portfolio returns, risk analysis, portfolio optimization and performance, publishing results using R Markdown, and an introduction to processing large data sets from public data sources, WRDS, and the SEC's Edgar database. Prerequisite: FINA 5311 or departmental permission.

FINA 5382. INDEPENDENT STUDIES IN FINANCE. 3 Hours.

Extensive analysis of a finance topic. Prerequisite: departmental permission.

FINA 5392. SELECTED TOPICS IN FINANCE. 3 Hours.

In depth study of selected topics in finance. May be repeated when topics vary. Prerequisite: departmental permission.

FINA 5398. THESIS. 3 Hours.

Thesis. FINA 5398 graded R (Research) or F only. Prerequisite: STAT 5325 and approval of Graduate Advisor.

FINA 5399. GRADUATE FINANCE INTERNSHIP. 3 Hours.

Practical training in finance. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

FINA 5698. THESIS. 6 Hours.

Thesis. Prerequisite: STAT 5325 and approval of Graduate Advisor.

FINA 6192. RESEARCH IN FINANCE. 1 Hour.

Independent study of advanced topics in finance under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

FINA 6292. RESEARCH IN FINANCE. 2 Hours.

Independent study of advanced topics in finance under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

FINA 6301. SEMINAR IN THE THEORY OF FINANCE. 3 Hours.

Development of the fundamental theories of modern finance from their microeconomic origins. Topics include: investment under uncertainty, asset pricing models, market equilibrium, market efficiency, and expected utility theory. Prerequisite: FINA 5311.

FINA 6311. SEMINAR IN THE THEORY OF CORPORATE FINANCE. 3 Hours.

Advanced theory of corporate finance. Capital budgeting, dividend policy, and capital structure. Prerequisite: FINA 5311.

FINA 6312. SEMINAR IN THE THEORY OF INVESTMENTS. 3 Hours.

Advanced theory of investments. Modern portfolio theory and the efficiency of capital markets. Prerequisite: FINA 5311.

FINA 6313. ADVANCED RESEARCH IN FINANCE. 3 Hours.

Analytical methods commonly applied in the academic finance literature. Topics such as factor analysis in arbitrage pricing models and techniques for identification of nonstationarities in risk. Prerequisite: FINA 5311 and STAT 5301.

FINA 6314. ADVANCED RESEARCH IN FINANCE II. 3 Hours.

Specialized and evolving techniques in financial research; topics such as identification of efficient markets, linear programming in capital budgeting, and multiple discriminant analysis in bankruptcy prediction and bond rating models. Prerequisite: FINA 5311 and STAT 5301.

FINA 6390. SEMINAR IN SPECIAL TOPICS IN FINANCE. 3 Hours.

Doctoral level coverage of advanced topics in finance. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

FINA 6392. RESEARCH IN FINANCE. 3 Hours.

Independent study of advanced topics in finance under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: FINA 5311.

First Year Experience (UNIV-AR)

COURSES

UNIV-AR 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV-AR 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-AT)

COURSES

UNIV-AT 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-BU)

COURSES

UNIV-BU 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV-BU 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-ED)

COURSES

UNIV-ED 1000. FIRST YEAR EXPERIENCE. 0 Hours.

A course that orients students to life on UTA's campus and emphasizes engagement beyond the classroom. Students in this course will experience the UTA community by attending campus events and making connections beyond their studies, including interaction with career services, the library and financial literacy services. Students will also be able to identify campus resources to support their wellness from multiple aspects of their lives, both the social and the physical. Each UNIV 1000 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs will work with students on finding their place on campus, learning academic success skills, and developing a degree map.

UNIV-ED 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV-ED 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-EN)

COURSES

UNIV-EN 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-HN)

COURSES

UNIV-HN 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV-HN 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-LA)

COURSES

UNIV-LA 1000. FIRST YEAR EXPERIENCE. 0 Hours.

A course that orients students to life on UTA's campus and emphasizes engagement beyond the classroom. Students in this course will experience the UTA community by attending campus events and making connections beyond their studies, including interaction with career services, the library and financial literacy services. Students will also be able to identify campus resources to support their wellness from multiple aspects of their lives, both the social and the physical. Each UNIV 1000 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs will work with students on finding their place on campus, learning academic success skills, and developing a degree map.

UNIV-LA 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV-LA 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-NU)

COURSES

UNIV-NU 1000. FIRST YEAR EXPERIENCE. 0 Hours.

A course that orients students to life on UTA's campus and emphasizes engagement beyond the classroom. Students in this course will experience the UTA community by attending campus events and making connections beyond their studies, including interaction with career services, the library and financial literacy services. Students will also be able to identify campus resources to support their wellness from multiple aspects of their lives, both the social and the physical. Each UNIV 1000 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs will work with students on finding their place on campus, learning academic success skills, and developing a degree map.

UNIV-NU 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV-NU 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-SC)

COURSES

UNIV-SC 1101. CAREER PREPARATION AND STUDENT SUCCESS. 1 Hour.

A course for new transfer students that will help students transition into UTA and achieve academic and personal success through recognition of campus resources and community building. Students will discover effective ways to balance personal and career obligations with academic goals. The course will allow for the discovery of marketable skills within a chosen academic discipline and the professions associated with that program of study. Experiential learning opportunities will be discussed, including undergraduate research, leadership, international engagement, community engagement and career development. Each UNIV 1101 class section has a Peer Academic Leader (PAL), who are students that assist as a discussion leader for the class under the supervision of the instructor. PALs provide peer mentorship and work with students to take a deep dive into how critical thinking and study skills can be applied to major academic content, raise awareness and understanding of students' majors and possible career pathways, and connect students to resources on campus and school-specific activities.

UNIV-SC 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Experience (UNIV-SW)

COURSES

UNIV-SW 1131. STUDENT SUCCESS. 1 Hour.

A learning community course that will teach new students academic success skills to aid their transition into college. The goal of the course is to help students identify their individual needs, determine what resources are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each UNIV 1131 class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. PALs provide guidance, raise awareness and understanding of students' majors, and help support collaborative and co-curricular opportunities available within the School/College.

First Year Seminar - Art (FS-ART)

COURSES

FS-ART 1300. FIRST YEAR SEMINAR IN ART. 3 Hours.

This is a required course intended to establish a solid overview of the Art and Art History Department for all first semester UTA students who intend to declare a studio art or art history major. Topics for the class can include: visiting artist speakers, attendance of exhibitions, writing assignments, surviving the advising process and concentration portfolio review, and library resources. Other topics may be discussed. This course may only be taken once for credit. This course includes student success curriculum and associated content and fulfills the University requirement for either UNIV 1101 or UNIV 1131.

First Year Seminar - Biology (FS-BIOL)

COURSES

FS-BIOL 1300. FIRST YEAR SEMINAR IN BIOLOGY. 3 Hours.

Special Topics in Biology taught in conjunction with college transitions skills. Topics may include: current research in the field of biology, critical thinking and active learning skills, engagement with UTA community. Only offered as a First Year Seminar for incoming first-year students. May not be repeated for credit.

First Year Seminar - Business (FS-BUSA)

COURSES

FS-BUSA 1300. BUSINESS DECISION MAKING - PLANNING, ETHICS, SUSTAINABILITY, AND AGILITY. 3 Hours.

Special topics in business. taught in conjunction with college transition skills. Students are exposed to broad and integrative business knowledge as they learn to lead and manage teams while creating a business plan. The business decisions they make focus on value added offerings and are crafted in a culture of ethical, sustainable, and agile business activity. The written business plans are evaluated by business professionals. Students then compete for various financial and non-financial awards by presenting their plans to the business community in a business exhibition venue called the Sustainable Business Challenge. Only offered as a first year seminar for incoming first year students. May not be repeated for credit.

First Year Seminar - Communications (FS-COMM)

COURSES

FS-COMM 1300. FIRST YEAR SEMINAR IN COMMUNICATION. 3 Hours.

Special topics in communication taught in conjunction with college transition skills. Topic will vary with instructor. Focus on issues in communication studies and mass communication, development of critical thinking and active learning skills, and engagement with the UTA community. Only offered as a First Year Seminar for incoming first-year students. May not be repeated for credit.

First Year Seminar - Criminal Justice (FS-CRCJ)

COURSES

FS-CRCJ 1300. FIRST YEAR SEMINAR IN CRIMINOLOGY AND CRIMINAL JUSTICE. 3 Hours.

Special topics in Criminology and Criminal Justice taught in conjunction with college transition skills. Topics may include any subject in criminology and criminal justice, along with critical thinking and active learning skills, as well as engagement with the UTA community. Only offered as a First Year Seminar for incoming first-year students. It may not be repeated for credit.

First Year Seminar - English (FS-ENGL)

COURSES

FS-ENGL 1300. FIRST YEAR SEMINAR IN ENGLISH. 3 Hours.

Special topics in English in conjunction with college transition skills. Topics may include: "Food, Language, and Literature," "Remix Culture," and others. Critical thinking, active learning skills, and engagement with UTA community. Only offered as a First Year Seminar for incoming first-year students.

First Year Seminar - History (FS-HIST)

COURSES

FS-HIST 1300. FIRST YEAR SEMINAR IN HISTORY. 3 Hours.

Special topics in history taught in conjunction with college transition skills. Topic will vary with instructor. Focus on use of historical materials, development of critical thinking and active learning skills, and engagement with the UTA community. Only offered as a First Year Seminar for incoming first-year students. May not be repeated for credit.

First Year Seminar - Management (FS-MANA)

COURSES

FS-MANA 1300. FIRST YEAR SEMINAR IN MANAGEMENT. 3 Hours.

Special topics in management taught in conjunction with college transition skills. Topic will vary with instructor. This course will focus on preventive stress management, good stress (motivation), leadership and stress, and newcomer socialization. Only offered as a First Year Seminar for incoming first-year students. May not be repeated for credit.

First Year Seminar - Math (FS-MATH)

COURSES

FS-MATH 1300. FIRST YEAR SEMINAR IN MATHEMATICS. 3 Hours.

Special topics in mathematics taught in conjunction with college transition skills. Topics may include mathematical games and logic, concepts on counting and infinity, different types of arithmetic, the Golden Rectangle, Fibonacci numbers in nature, geometric patterns and symmetry, knots, fractals, chaos, voting schemes and statistics, and modern topics in pure and applied mathematics. Includes a study of the relevance and utility of mathematics in everyday activities and modern society, including critical thinking, active learning, effective communication, and engagement within the UTA community. Only offered as a First Year Seminar for incoming first-year students. May not be repeated for credit.

First Year Seminar - Modern Languages (FS-MODL)

COURSES

FS-MODL 1300. FIRST YEAR SEMINAR IN MODERN LANGUAGES. 3 Hours.

First Year Seminar. Special topics in Modern Languages in conjunction with college transition skills. Topics include, but are not limited to: Language and literary/cultural studies relating to Arabic, Chinese, French, German, Russian, Spanish and other languages, critical thinking and active learning skills, and engagement with UTA community. Only offered as a First Year Seminar for incoming first-year students.

First Year Seminar - Nurse (FS-NURS)

First Year Seminar - Theater (FS-THEA)

COURSES

FS-THEA 1300. FIRST YEAR SEMINAR IN THEATRE ARTS. 3 Hours.

Special topics in Theatre Arts taught in conjunction with college transitions skills. Topics may include: the theatrical experience in front of and/or behind the curtain, and/or other theatre related topics, critical thinking and active learning skills, engagement with UTA community. Only offered as a First Year Seminar for incoming first-year students. May not be repeated for credit.

First Year Seminar - University Studies (FS-UNIV)

COURSES

FS-UNIV 1300. UNIVERSITY FIRST YEAR SEMINAR. 3 Hours.

Seminar taught by faculty across campus on a topic of interest or professional development. Within the framework of research-based content, students will learn foundational skills that will assist them in developing critical thinking, self-management, and study skills as well as their transition to UT Arlington.

First Year Seminar -Philosophy (FS-PHIL)

COURSES

FS-PHIL 1300. FIRST YEAR SEMINAR. 3 Hours.

Special topics in philosophy taught in conjunction with college transition skills. Topic will vary with instructor. Focus on use of philosophical materials, development of critical thinking and active learning skills, and engagement with the UTA community. Only offered as a First Year Seminar for incoming first-year students. May not be repeated for credit.

French (FREN)

COURSES

FREN 1441. BEGINNING FRENCH I. 4 Hours. (TCCN = FREN 1411)

Multimedia immersion in the culture and language of French-speaking countries. Designed to enable students to understand and communicate effectively in French at the beginning level. No prerequisites.

FREN 1442. BEGINNING FRENCH II. 4 Hours. (TCCN = FREN 1412)

Continuation of beginning French. Prerequisite: FREN 1441 with a grade of C or better.

FREN 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

FREN 2301. TOPICS IN FRENCH LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. FREN 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302 with a grade of C or better.

FREN 2310. FRENCH AND FRANCOPHONE CULTURES IN THE WORLD. 3 Hours.

An overview of the cultures of the French-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

FREN 2313. INTERMEDIATE FRENCH I. 3 Hours. (TCCN = FREN 2311)

Continued immersion in the culture and language of French -speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: FREN 1442 with a grade of C or better.

FREN 2314. INTERMEDIATE FRENCH II. 3 Hours. (TCCN = FREN 2312)

Continuation of intermediate French. Prerequisite: FREN 2313 with a grade of C or better.

FREN 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

FREN 3300. PHONOLOGY & PRONUNCIATION. 3 Hours.

This course provides a practical introduction to sound patterns in standard, metropolitan French, stressing the acquisition of pronunciation. Students will also be introduced to theoretical aspects of French phonetics and phonology. Not open to native and heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3303. ADVANCED FRENCH CONVERSATION. 3 Hours.

Practice in oral expression with an introduction to practical phonetics and vocabulary building. Of special interest to students who wish to improve their skill in pronunciation, comprehension, and oral expression. Credit will not be granted to native or heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3304. READINGS AND WRITING IN FRENCH. 3 Hours.

This course emphasizes reading comprehension, writing skills, and compositional techniques. Grammar is reviewed. Short stories, essays, movies, and social media provide content material. Credit will not be granted to native or heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3305. FRENCH CULTURE AND CIVILIZATION. 3 Hours.

Historical development of the social, institutional, intellectual, and artistic life of France from inception to the present. Credit will not be granted to native or heritage speakers of French. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3309. FRENCH FILM: ART, TECHNOLOGY AND SOCIETY. 3 Hours.

The course is an overview of major movements in French film from the Lumières brothers and Méliès to the contemporary cinema of Leconte, Varda, Bonello, and Denis. It introduces students to the technologies that helped shape French films and uses film to raise important issues about national identity, politics, and gender in France and in the wider Francophone world. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3310. INTRODUCTION TO LITERATURE. 3 Hours.

Principles of literary analysis pertaining to genre, concepts of literary structure, language, and criticism through examination of selected works. Prerequisite: FREN 2314 with a grade of C or better.

FREN 3311. CATHEDRALS, CASTLES, AND REVOLUTIONS. 3 Hours.

This course examines the conditions that shaped France from medieval times to the Renaissance, and onward to the Enlightenment and the Revolution of 1789. The course explores main currents of French literature, art, and thought. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3312. FRENCH LITERATURE AND CULTURE 19th to 21st CENTURIES. 3 Hours.

This course examines the conditions that shaped French culture From Napoleon I to modern times by exploring main currents of French literature, art, film, and thought. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3316. TOPICS IN CITIES OF FRANCE AND THE FRENCH-SPEAKING WORLD. 3 Hours.

The course explores cities and other places as geographical and cultural constructs in literature, the visual arts (including film), and the media. Topics may include large cities like Paris, Lyon, Montreal, Cairo, and Algiers, for example, as well as museums, metros, parks, and other public spaces in France, the Middle East, North Africa, Africa, the Americas, and Asia. FREN 3316 may be repeated for credit when content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3318. TOPICS OF IDENTITY IN FRANCE AND THE FRENCH-SPEAKING WORLD. 3 Hours.

Study of the individual and/or group from the medieval times to the present. Topics may include language choice, the child, women, workers, the bourgeoisie, peasants, artists, immigrants and other strangers. FREN 3318 may be repeated for credit when the content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 3320. LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of French language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May be repeated for credit as focus of course changes. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 2314 with a grade of B or better.

FREN 3321. LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of French and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 3320 with a grade of B or better.

FREN 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM), and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-French. FREN 3345 cannot be applied toward the minor in French. FREN 3320 is strongly recommended before FREN 3345.

FREN 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 3320.

FREN 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-French. Prerequisite: FREN 3320 or FREN 3321.

FREN 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of instructor.

FREN 3393. FRENCH INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

FREN 4310. GRAPHIC NOVELS AND THE MEDICAL WORLD. 3 Hours.

This course examines the ways in which the comic book medium can bring new insights to patient, healthcare, and clinical experiences. Students will become familiar with both major works of graphic medicine and key theoretical texts related to sequential art and to pathographies (autobiographies that revolve particularly around health issues). Includes a cultural comparison component through patient and practitioner stories from an American and from a French perspective. Taught in English. Students in French can read the material in French and write assignments in French with permission of the instructor. Prerequisite: FREN 2314.

FREN 4314. IMPROVING FRENCH GRAMMAR AND WRITING. 3 Hours.

A detailed study of French grammar with practice in composition requiring original themes, essays, and research papers. An overview of the history of the French language and the influences of other languages and cultures on its evolution. Recommended for senior French majors. Prerequisite: FREN 3304 or equivalent with a grade of C or better.

FREN 4316. GLOBAL FRENCH CUISINES. 3 Hours.

This course examines the history and culture of French cuisines across the globe from the Metropole (France) to its colonies, protectorates, and spheres of influence in the Middle East, North Africa, West Africa, Asia, North America, Central America, and other geographic spaces across time. Topics include North African and Middle Eastern Cuisines, The Culinary Traditions of Provence, Caribbean Cuisine: History and Cultures, West African Cuisine: Colonial and Postcolonial Encounters, French Foods and Revolutions: The Socialist Baguette and the Bourgeois Croissant, Street Food and the Rise of Café and Bistro Cultures, and others. Prerequisite: FREN 2314 with a grade of C or better or permission of the instructor.

FREN 4318. INTRODUCTION TO FRENCH LINGUISTICS. 3 Hours.

An introductory course on the linguistic structure of modern standard French, including phonology, morphology and syntax. Prerequisite: Any two 3000 level French courses with a grade of C or better. FREN 3300 is strongly recommended before taking FREN 4318.

FREN 4322. TOPICS IN 17TH-CENTURY FRANCE. 3 Hours.

This course takes a close look at the political and artistic climate of a defining period in French culture. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4324. TOPICS IN 19TH-CENTURY FRANCE. 3 Hours.

The course surveys major currents like Romanticism, Realism, Impressionism, and Orientalism in literature and art. Strong emphasis on the possibilities of leisure (theatre, travel, the phenomena that are department stores, trains, cameras, moving pictures, and high fashion), bourgeois tastes and institutions, the role of Capitalism, and the Alliance network in empire building. FREN 4324 may be repeated for credit when the content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4325. TOPICS IN 18TH-CENTURY FRANCE. 3 Hours.

Major currents such as Sensibility, Libertinism, the Republic of Letters, Exoticism, and Orientalism in literature and art. Patterns of French thought comprising the Enlightenment leading to the Revolution. May be repeated for credit when content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4328. TOPICS IN GLOBAL FRENCH IN THE 20TH-21ST CENTURIES. 3 Hours.

Cultural and literary output of France, the Middle East, North Africa, Africa, the Americas, and Asia before and after the Second World War. Patterns of French thought, writing, and self-representation, New Europe, decolonization, and nationalism through various media. May be repeated for credit when content changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4332. MEDIEVAL AND RENAISSANCE CULTURES. 3 Hours.

Readings in modern French of Medieval and Renaissance French literature. Works include the adventures of King Arthur and the Knights of the Round Table, Gargantua, reflections on the self, friendship, education, and the "Other" in Montaigne's Essais, and the love poems of Ronsard. Emphasis on the importance of religion, the evolution and the meaning of cathedrals and monasteries, and the effect of the discovery of the "New World" on perceptions of self and of community. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4334. GLOBAL FRENCH CULTURES TODAY. 3 Hours.

This course examines French media, advertisement, journalism, and business culture. It explores the historical context and the social, political, and economic environment that informs these activities. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4335. BUSINESS FRENCH. 3 Hours.

Students learn to function in French in business environments, with emphasis on writing business letters, conducting telephone conversations and business meetings, using terminology for transactions in places such as banks, post offices, airports, and hotels. Video segments and interactive computer packages are used extensively to reinforce vocabulary and knowledge acquired through lectures, translations, and readings. Preparation for the DFP (Diplôme de Français Professionnel) Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4338. GLOBAL FRENCH LITERATURES AND CULTURES. 3 Hours.

This course focuses on French-speaking cultures in Europe, the Middle East, North Africa, West Africa, the Americas, and Asia from the 17th century to the present through literature, music, film, and other forms of expression. Topics include The French Caribbean Novel, World War II in French Literature and Film, Colonial and Postcolonial Experience, French Canada: History and Culture, Mediterranean Readings, The Maghreb and the Levant. May be repeated for credit when topic changes. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4339. ACQUISITION OF FRENCH. 3 Hours.

Theory and practice of language acquisition. Techniques needed to understand and analyze the sounds, vocabulary, and grammar of the French language. Primarily for students seeking teacher certification. Prerequisite: FREN 2314 or equivalent with a grade of C or better.

FREN 4341. TRANSLATION: THEORY & PRACTICE. 3 Hours.

An examination of translation methodology and approaches to various types of texts, with emphasis on the structural, lexical, and conceptual differences between French and English. Prerequisite: FREN 3304 or FREN 4314 with a grade of C or better, or permission of the instructor.

FREN 4342. TOPICS IN TRANSLATION. 3 Hours.

This course provides additional practice translating texts, comparing and evaluating professional or amateur translations, and/or post-editing machine translations. May be repeated for credit when content changes. Prerequisite: FREN 4341 with a grade of C or better or permission of the instructor.

FREN 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic and consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission.

FREN 4393. FRENCH INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in French, outside readings, and formal presentations. Prerequisite: Two FREN 3000 level courses and permission of the instructor.

FREN 4394. HONORS THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit.

FREN 5101. TEACHING PRACTICUM I. 1 Hour.

Required of all teaching assistants in French in their first semester. May not be counted toward a master's degree. Graded P/F/R.

FREN 5102. TEACHING PRACTICUM II. 1 Hour.

Required of all teaching assistants in French in their second semester. May not be counted toward a master's degree. Graded P/F/R.

FREN 5314. ADVANCED STYLISTICS. 3 Hours.

Focuses on advanced problems of grammar and style, including syntax, morphology, semantics and stylistics. Surveys the history of the French language, including influences of other languages and cultures on its evolution. Attention given to pedagogical models and approaches as well as intensive composition practices.

FREN 5316. MEDIEVAL AND RENAISSANCE LITERATURE AND CULTURE. 3 Hours.

A study of the main currents of French literature and culture in their social, economic and political context through the representative genres of the period: epic verse, poetry, tales, fabliaux, comic narrative, and theatre to name a few.

FREN 5317. 17TH AND 18TH CENTURY LITERATURE AND CULTURE. 3 Hours.

A study of the main currents of French literature and culture in their social, economic and political context through the representative genres of the period: theatre, the romance, the novel, the portrait and maxim, the philosophic dialogue and tale, among others.

FREN 5318. 19TH AND 20TH CENTURY LITERATURE AND CULTURE. 3 Hours.

A study of the main currents of French literature and culture in their social, economic and political context through the representative genres of the period: theatre, the nouvelle, poetry, the novel, the anti-novel, etc.

FREN 5320. TOPICS IN FRENCH LANGUAGE & LINGUISTICS. 3 Hours.

Special studies in French language and linguistics not ordinarily covered by regular course offerings. Topics may include "Socio-Phonetics," French Phonetics and Phonology," and "History of the French Language." May be repeated for credit when content changes.

FREN 5321. TOPICS IN GENRES OF THE 17TH CENTURY. 3 Hours.

Investigates ideology and practice through literature, the visual arts, music and other cultural "texts." Major topics may include "Versailles: Architecture, Literature, and Politics," "Jansenism and its Discontents: Pascal, Racine, de Lafayette," "Libertins: Masks and Counter Masks." May be repeated for credit when topic changes.

FREN 5325. TOPICS IN GENRES OF THE 18TH CENTURY. 3 Hours.

Studies oppositional discourse as expressed through the different genres (theatre, poetry, fiction, political and philosophical writings) popular in the 18th century as well as the role and the effect of these works in constituting the Republic of Letters. May be repeated for credit when topic changes.

FREN 5330. TOPICS IN GENRES OF THE 19TH CENTURY. 3 Hours.

Concentrates on literature, the visual arts, entertainment, and fashion as expressions of popular culture. The rise of the "petite bourgeoisie," social utopias, the rebuilding of Paris, and responses to modernity will be studied in such courses as "Paris and Its Subcultures," Impressionism and the Bourgeoisie," "The Novel and the Body." May be repeated for credit when topic changes.

FREN 5331. TOPICS IN GENRES OF THE 20TH CENTURY. 3 Hours.

Focuses on the work of French and Francophone writers in the light of modernist and post-modernist aesthetics. Literature, art, architecture, music, film, video, television, and other forms of popular production are studied as reflections of an era in crisis. May be repeated for credit when topic changes.

FREN 5338. TOPICS IN FRENCH CULTURE. 3 Hours.

Survey of themes and structures on a range of topics such as "Women in/as Fiction," "Self and Society," & "Revolutions," "French Film." May be repeated for credit when topic changes.

FREN 5391. CONFERENCE COURSE IN FRENCH LINGUISTICS, CULTURE, OR LITERATURE. 3 Hours.

Graded R. Prerequisite: permission of Graduate Advisor. Course may be repeated for credit when the topic changes.

FREN 5398. THESIS. 3 Hours.**FREN 5698. THESIS. 6 Hours.****FREN 5998. THESIS. 9 Hours.****FREN 6310. FRENCH STUDIES. 3 Hours.**

Geography (GEOG)

COURSES

GEOG 2301. PHYSICAL GEOGRAPHY. 3 Hours.

Survey of geographies of the natural environment and human-environment interactions with an emphasis on spatial patterns and processes.

GEOG 2302. HUMAN GEOGRAPHY. 3 Hours.

An introduction to geographical perspectives. An exploration of human activities from a local to a global scale. Emphasis on mapping and interpreting patterns and processes of human geography.

GEOG 2303. WORLD REGIONAL GEOGRAPHY. 3 Hours.

Survey of the geography of major world regions. Introduces global issues from a regional perspective with an emphasis on developing an understanding of the connections between and differences among world regions.

GEOG 3300. RESEARCH METHODS IN GEOGRAPHY. 3 Hours.

An introduction to geographic research that includes generating research questions, research design, methods of quantitative and qualitative data collection and analysis, and communication of research results. Prerequisite: GEOG 2302.

GEOG 3305. MAPS AND MAPMAKERS. 3 Hours.

A history of geography and cartography with an emphasis on the development of geographical ideas and mapmaking from antiquity to the modern era. Offered as GEOG 3305 and HIST 3305; credit will be granted only once.

GEOG 3310. GEOGRAPHY OF THE UNITED STATES AND CANADA. 3 Hours.

A survey of the geography of the United States and Canada. Includes environmental, cultural, economic, and political geographies with an emphasis on spatial patterns and processes.

GEOG 3315. GEOGRAPHY OF LATIN AMERICA AND THE CARIBBEAN. 3 Hours.

A regional survey of Latin American geography including Mexico, the Caribbean, Central America, and South America. Focuses on environmental, cultural, economic, political, and urban geographies with an emphasis on spatial patterns and processes.

GEOG 3320. GEOGRAPHY OF AFRICA. 3 Hours.

A survey of the human and physical geography of the whole continent of Africa. It assesses environmental, demographic, cultural, economic, and political geographies with an emphasis on spatial patterns and processes.

GEOG 3334. HISTORICAL GEOGRAPHY OF NORTH AMERICA. 3 Hours.

Examines the intersection of the disciplines of geography and history including the creation of cultural landscapes, the spatial organization of human activities over time, and the interaction of humans with their environment over time with an emphasis on North America. Course taught as HIST 3334 and GEOG 3334. Credit will be granted in only one department.

GEOG 3336. ENVIRONMENTAL HISTORY OF THE UNITED STATES. 3 Hours.

People and the natural environment from the colonial period to the present. Ecological change, conservation movements, and artistic and literary interpretations of landscape and nature. Listed as GEOG 3336 and HIST 3336; credit will be granted only once.

GEOG 3347. AMERICA'S BORDERS AND BORDERLANDS. 3 Hours.

Covers the historical evolution of U.S. borders from independence to the present, and of the hybrid societies that have emerged along with them. Examines how borders have changed over time, and the people, commodities, ideas, and cultures, etc. that have crossed or straddled them. Particular attention is given to changing patterns of migration, border enforcement, and cultural hybridization, and the impact these have had on American society and politics. Offered as GEOG 3347 and HIST 3347; credit will only be granted in one department.

GEOG 3380. THE SPATIAL HUMANITIES. 3 Hours.

Introduction to the Spatial Humanities, including theory and methods concerning deep mapping, sense of place, and online open-source geospatial technology. Helps to develop an understanding of spatial and "palatial" thought and practice, drawing on perspectives found in literary, cultural, social, philosophical, linguistic, historical, artistic, dramatic, cinematographic, and media studies.

GEOG 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: permission of the instructor.

GEOG 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: permission of the instructor.

GEOG 4330. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software. This course is offered as GEOL 4330 and GEOG 4330; credit will not be granted for both. Prerequisite: Junior standing.

GEOG 4331. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3-D Analyst, topological surface analysis and modeling; 3-D visualization and viewscales; spatial statistics and data quality management. Course taught as GEOL 4331 and GEOG 4331. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4332. GLOBAL POSITIONING SYSTEM. 3 Hours.

Review of the NAVSTAR Global Positioning System and its segments: space, operational control, and GPS receivers. Mechanics of the satellite constellation; GPS signal structure; datums and coordinate systems; precision and accuracy; error factors; absolute (point) versus relative (differential) positioning. Various positioning techniques using several types of GPS receivers; field data collection and input into GIS programs for data analysis and presentation. Course taught as GEOL 4332 and GEOG 4332. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4333. REMOTE SENSING FUNDAMENTALS. 3 Hours.

The electromagnetic spectrum and the interaction of EM waves with matter; various types of sensing devices; spectral and spatial resolution parameters; airborne and satellite sensor platforms; aerial photographs and false-color images. The sequence of data acquisition, computer processing, and interpretation; sources of data; the integration of remote sensing data with other data types in GIS. Course taught as GEOL 4333 and GEOG 4333. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4334. GEOGRAPHIC DATA ANALYSIS. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with approval of the instructor. A written report of the results is required. Course taught as GEOL 4334 and GEOG 4334. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOG 4340. GEOGRAPHIES OF FILM. 3 Hours.

An exploration of film geographies with a focus on cinema as both a topic and a method for geographical representation, analysis, and learning.

GEOG 4341. IMAGES OF THE SOUTHWEST BORDERLANDS. 3 Hours.

Examines the changing culture, architecture, and landscapes of the American Southwest as depicted in literature, art, film, television, and advertising, including the role of popular culture and commerce in creating and marketing a regional "Southwestern style." Offered as GEOG 4341 and HIST 4341; credit will be granted only once.

GEOG 4350. SPECIAL TOPICS IN MODERN GEOGRAPHY. 3 Hours.

Selected topics in an identified area of geography. The course may be repeated for credit.

GEOG 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: permission of the instructor.

GEOG 5330. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software. This course is offered as GEOL 5330 and GEOG 5330; credit will not be granted for both.

GEOG 5331. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3-D Analyst, topological surface analysis and modeling; 3-D visualization and viewsapes; spatial statistics and data quality management. Course taught as GEOL 5331 and GEOG 5331. Credit will be granted in only one department.

GEOG 5334. GEOGRAPHIC DATA ANALYSIS PROJECT. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with the approval of the instructor. A written report of the results is required. Offered as GEOL 5324 and GEOG 5334. Credit will not be given for both. Prerequisite: For GEOL 5324: GEOL 5320.

Geology (GEOL)

COURSES

GEOL 1135. GEOLOGICAL LABORATORY. 1 Hour.

Experiments and exercises related to geological principles and problems. Prerequisite: Permission from department.

GEOL 1136. GEOLOGICAL LABORATORY II. 1 Hour.

Experiments and exercises related to geological principles and problems of earth history. Prerequisite: Permission from department.

GEOL 1137. GEOLOGICAL LABORATORY III. 1 Hour.

Experiments and exercises related to geological principles and problems of environmental science. Prerequisite: permission from department.

GEOL 1301. EARTH SYSTEMS. 3 Hours.

An integrated study of the earth, emphasizing interactions between plate tectonics, the atmosphere, the oceans, the biosphere, and human activity. Formerly listed as GEOL 1425, credit will not be given for both.

GEOL 1302. EARTH HISTORY. 3 Hours.

History of the earth and evolution of life emphasizing the co-evolution of the atmosphere, oceans, and biosphere. Formerly listed as GEOL 1426, credit will not be given for both.

GEOL 1315. METEORITES, ASTEROIDS, FLOOD VOLCANISMS AND MASS EXTINCTIONS. 3 Hours.

An introduction to the geology of the solar system from the perspectives of earth science, and the fascinating world of meteorites, asteroids, comets, and impact craters. Special emphasis is on the meteorite evidence for our understanding of planetary formation, the age and origin of the earth, and the role of near synchronous impacts and flood basalts in causing two of the largest mass extinctions in earth history. Weekly practicum with hands-on examination of solar system materials, including observations under polarizing light microscopy. Formerly listed as GEOL 1415, credit will not be given for both.

GEOL 1330. GLOBAL WARMING. 3 Hours.

Global environmental challenges confronting humanity such as pollution, depletion of natural resources, ecosystem deterioration, food production, and population growth. Offered as ENVR 1330 and GEOL 1330. Credit will not be given for both.

GEOL 1340. WEATHER AND CLIMATE. 3 Hours.

Nature and variability of weather and climate, including wind, temperature, clouds and precipitation, droughts and flooding. Storm systems, fronts, thunderstorms, tornadoes, hurricanes. Atmospheric chemistry and air pollution. Mean climate, seasonal variations and climatic change. Formerly listed as GEOL 2401, credit will not be given for both.

GEOL 1350. INTRODUCTION TO OCEANOGRAPHY. 3 Hours.

The study of ocean basins and their origin, ocean currents, waves and tides, properties of sea water, and marine ecosystems, emphasizing the role of the ocean in the Earth system. Discussion of weekly ocean news, and incorporation of web-delivered current oceanographic data into the course material. Formerly offered as GEOL 3301 and GEOL 3184 and GEOL 2412; credit will be granted only once. Formerly listed as GEOL 1450, credit will not be given for both.

GEOL 1360. GEOLOGIC HAZARDS. 3 Hours.

Processes producing earthquakes, floods, eruptions and landslides, and their effect on people. Formerly listed as GEOL 2404, credit will not be given for both.

GEOL 2406. NATURAL RESOURCES & SUSTAINABILITY. 4 Hours.

Energy, construction, agricultural, and hydrological resources are evaluated in terms of their production and use, including storage and disposal of waste. Emphasis is placed on the importance of preserving clean water, air and soils. The course will concentrate on what humans take from the Earth, the impacts it has on their environment, and what it takes to make the planet sustainable for human habitation.

GEOL 2410. PLANETARY GEOLOGY. 4 Hours.

The geology, history and landscapes of the terrestrial planets and satellites of the outer planets. Composition of the planets as a guide to the origin and evolution of the solar system.

GEOL 2445. MINERALOGY. 4 Hours. (TCCN = GEOL 2409)

Lectures discuss the physical and chemical principles governing the properties and formation of minerals. There are three major divisions of the subject matter: (a) geometric and optical crystallography; (b) crystal chemistry and properties of minerals, and (c) occurrence, origins, and pressure-temperature stabilities of the major rock-forming minerals. Laboratories are devoted to exercises in crystallography, X-ray diffraction, optical mineralogy and hand-specimen mineral identification. Prerequisites: CHEM 1442 and MATH 1323 or higher-level MATH.

GEOL 3100. GEOSCIENCE PROFESSIONAL ORIENTATION. 1 Hour.

Review of various careers in the Geosciences, and how to prepare a resume, network, and interview. Principles to follow for on-the-job success. Class will involve field trips and guest lectures.

GEOL 3316. ASTROBIOLOGY I. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include properties of life, origin and evolution of life on Earth, terrestrial geology and habitability, environmental forcings, extremophiles, mass extinctions, meteorites, searches for life in the solar system. Offered as BIOL 3316, GEOL 3316 and PHYS 3316; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent.

GEOL 3340. GEOLOGY FOR ENGINEERS. 3 Hours.

Introduction to geological materials and processes important to practice of civil engineering. Includes processes forming minerals and rocks; mechanics and deformation of rocks, weathering, erosion and soils; soil hazards, land subsidence and mass movements; groundwater hydrology, geochemistry and contamination; and rivers. Labs will include introduction to geologic materials and use of GIS software to store, analyze and display geologic and engineering data. Prerequisites: PHYS 1443 and CHEM 1465 or CHEM 1442.

GEOL 3358. ASTROBIOLOGY II. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include basic properties of life, habitability of Earth, studies of possible life regarding Mars, Europa & Titan, space missions, exoplanets and exomoons, stellar habitable zones, multistellar systems, exoEarths, biomarkers, SETI, Fermi paradox, Drake equation, cosmology. Offered as BIOL 3358, GEOL 3358, and PHYS 3358; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent. Note that Astrobiology I is strongly recommended to students to be taken prior to Astrobiology II, but is not a prerequisite.

GEOL 3387. FIELD GEOLOGY I. 3 Hours.

Stratigraphic and structural mapping and analysis of data collected in the field. Taught for three weeks only in the summer session. Special fee covers cost of transportation, room, and board while in the field. Prerequisite: GEOL 2445, GEOL 3442, and GEOL 3443.

GEOL 3388. FIELD GEOLOGY II. 3 Hours.

Mapping and analysis of igneous and metamorphic rock data as well as hydrologic, geochemical and mass wasting data collected in the field. Taught for three weeks after GEOL 3387 only in the summer session. Special fee covers cost of transportation, room, and board while in the field. Prerequisite: GEOL 2445, GEOL 3442, GEOL 3443, and GEOL 3387.

GEOL 3441. BIOSTRATIGRAPHY AND LIFE THROUGH TIME. 4 Hours.

Basic principles of bio- and chronostratigraphy including the classification of fossil groups, how index fossils are used to construct the geologic timescale and correlate strata. Prerequisite: GEOL 1302.

GEOL 3442. SEDIMENTOLOGY AND STRATIGRAPHY. 4 Hours.

An introduction to the description, origin, and historical interpretation of stratified rocks. Prerequisite: GEOL 2445.

GEOL 3443. STRUCTURAL GEOLOGY. 4 Hours.

The genesis, classification, and description of structural features resulting from deformation of the earth's crust. Prerequisite: GEOL 3445 and PHYS 1441 or PHYS 1443.

GEOL 3446. PETROLOGY AND GEOCHEMISTRY. 4 Hours.

Distribution, description, classification, plate-tectonic setting and origins of igneous and metamorphic rocks in the light of theoretical-experimental multicomponent phase equilibria studies; use of trace elements and radiogenic and stable isotopes as tracers in rock genesis; hand specimen and microscopic examinations of the major igneous-metamorphic rock types in the laboratory. Prerequisite: C or better in GEOL 2445.

GEOL 3454. STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of statistics and helps students apply statistics to analyze data and interpret results from the perspective of Earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in Earth and environmental sciences. Offered as ENVR 3454 and GEOL 3454, credit will not be given for both. Prerequisite: GEOL 3454: MATH 1426.

GEOL 4081. RESEARCH IN EARTH & ENVIRONMENTAL SCIENCES. 0 Hours.

Research problems on an individual or group basis, conducted on a selected topic under the direction of a member of the Earth & Environmental Sciences faculty. May be repeated. This is a non-credit course so cannot be used to meet degree requirements. Prerequisite: Permission of the instructor.

GEOL 4181. TOPICS IN ENERGY AND EARTH RESOURCES. 1 Hour.

Lectures will discuss the historical evolution and current status of major research thrusts in the environment, energy, and resources studies, including Superfund and groundwater remediation, carbon sequestration, tight sands and coalbed methane, petroleum production in shale gas and oil reservoirs, geological repository of high-level nuclear waste, geothermal energy exploitation, mining of critical minerals, and gas (methane) hydrate. Prerequisite: GEOL 1301 or equivalent.

GEOL 4189. RESEARCH IN GEOLOGY. 1 Hour.

Supervised undergraduate research in any one of the various fields of geology. May be repeated but will not meet Geology degree requirements. Prerequisite: permission from instructor.

GEOL 4190. GEOSCIENCE INTERNSHIP. 1 Hour.

Work in geoscience for a commercial concern at least 20 hours per week for three months. Requirements include: writing a resume, learning how to interview and function on the job, and a report describing the work. Prerequisite: 16 hours of Geology coursework.

GEOL 4199. TECHNICAL SESSIONS. 1 Hour.

Forum for presentation of results of undergraduate and graduate students and faculty research. Offered as ENVR 4199 and GEOL 4199. Credit will not be given for both. Prerequisite: For ENVR: ENVR 1301 or equivalent. For GEOL: GEOL 1301 or equivalent.

GEOL 4289. RESEARCH IN GEOLOGY. 2 Hours.

Supervised undergraduate research in any one of the various fields of geology. May be repeated but will not meet Geology degree requirements. Prerequisite: permission from instructor.

GEOL 4301. MARINE GEOLOGY & GEOCHEMISTRY. 3 Hours.

Geologic and geochemical processes of the oceans. Chemistry of seawater; geochemical and biogeochemical cycles; carbonate sediment production. Prerequisite: CHEM 1441 and CHEM 1442.

GEOL 4302. GEODYNAMICS. 3 Hours.

A comprehensive and quantitative study of fundamental aspects of plate tectonics. Introduction to heat flow, elasticity and flexure, fluid mechanics, faulting, gravity, and flow in porous media, with a wide range of geological applications. Includes collaborative problem solving. Prerequisite: GEOL 3443 and MATH 2425.

GEOL 4304. SOLID EARTH GEOMECHANICS. 3 Hours.

Application of continuum mechanics to understanding deformation in the earth, including mechanical analysis of natural geologic structures such as faults, folds, lava flows, and dikes, as well as practical problems related to reservoir geomechanics and mining applications. Prerequisites: GEOL 3443, MATH 2425, and PHYS 1444.

GEOL 4305. SELECTED TOPICS IN GEOLOGY. 3 Hours.

Geological topics not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for Geology elective credit as different topics are offered.

GEOL 4307. SEQUENCE STRATIGRAPHY. 3 Hours.

This course introduces sequence stratigraphy within context of all stratigraphy and history of sequence stratigraphy. Includes overview of sequence stratigraphy principles. Review of basic fundamental concepts of surface- and facies-based physical stratigraphy. Review of architectural element analysis, sequence stratigraphic in seismic, borehole expression of sequences and overview of subsurface stratigraphic techniques. Prerequisite: GEOL 3442.

GEOL 4308. ENVIRONMENTAL GEOCHEMISTRY. 3 Hours.

The geochemistry of natural waters with emphasis on processes that control solute concentrations including complexation reactions, oxidation and reduction reactions, biogeochemistry, and chemical weathering reactions. Prerequisites: CHEM 1442 or GEOL 2445.

GEOL 4309. INTRODUCTION TO GEOPHYSICS. 3 Hours.

Introduction to the fundamental physical principles, theory, and techniques of geophysics. Topics include gravity and magnetic fields, heat-flow, earthquakes and elastic wave propagation, and geodesy. Emphasis will be on how geophysical data are used to constrain plate tectonic processes as well as the internal structure and dynamics of the solid Earth. Prerequisites: GEOL 3443 and MATH 2425.

GEOL 4323. ISSUES IN ENVIRONMENTAL HEALTH. 3 Hours.

An introduction to health issues of current concern resulting from environmental exposures. Topics include: environmental asthma, endocrine disruptors, climate change and health, emerging contaminants, nanotechnology and health, airborne particles and pediatric health. Offered as ENVR 4323 and GEOL 4323. Credit will not be given for both.

GEOL 4330. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software. This course replaces GEOL 4352; credit will not be granted for both. This course is offered as GEOL 4330 and GEOG 4330. Prerequisite: Junior standing.

GEOL 4331. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3-D Analyst, topological surface analysis and modeling; 3-D visualization and viewscapes; spatial statistics and data quality management. Course taught as GEOL 4331 and GEOG 4331. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4332. GLOBAL POSITIONING SYSTEM. 3 Hours.

Review of the NAVSTAR Global Positioning System and its segments: space, operational control, and GPS receivers. Mechanics of the satellite constellation; GPS signal structure; datums and coordinate systems; precision and accuracy; error factors; absolute (point) versus relative (differential) positioning. Various positioning techniques using several types of GPS receivers; field data collection and input into GIS programs for data analysis and presentation. Course taught as GEOL 4332 and GEOG 4332. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4333. REMOTE SENSING FUNDAMENTALS. 3 Hours.

The electromagnetic spectrum and the interaction of EM waves with matter; various types of sensing devices; spectral and spatial resolution parameters; airborne and satellite sensor platforms; aerial photographs and false-color images. The sequence of data acquisition, computer processing, and interpretation; sources of data; the integration of remote sensing data with other data types in GIS. Course taught as GEOL 4333 and GEOG 4333. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4334. GEOGRAPHIC DATA ANALYSIS. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with approval of the instructor. A written report of the results is required. Course taught as GEOL 4334 and GEOG 4334. Credit will be granted in only one department. Prerequisite: GEOL 4330 or GEOG 4330.

GEOL 4335. TECTONICS AND ISOTOPES. 3 Hours.

Fundamentals of global tectonics, and the application of isotope geochemistry in sedimentary rocks to understanding tectonic questions. Emphasis will be given to the mechanisms of mountain formation, isotope paleoaltimetry, detrital geochronology, and thermochronology. Prerequisite: GEOL 3442, GEOL 3446.

GEOL 4342. MICROFOSSILS & THE CORRELATION OF SEDIMENTARY ROCKS. 3 Hours.

This course is an introduction to microfossil groups useful in the regional and global correlation of sedimentary rock strata throughout the Phanerozoic. Microfossils record plant, animal, and protist life forms including foraminifers, radiolarians, ostracodes, conodonts, algae and coccolithophorids. Morphology, taxonomy and biostratigraphy of these groups will be stressed along with the principles used in the correlation of sedimentary rocks. Prerequisite: GEOL 3441.

GEOL 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with four independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: C or better in SCIE 1201 or SCIE 1334, or concurrent enrollment; and junior or senior standing.

GEOL 4346. BASIN ANALYSIS. 3 Hours.

The classification and characteristics of sedimentary basins and the mechanisms forming them; and the tectonic, climatic, and eustatic controls on basin subsidence and the basin fill. Applications include the influence of basin evolution on petroleum generation, migration, and accumulation. Prerequisite: GEOL 3442 and MATH 1426.

GEOL 4350. STABLE ISOTOPE GEOCHEMISTRY. 3 Hours.

Principles governing the fractionation and distribution of stable isotopes (C, H, N, O, S) in nature, and application of stable isotope geochemistry to environmental problems and global climate change. Prerequisite: GEOL 2445 and CHEM 1442, or permission from instructor.

GEOL 4351. ENERGY RESOURCES FOR GEOSCIENTISTS. 3 Hours.

The course will review critical knowledges of minerals, rocks, stratigraphy, surface processes, geophysics, geochemistry, structures and tectonics, and connect these aspects of Earth system with Earth's six energy components: hydrocarbon, critical minerals, geothermal energy, CO₂ sequestration, waste management, and green energies. Prerequisite: GEOL 1301, GEOL 3340, or cons. inst.

GEOL 4352. ANALYTICAL METHODS IN GEOCHEMISTRY. 3 Hours.

Principles of geochemical analysis of waters, rocks and soils, and gases. Methods to be covered include x-ray fluorescence and diffraction, mass spectrometry, coulometry, inductively-coupled plasma, and gas/ion chromatography with various detection methods. Prerequisite: CHEM 1442.

GEOL 4353. VOLCANOLOGY. 3 Hours.

A broad survey of volcanic rocks, landforms, products, minerals, volatiles, and processes at a generally descriptive to semi-quantitative level. Introduces areas of interface with other branches of geology and with socioeconomic interest. Prerequisite: GEOL 2446.

GEOL 4356. ENVIRONMENTAL RISK ASSESSMENT. 3 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization.

GEOL 4357. MEDICAL GEOLOGY. 3 Hours.

Introduction to geoscience and health. Students will learn how the geologic and geochemical environment can impact health. The historic background to geoscience and health will be presented followed by discussions on the natural abundance of elements in the earth, and the nature of essential and toxic elements (dose-response). Students will then learn about health responses following exposures in specific geologic/geochemical situations. Prerequisite: GEOL 1301 or ENVR 1301, or equivalent.

GEOL 4360. GEOLOGICAL PROCESSES OF OCEANS. 3 Hours.

Sedimentation in the oceans, chemistry of seawater, geochemical cycles in the oceans, and physical and biological processes that relate to sediment production, origin of seafloor topography, and seafloor spreading. Prerequisite: GEOL 3442.

GEOL 4367. PALEO EARTH SYSTEMS. 3 Hours.

This course discusses the evolution of Earth's complex dynamic system that is controlled by feedback processes that are both non-linear and stochastic in nature. Prerequisite: GEOL 1301.

GEOL 4368. GEOLOGY OF THE PERMIAN BASIN. 3 Hours.

Overview of the geologic evolution of the Permian Basin of W Texas and SE New Mexico and its petroleum resources. Emphasis on student presentations and term paper. Prerequisite: GEOL 1301 or equivalent.

GEOL 4389. RESEARCH IN GEOLOGY. 3 Hours.

Supervised undergraduate research in any one of the various fields of geology. May be repeated but will not meet Geology degree requirements. Prerequisite: permission from instructor.

GEOL 4393. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project under the direction of a faculty member in the Earth and Environmental Sciences Department.

GEOL 4402. COMPUTER MODELING IN EARTH SCIENCE. 4 Hours.

An introduction to basic programming and computation in the earth sciences using Matlab®, with emphasis on development of univariate and bivariate statistical models, spatial and image analysis, time series analysis, and the development of basic deterministic physics-based models of geological processes. Prerequisite: MATH 2425.

GEOL 4405. METEOROLOGY AND CLIMATOLOGY. 4 Hours.

A quantitative approach to the study of the structure, energy, and motions of the atmosphere. Prerequisite: MATH 1426 and junior standing, or permission of instructor.

GEOL 4420. HYDROGEOLOGY. 4 Hours.

Hydrologic cycle, Darcy's law, hydraulic properties, aquifer types and materials, groundwater flow to wells, fracture flow, vadose zone flow, groundwater chemistry, and groundwater modeling. Prerequisite: PHYS 1441 or PHYS 1443.

GEOL 4421. GEOCHRONOLOGY. 4 Hours.

Introduction to dating techniques, applied to understand past climate and tectonics. Prerequisite: GEOL 1301 or equivalent.

GEOL 4422. CONTAMINANT HYDROGEOLOGY. 4 Hours.

Sources and types of organic and inorganic contaminants; the physical, chemical, and biological factors and processes that affect the transport and fate of contaminants in the subsurface; non-aqueous phase liquids and multiphase flow; and various remedial techniques of contaminated sites. Prerequisite: GEOL 1301, ENVR 1301, or equivalent.

GEOL 4425. PALEOCLIMATE & CLIMATE CHANGE. 4 Hours.

Climate change throughout geologic time, especially the last 100 million years: models of the climate system, reconstruction and modeling of past climates, abrupt climate change, warm climates, paleoclimatology, climate change and mass extinctions. Prerequisite: GEOL 1301, MATH 1426, and junior standing, or permission from instructor.

GEOL 4443. SEDIMENTARY SYSTEMS. 4 Hours.

Focuses on the processes transporting and archiving siliciclastic sediment, and the approaches using siliciclastic sedimentary rocks to reconstruct earth surface processes. This course includes a heavy component of student-led presentation and discussion. Prerequisite: GEOL 3442.

GEOL 4455. MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS. 4 Hours.

This course is designed to introduce the process principles that govern contaminant transport and transformations in multimedia environments. This course will cover application of fate and transport models to evaluate pollutant interactions with the biosphere, particularly in the context of human exposure modeling and health risk assessment. Offered as ENVR 4455 and GEOL 4455. Credit will not be given for both.

GEOL 4456. ENVIRONMENTAL RISK ASSESSMENT. 4 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization. Offered as ENVR 4456 and GEOL 4456. Credit will not be given for both.

GEOL 4458. MACHINE LEARNING FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of machine learning and helps students apply machine learning to analyze data, predict outcomes and interpret results from the perspective of earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in earth and environmental sciences. Offered as GEOL 4458 and ENVR 4458. Credit will be not given for both. Prerequisite: GEOL 3454 or ENVR 3454 or equivalent.

GEOL 4465. PHYSICAL OCEANOGRAPHY AND LIMNOLOGY. 4 Hours.

An introduction to physical processes in lakes and oceans. Changes in lakes and oceans influence heat, and momentum fluxes at the aquatic/oceanic and atmospheric interface. Topics include ocean/lake structure and circulation, and the impact of global climate change on lakes and oceans. Field excursions to nearby lakes combine theoretical knowledge and field measurements. Prerequisite: MATH 2425 and PHYS 1441 or PHYS 1443.

GEOL 5151. TOPICS IN ENERGY AND EARTH RESOURCES. 1 Hour.

This course will discuss the historical evolution and current status of major research thrusts in the environment, energy, and resources studies, including Superfund and groundwater remediation, carbon sequestration, tight sands and coalbed methane, petroleum production in shale gas and oil reservoirs, geological repository of high-level nuclear waste, geothermal energy exploitation, mining of critical minerals, and gas (methane) hydrate. Prerequisite: GEOL 1301 or equivalent.

GEOL 5180. PROFESSIONAL ORIENTATION AND BUSINESS ETHICS. 1 Hour.

A mentoring program using working professionals selected by the Earth and Environmental Sciences Department. Each participant meets at least once a month with a mentor who provides information on practices and skills necessary to succeed in the workplace. Course participants review business ethics statements provided by the mentor's company or other companies and write a critique based on materials from professional business ethics organizations such as the International Business Ethics Institute. Prerequisite or concurrent enrollment GEOL 5345.

GEOL 5181. RESEARCH IN GEOLOGY. 1 Hour.

Independent study in various areas of research including paleontology, stratigraphy, tectonics, structural geology, sedimentology, geochemistry, petrology, geophysics, and volcanology. May be repeated for credit. Graded P/F/R/W.

GEOL 5190. GEOSCIENCE INTERNSHIP. 1 Hour.

Work in geoscience for a commercial concern at least 20 hrs/wk for 3 months. Requirements include writing a resume, learning how to interview and function on the job, and a report describing the work. Prerequisite: GEOL 5345 or concurrent enrollment.

GEOL 5199. TECHNICAL SESSIONS. 1 Hour.

Forum for presentation of results of graduate students and faculty research. Required each semester of all graduate students.

GEOL 5265. TOPICS IN GEOL. 2 Hours.**GEOL 5281. RESEARCH IN GEOLOGY. 2 Hours.**

Independent study in various areas of research including paleontology, stratigraphy, tectonics, structural geology, sedimentology, geochemistry, petrology, geophysics, and volcanology. May be repeated for credit. Graded P/F/R/W.

GEOL 5301. ENVIRONMENTAL GEOCHEMISTRY. 3 Hours.

Fundamentals of low-temperature aqueous geochemistry, and anthropogenic impacts on natural water systems. Topics include equilibrium thermodynamics, kinetics, aqueous complexation, and oxidation/reduction processes that affect metals and organic matter in natural waters.

GEOL 5302. GEODYNAMICS. 3 Hours.

A comprehensive and quantitative study of fundamental aspects of plate tectonics. Introduction to heat flow, elasticity and flexure, fluid mechanics, faulting, gravity, and flow in porous media, with a wide range of geological applications. Includes collaborative problem solving. Prerequisite: GEOL 3443 and MATH 2425.

GEOL 5303. ROCK FRACTURE MECHANICS. 3 Hours.

Principles and tools of fracture mechanics are applied to the origins and physical behaviors of faults, dikes, joints, veins, and other natural structures in rock. Special emphasis will be given to combining field observations of fractures in rock with the elastic theory of cracks in order to explore the role of natural fractures in brittle rock deformation in the earth's crust with applications to crustal deformation, structural geology, engineering geology, and induced hydraulic fracture, i.e. Fracking. Prerequisite: GEOL 3443 and MATH 2425; or GEOL 3340 and CE 2313.

GEOL 5304. SOLID EARTH GEOMECHANICS. 3 Hours.

Application of continuum mechanics to understanding deformation in the earth, including mechanical analysis of natural geologic structures such as faults, folds, lava flows, and dikes, as well as practical problems related to reservoir geomechanics and mining applications. Prerequisite: GEOL 3443, MATH 2325, PHYS 1441 or PHYS 1443.

GEOL 5306. ENVIRONMENTAL GEOLOGY. 3 Hours.

Hydrological systems, water quality, and behavior of pollutants; atmospheric systems, air quality, and effects of pollutants; occurrence, prediction, and amelioration of natural environmental hazards including floods, earthquakes, volcanism, and landslides.

GEOL 5309. GEOMORPHOLOGY & QUATERNARY STRATIGRAPHY OF SEDIMENTARY SYSTEMS. 3 Hours.

This course examines those physical processes that sculpt the surface of the Earth and result in deposition of sediments. Surface systems covered include weathering, mass wasting, rivers, shorelines, eolian processes, and glaciers. The course also examines the stratigraphic techniques used to decode the recent (2 million to present) stratigraphic record of these systems. Course is designed for geologists, biologists, and other fields concerned with interpreting and/or managing modern environments.

GEOL 5312. SANDSTONE PETROLOGY. 3 Hours.

Petrographic examination of terrigenous clastics, including textural, compositional, and diagenetic aspects. Focus on paleogeographic, tectonic, and environmental interpretation. Prerequisite: GEOL 3442.

GEOL 5313. CARBONATE PETROLOGY. 3 Hours.

Nature and composition of ancient and modern carbonate sediments and rocks in terms of their genesis, depositional environments, biological constituents, and processes involved in transport, deposition, diagenesis, and lithification. Knowledge of stratigraphy and paleontology is necessary for success in this course. Prerequisite: GEOL 3442 or permission of the instructor.

GEOL 5320. UNDERSTANDING GEOGRAPHIC INFORMATION SYSTEMS. 3 Hours.

A practical introduction to GIS and methods of creating, maintaining and displaying spatial data using the ArcGIS software.

GEOL 5321. ANALYSIS OF SPATIAL DATA. 3 Hours.

Analyzing spatial data using ArcGIS, Spatial Analyst, and 3D Analyst, topological surface analysis and modeling; 3D visualization and viewscales; spatial statistics and data quality management. Prerequisite: GEOL 4330 or GEOL 5320.

GEOL 5322. GLOBAL POSITIONING SYSTEM. 3 Hours.

Review of the NAVSTAR Global Positioning System and its segments: space, operational control, and GPS receivers. Mechanics of the satellite constellation; GPS signal structure; data and coordinate systems; precision and accuracy; error factors; absolute (point) versus relative (differential) positioning. Various positioning techniques using several types of GPS receivers; field data collection and input into GIS programs for data analysis and presentation. Prerequisite: GEOL 4330 or GEOL 5320.

GEOL 5323. REMOTE SENSING FUNDAMENTALS. 3 Hours.

The electromagnetic spectrum and the interaction of EM waves with matter; various types of sensing devices; spectral and spatial resolution parameters; airborne and satellite sensor platforms; aerial photographs and false-color images. The sequence of data acquisition, computer processing and interpretation; sources of data; the integration of remote sensing data with other data types in GIS. Prerequisite: GEOL 4330 or GEOL 5320.

GEOL 5324. GEOGRAPHIC DATA ANALYSIS PROJECT. 3 Hours.

Acquisition, processing and analysis of a set of spatial data selected by the student with the approval of the instructor. A written report of the results is required. Offered as GEOL 5324 and GEOG 5334. Credit will not be given for both. Prerequisite: For GEOL 5324: GEOL 5320.

GEOL 5332. STABLE ISOTOPE GEOCHEMISTRY. 3 Hours.

Principals governing the fractionation and distribution of stable isotopes (C, H, N, O, S) in nature, and application of stable isotope geochemistry to environmental problems and global climate change.

GEOL 5333. FIELD METHODS. 3 Hours.**GEOL 5334. ANALYTICAL METHODS IN ENVIRONMENTAL SCIENCE. 3 Hours.**

Principals of geochemical analysis of waters, rocks and soils, and gases. Methods to be covered include x-ray fluorescence and diffraction, mass spectrometry, coulometry, inductively-coupled plasma, and gas/ion chromatography with various detection methods.

GEOL 5335. ISOTOPES AND TECTONICS. 3 Hours.

An Introduction to the fundamentals of clumped isotopes, and major radiogenic and cosmogenic isotope systems and their applications to the study of earth system processes and Earth history; emphasis will be placed on applications to tectonics, geochronology, and thermochronology. Prerequisite: CHEM 1442 or GEOL 4302.

GEOL 5342. MICROFOSSILS AND CARBONATE ROCKS. 3 Hours.

Half of this course consists of an introduction to microfossil groups occurring in sedimentary rocks: foraminifers, conodonts, coccolithophorids and others, and their usefulness in regional and global correlation of Phanerozoic strata. The biostratigraphy of these groups will be discussed along with the principles used in the correlation of sedimentary rocks. The other half of the course consists of the analysis of the lithofacies and biofacies of carbonate rocks, their genesis, depositional environments, and diagenesis. Prerequisite: GEOL 3441 and GEOL 3442 or permission of the instructor.

GEOL 5344. DEPOSITIONAL ENVIRONMENTS: TERRIGENOUS CLASTICS. 3 Hours.

Depositional processes, physiographic and environmental components, and facies characteristics and relationships of alluvial, eolian, deltaic, clastic shoreline, shallow siliciclastic sea and deep sea clastic depositional systems. Emphasis on interpretation of ancient analogs. Prerequisite: GEOL 3442.

GEOL 5345. PETROLEUM GEOLOGY. 3 Hours.

Origin, generation and migration of petroleum; reservoirs, seals and traps; the subsurface environment; properties of petroleum; exploration and production methods; use of seismic lines and well logs; types of petroleum basins; reserves and resources. Prerequisite: GEOL 3442 and GEOL 3443.

GEOL 5348. MARINE GEOLOGY AND GEOCHEMISTRY. 3 Hours.

Geologic and geochemical processes of the oceans. Chemistry of seawater; geochemical and biogeochemical cycles; carbonate sediment production.

GEOL 5351. ENERGY RESOURCES FOR GEOSCIENTISTS. 3 Hours.

The course will review critical knowledges of minerals, rocks, stratigraphy, surface processes, geophysics, geochemistry, structures and tectonics, and connect these aspects of Earth system with Earth's six energy components: hydrocarbon, critical minerals, geothermal energy, CO₂ sequestration, waste management, and green energies. Prerequisite: GEOL 1301, GEOL 3340, or cons. inst.

GEOL 5365. TOPICS IN GEOLOGY. 3 Hours.

Topics offered depend on student and faculty interest. Such topics might include identification of fossil fragments in thin section; magmatic processes; plate tectonics and sedimentary basin evolution; stratigraphic paleontology; sedimentary or volcanogenic ore deposition; geostatistics; geophysical archeology; and various advanced subjects in sedimentology, stratigraphy, paleontology, geophysics, geochemistry, volcanology and petrology. May be repeated for credit when topic changes.

GEOL 5367. PALEO EARTH SYSTEMS. 3 Hours.

This course discusses the evolution of Earth's complex dynamic system that is controlled by feedback processes that are both non-linear and stochastic in nature. Prerequisite: GEOL 1301.

GEOL 5368. GEOLOGY OF THE PERMIAN BASIN. 3 Hours.

Overview of the geologic evolution of the Permian Basin of W Texas and SE New Mexico and its petroleum resources. Emphasis on student presentations and term paper.

GEOL 5369. SEQUENCE STRATIGRAPHY. 3 Hours.

This course introduces sequence stratigraphy within context of all stratigraphy and history of sequence stratigraphy. Includes overview of sequence stratigraphy principles. Review of basic fundamental concepts of surface- and facies-based physical stratigraphy. Review of architectural element analysis, sequence stratigraphic in seismic, borehole expression of sequences and overview of subsurface stratigraphic techniques. Prerequisite: GEOL 3442.

GEOL 5370. SEDIMENTARY SYSTEMS. 3 Hours.

Carbonate and clastic depositional systems, recognition of facies, systems tracts, diagenetic overprint, shelf to basin profiling, and sequence stratigraphic analysis.

GEOL 5371. BASIN ANALYSIS. 3 Hours.

Topics include: the classification and characteristics of sedimentary basins and the mechanisms forming them; and the tectonic, climatic, and eustatic controls on basin subsidence and the basin fill. Applications include the influence of basin evolution on petroleum generation, migration, and accumulation. Prerequisite: GEOL 3442 (Sedimentology and Stratigraphy).

GEOL 5372. STRUCTURAL GEOMETRY AND TECTONICS OF PETROLEUM FIELDS. 3 Hours.

Structural styles of thin-skinned, basement involved and reactivated systems in shortening, extensional and strike-slip deformation. Use of structural modeling and restoration methods to test the reliability of structural interpretations. Prerequisite: GEOL 3443.

GEOL 5373. RESERVOIR CHARACTERIZATION. 3 Hours.

Principles, protocols, analysis and measurement of petrophysical properties (e.g., fluid content, porosity, permeability, pore size distribution, water retention curve, imbibition) of petroleum reservoir rocks.

GEOL 5374. SEISMIC INTERPRETATION. 3 Hours.

Introduction to the methods of acquisition and processing as they relate to the interpretation of seismic records. Structural and stratigraphic interpretation methods and pitfalls using two and three dimensional seismic data. Introduction to Seismic Interpretation Software such as the Kingdom Suite from Seismic Micro Technology, Inc. Prerequisite: GEOL 3442 and GEOL 3443.

GEOL 5375. INTRODUCTION TO WELL LOG INTERPRETATION AND MAPPING. 3 Hours.

Introduction to the various types of well logs used in the petroleum industry and their petrophysical interpretations, including evaluations of porosity, water saturation, shale volume, permeability, and lithology. Introduction to techniques of contouring data and use of mapping software such as PETRA. Prerequisite: GEOL 3442.

GEOL 5381. RESEARCH IN GEOLOGY. 3 Hours.

Independent study in various areas of research including paleontology, stratigraphy, tectonics, structural geology, sedimentology, geochemistry, petrology, geophysics, and volcanology. May be repeated for credit. Graded R.

GEOL 5395. MASTER'S PROJECT. 3 Hours.

May be used as elective for students in non-thesis program. Graded F,P,R,W. Prerequisite: GEOL 1301 or equivalent course.

GEOL 5398. THESIS. 3 Hours.

Graded F, R.

GEOL 5405. METEOROLOGY AND CLIMATOLOGY. 4 Hours.

A quantitative approach to the study of the structure, energy, and motions of the atmosphere.

GEOL 5409. APPLIED GEOPHYSICS. 4 Hours.

Geophysical Techniques used to determine the presence and extent of deposits of minerals and the subsurface structure of selected localities from field methods.

GEOL 5421. GEOCHRONOLOGY. 4 Hours.

Introduction to dating techniques, applied to understand past climate and tectonics. Prerequisite: GEOL 1301 or equivalent.

GEOL 5425. PALEOCLIMATE AND CLIMATE CHANGE. 4 Hours.

Climate change throughout geologic time, especially the last 100 million years: models of the climate system, reconstruction and modeling of past climates, abrupt climate change, warm climates, paleoclimatology, climate change and mass extinctions.

GEOL 5428. HYDROGEOLOGY. 4 Hours.

Hydrologic cycle, Darcy's law, hydraulic properties, aquifer types and materials, groundwater flow to wells, fracture flow, vadose zone flow, groundwater chemistry, and groundwater modeling; a term paper about the relevant topics covered in the class is required. Prerequisite: GEOL 2446, MATH 2425.

GEOL 5450. CONTAMINANT HYDROGEOLOGY. 4 Hours.

Sources and types of organic and inorganic contaminants; the physical, chemical, and biological factors and processes that affect the transport and fate of contaminants in the subsurface; non-aqueous phase liquids and multiphase flow; and various remedial techniques of contaminated sites.

GEOL 5454. STATISTICS FOR EARTH AND ENVIRONMENTAL SCIENTISTS. 4 Hours.

This course provides students with basic principles of statistics and helps students apply statistics to analyze data and interpret results from the perspective of Earth and environmental scientists. The course will first introduce basic concepts and then focus on applications to various examples in Earth and environmental sciences. Offered as EVSE 5454 and GEOL 5454. Credit will not be given for both.

GEOL 5455. MATHEMATICAL MODELING OF ENVIRONMENTAL QUALITY SYSTEMS. 4 Hours.

This course is designed to introduce the process principles that govern contaminant transport and transformations in multimedia environments. This course will cover application of fate and transport models to evaluate pollutant interactions with the biosphere, particularly in the context of human exposure modeling and health risk assessment. Offered as EVSE 5455 and GEOL 5455. Credit will not be given for both.

GEOL 5456. ENVIRONMENTAL RISK ASSESSMENT. 4 Hours.

This course introduces the basic scientific components of environmental and occupational health risk assessment and describes the policy context in which decisions to manage environmental health risks are made. The course presents the quantitative methods used to assess the human health risks associated with exposure to toxic chemicals, focusing on the four major components of risk assessment-hazard identification, dose-response assessment, exposure assessment, and risk characterization. Offered as EVSE 5456 and GEOL 5456, credit will not be given for both.

GEOL 5465. PHYSICAL OCEANOGRAPHY AND LIMNOLOGY. 4 Hours.

An introduction to physical processes in lakes and oceans. Changes in lakes and oceans influence heat, and momentum fluxes at the aquatic/oceanic and atmospheric interface. Topics include ocean/lake structure and circulation, and the impact of global climate change on lakes and oceans. Field excursions to nearby lakes combine theoretical knowledge and field measurements. Prerequisite: PHYS 1441 or PHYS 1443; and MATH 2425.

GEOL 5698. THESIS. 6 Hours.

Graded F, P, R.

German (GERM)

COURSES

GERM 1441. BEGINNING GERMAN I. 4 Hours. (TCCN = GERM 1411)

Multimedia immersion in the culture and language of German-speaking countries. Designed to enable students to understand and communicate effectively in German at the beginning level.

GERM 1442. BEGINNING GERMAN II. 4 Hours. (TCCN = GERM 1412)

Continuation of beginning German. Prerequisite: GERM 1441 with a grade of C or better.

GERM 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

GERM 2301. TOPICS IN GERMAN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. GERM 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

GERM 2310. GERMAN CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the German-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

GERM 2313. INTERMEDIATE GERMAN I. 3 Hours. (TCCN = GERM 2311)

Continued immersion in the culture and language of German-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: GERM 1442 with a grade of C or better.

GERM 2314. INTERMEDIATE GERMAN II. 3 Hours. (TCCN = GERM 2312)

Continuation of intermediate German. Prerequisite: GERM 2313 with a grade of C or better.

GERM 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

GERM 3301. TOPICS IN GERMAN LITERATURE AND CULTURE IN TRANSLATION. 3 Hours.

Intellectual and literary trends in life and literature of German-speaking countries as reflected in text, film, and video. Topics: 20th century cinema, the Holocaust experience in literature and culture, women writers from the Enlightenment to the present, postwar in two Germanies, among others. May be repeated as topic varies. The course will be count only once, however, toward a minor in German. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3310. LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of German language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May be repeated once. Prerequisite: GERM 2314 with a grade of B or better.

GERM 3311. LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of German and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: GERM 3310 with a grade of B or better.

GERM 3312. ADVANCED GERMAN GRAMMAR. 3 Hours.

A detailed study of German grammar. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3313. TOPICS IN GERMAN CULTURE & CONVERSATION. 3 Hours.

Topics in German culture with emphasis on conversation and reading skills in German with grammar review. Course may be repeated for credit with departmental permission as topic varies. Credit will not be given to native speakers of German, except with permission of the department. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3316. GERMAN COMPOSITION & GRAMMAR. 3 Hours.

Introduction to the analysis of literary texts with emphasis on reading comprehension, grammar, writing skills and compositional techniques. Prerequisite: GERM 2314, or the equivalent, with a grade of C or better.

GERM 3317. INTRODUCTION TO LITERATURE AND CULTURE STUDIES. 3 Hours.

Introduction to the study of literature and culture including approaches to texts, basic theoretical considerations, fundamentals of scholarship. Prerequisite: GERM 2314 with a grade of C or better.

GERM 3318. SPECIAL TOPICS IN GERMAN STUDIES I. 3 Hours.

German courses that may be cross-period or thematically oriented like Kinderliteratur or Film but also those courses targeted at specific groups (e.g. Business, Science, etc.). Course may be repeated for credit with departmental permission as topic varies.

GERM 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM), and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-German. GERM 3310 or GERM 4334 is strongly recommended before GERM 3345.

GERM 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-German. Prerequisite: GERM 3310 or GERM 4334.

GERM 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-German. Prerequisite: GERM 3310, GERM 4334, GERM 3311 or GERM 4335.

GERM 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: consent of the department.

GERM 3393. GERMAN INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

GERM 4313. GERMAN LITERATURE AND CULTURE I. 3 Hours.

Literary and cultural history from the Renaissance to Romanticism. The course focuses on the history of cultural (including literary) texts and surveys the history of written texts in German-speaking Europe. Course is taught in German. Students may elect to read some of the texts in German. Prerequisite: GERM 2314 with a grade of B or better.

GERM 4314. GERMAN LITERATURE AND CULTURE II. 3 Hours.

Literary and cultural history from Romanticism to the present. Course focuses on the history of cultural (including literary) texts and surveys the history of written texts in German-speaking Europe. Course is taught in German. Students will read texts in German. Prerequisite: GERM 2314 with a grade of B or better.

GERM 4317. TOPICS IN GERMAN TRANSLATION. 3 Hours.

Introduction to the theory and practice of translation. Examples will cover a wide range of texts including literature, business, newspapers, etc. (May substitute for GERM 4335). May be repeated for credit when subject changes up to 3 times total. Prerequisite: One GERM 3000-level course with a grade of C or better, or permission of the instructor.

GERM 4321. TOPICS IN LITERATURE & CULTURE. 3 Hours.

Literary periods, genres, authors, and research themes from German speaking countries. May include literature and thought from the Enlightenment and Classical period; Romanticism; the German Novelle and drama; German opera; banned books and postwar works from modern Germany. May be repeated as topics and texts vary. Prerequisite: GERM 2314 with a grade of B or better.

GERM 4322. SPECIAL TOPICS IN GERMAN STUDIES II. 3 Hours.

German courses that may be cross-period or thematically oriented, such as Culture of Obedience, Classical Tradition, or Women Writers, as well as specific time periods. Course may be repeated for credit with departmental permission as topic varies. Prerequisite: GERM 2314 with a grade of C or better.

GERM 4334. THE CULTURE OF BUSINESS. 3 Hours.

The relationship of culture, language, and meaning to issues affecting business and e-commerce in the German-speaking world, with emphasis on intercultural communication in an international business environment. Web-based media segments about international business in German-speaking Europe and the United States are used as an aid in the acquisition of pertinent cultural knowledge, as well as vocabulary. Prerequisite: GERM 2314 with a grade of C or better.

GERM 4335. BUSINESS GERMAN. 3 Hours.

Students learn to function in business environments, with emphasis on the skills needed for conducting e-commerce. Web-based media segments from the United States and German-speaking Europe are used to reinforce vocabulary and other linguistic knowledge. Prerequisite: GERM 4334 with a grade of C or better.

GERM 4339. THE ACQUISITION OF GERMAN. 3 Hours.

Theory and practice of acquisition of German. Techniques needed to understand and analyze the sounds, vocabulary, and grammar of the German language. Introduction to reading strategies, the development of oral communication skills, and writing strategies.

GERM 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission.

GERM 4393. GERMAN INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in German, outside readings, and formal presentations. Prerequisite: Two GERM 3000 level courses and permission of the instructor.

GERM 4394. HONORS THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit.

Global (GLOBAL)

COURSES

GLOBAL 2301. INTRODUCTION TO GLOBAL ISSUES. 3 Hours.

Comparative perspectives on a broad range of cultural, linguistic, economic, political, and social issues confronting a globalized world today. Designed to draw attention to the multifaceted connections among nation-states, nongovernmental organizations, diverse ethnic, cultural and religious groups, and populations around the world.

GLOBAL 2315. INTRODUCTION TO LOCALIZATION AND LANGUAGE TECHNOLOGY. 3 Hours.

An introduction to localization and computational approaches to language and culture. Topics will include: computer-aided translation, machine translation, natural language processing, mining and semantic analysis of language data, machine learning/AI with natural language.

GLOBAL 3301. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS I. 3 Hours.

Intensive study of a particular world region and/or culture including, but not limited to, its language, geography, history, arts, commerce, politics, and government. Focus on its uniqueness as a culture and its integral place in global society. Repeatable for credit as topic varies. No prerequisite. Recommend enrollment in GLOBAL 2301 concurrently or previously.

GLOBAL 3302. TOPICS IN INTERNATIONAL CULTURES AND CIVILIZATIONS II. 3 Hours.

Advanced study of a particular world region and/or culture including, but not limited to, its language, geography, history, arts, commerce, politics, and government. Emphasis on film, media, international communication, or other subjects of global study. Repeatable for credit as topic changes. No prerequisite. Strongly recommended: GLOBAL 2301 and GLOBAL 3301, concurrently or previously.

GLOBAL 3310. LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: GLOBAL 3301 in the language under study or permission of the instructor.

GLOBAL 4301. RESEARCH IN GLOBAL STUDIES. 3 Hours.

This course examines multidisciplinary problems that fall within the scope of human rights and the UN's Sustainable Development Goals (SDGs). Students complete coursework which culminates in an original research project on a topic of their choice, which might involve novel approaches toward sustainability, food security, infrastructure, health, water conservation, sanitation, ecosystem resilience, urbanization, recycling, or other issues related to globalization. Students will investigate and propose solutions in the form of a proposal to carry out active field work in partnership with a non-governmental agency or non-profit organization working to promote sustainable global development. For students pursuing a minor or certificate in Global Studies, this course serves as their Capstone. Prerequisite: ANTH 2322, GLOBAL 2301, GLOBAL 3310, POLS 3302, or POLS 3304.

GLOBAL 4312. INTERCULTURAL COMPETENCE FOR GLOBAL COMMUNICATION. 3 Hours.

A study of the differences between the U.S. and other cultures of the world with a focus on the development of intercultural competence: verbal and non-verbal communication, interpersonal skills, effective management strategies, and professional etiquette in multicultural settings.

GLOBAL 4393. INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, and formal presentations. Prerequisite: Two GLOBAL 3000 level courses and/or permission of the instructor.

Greek (GREK)

COURSES

GREK 1441. GREEK LEVEL I. 4 Hours. (TCCN = GREE 1411)

GREK 1442. GREEK LEVEL II. 4 Hours. (TCCN = GREE 1412)

Prerequisite: GREK 1441 or equivalent.

GREK 2313. GREEK LEVEL III. 3 Hours. (TCCN = GREE 2311)

Prerequisite: GREK 1442 or equivalent.

GREK 2314. GREEK LEVEL IV. 3 Hours. (TCCN = GREE 2312)

Prerequisite: GREK 2313 or equivalent.

GREK 4335. TOPICS IN GREEK LITERATURE. 3 Hours.

Close reading of one or more Greek texts, with attention both to grammatical precision and to interpretation. Students should be able to read unaltered Greek.

GREK 4391. CONFERENCE COURSE. 3 Hours.

Advanced independent study in Greek literature. May be repeated for credit with departmental permission.

GREK 5391. CONFERENCE COURSE IN GREEK. 3 Hours.

May be taken only with the permission of the instructor and the Graduate Advisor.

Health (HEED)

COURSES

HEED 1230. FIRST AID / CPR / AED TRAINING. 2 Hours.

This course is designed to cover the components of Standard First Aid, Cardio-Pulmonary Resuscitation (CPR) for the Professional Rescuer, and Automated External Defibrillator (AED) training. Certification is possible upon successful course completion. Offered as HEED 1230 and KINE 1230. Students seeking credit in HEED should enroll in HEED 1230 and students seeking credit in KINE should enroll in KINE 1230. Credit will not be granted for both courses.

HEED 1301. NUTRITION. 3 Hours.

Nutrients essential to an adequate diet and good health and the nutritive values of common foods are reviewed. Offered as BIOL 1301 and HEED 1301: credit will be granted for only one of these courses. Students seeking certification in Health Education must enroll in HEED 1301. Students seeking credit toward their science requirement must enroll in BIOL 1301. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, or medical technology.

HEED 1316. FOUNDATIONS OF HEALTH. 3 Hours.

Emphasis on interrelationship of physical, emotional, mental, social, and spiritual dimensions of health. Involves the analysis of personal health status and development of strategies for improving quality of life.

HEED 1340. HEALTHY LIFESTYLES. 3 Hours.

This course will present theoretical content related to a healthy lifestyle. Students will apply these concepts in laboratory sessions where they evaluate current health habits and develop a nutrition, exercise, and stress management plan to promote a healthy lifestyle. The laboratory section will also provide instruction with regards to proper technique and form for resistance training, flexibility and aerobic conditioning. Lifestyle related diseases and addictions such as cardiovascular disease, cancer, diabetes, substance abuse, sexually transmitted diseases and achievement and maintenance of optimal body composition will also be addressed. These problems will be discussed relative to social, cultural and ethnic concerns.

HEED 2300. STUDENT HEALTH PEER TRAINING. 3 Hours.

Train students to be peer counselors who will work as group leaders both on campus and in the community in the Fall and Spring Semesters. Students learn about alcohol and other drugs and their relationship to health and sex issues which prepare them for group presentations and in making referrals when necessary. Topics of training include alcohol and other drug use/abuse, sexually transmitted diseases (STDs), HIV/AIDS, acquaintance rape, smoking/tobacco cessation, eating disorders, suicide, and self-esteem. Prerequisite: permission of instructor.

HEED 2317. BASIC CONCEPTS IN HUMAN SEXUALITY. 3 Hours.

The physiological, psychological, and sociological aspects of human sexuality. Offered as BIOL 2317, HEED 2317, PSYC 2317, and WOMS 2317. Credit will be granted for one of these courses only. Students seeking certification in Health Education must enroll in HEED 2317. Students seeking credit toward their science requirement must enroll in BIOL 2317. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, medical technology, psychology, or sociology.

HEED 2330. CARE AND PREVENTION OF ATHLETIC INJURIES. 3 Hours.

An introduction to the profession of Athletic Training. Common sports-related injuries and illnesses will be discussed with an emphasis on the proper methods for prevention, recognition, and immediate care. Offered as HEED 2330 and KINE 2330. Kinesiology majors must take KINE 2330.

HEED 3301. SPORTS NUTRITION. 3 Hours.

Overview of nutrients necessary for healthful living and nutritional impact on reducing risk factors of lifestyle diseases. Application of nutrient recommendations for sports and exercise activities, including fluid replacement, sports supplements, and ergogenic aids.

HEED 3303. DRUGS AND BEHAVIOR. 3 Hours.

A survey of the psychoactive agents, their therapeutic uses, and social abuses. Alcohol, nicotine, caffeine, narcotics, hallucinogens, stimulants, and tranquilizers. Offered as BIOL 3303, HEED 3303, and PSYC 3303; credit will be granted only once. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology, microbiology, or medical technology. Students seeking certification in health education must enroll in HEED 3303.

HEED 3305. WOMEN'S HEALTH ISSUES. 3 Hours.

Will address specific issues of importance to women and their health, including growth and development, nutrition, reproductive health, pregnancy, chronic diseases, and relationship/family issues. Offered as DIVR 3305, HEED 3305 and WOMS 3305. Credit will be granted only once.

HEED 3330. CONSUMER HEALTH AND PUBLIC HEALTH SYSTEMS. 3 Hours.

Analysis of personal, social, cultural, economic, and political aspects of health. Topics covered include managed health care, health insurance, health services/products, doctor-patient communication, traditional vs. non-traditional medicine, diagnosis and treatment of chronic diseases, and health legislation. Prerequisite: KINE 2350 and KINE 3350.

HEED 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in the designated area.

HEED 4192. SPECIAL TOPICS IN HEALTH. 1 Hour.

Designed to present topics in health not currently offered in existing curriculum. May be repeated for credit when the topic changes.

HEED 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

HEED 4292. SPECIAL TOPICS IN HEALTH. 2 Hours.

Designed to present topics in health not currently offered in existing curriculum. May be repeated for credit when the topic changes.

HEED 4310. STRESS MANAGEMENT. 3 Hours.

Analysis of the psychophysiology of stress and the role of stress in the development of acute and chronic diseases. Examine personal and medical uses of stress management techniques.

HEED 4311. THE ENVIRONMENT AND PUBLIC HEALTH SYSTEMS. 3 Hours.

This course is a study of the basic principles of ecology as they relate to the general health of society. Topics including conditions of soil, water, and air - nationally and globally - will be discussed. The successful student will acquire a level of proficiency in appropriate health care techniques specific to environmental health concerns. Prerequisite: KINE 2350, KINE 3350, KINE 3353, CHEM 1441 or CHEM 1451 and BIOL 1345 or BIOL 1441.

HEED 4312. HEALTH & HUMAN DISEASE. 3 Hours.

Basic principles of human diseases including cardiovascular disease, cancer, AIDS, influenza, and Alzheimer's. The role of infectious and communicable diseases in human history will also be discussed.

HEED 4320. STUDIES IN HEALTHY AGING. 3 Hours.

Emphasis on complex issues associated with aging and death. Topics include changes/losses related to specific stages of life; care-giving to the dying; pertinent legal issues; medical gerontology; other salient issues and problems concerning aging and death. This course is especially helpful to those students who plan careers in the medical profession.

HEED 4330. COMPREHENSIVE SEXUALITY EDUCATION. 3 Hours.

Explores contemporary issues in human sexuality (i.e., physiological, psychological, and sociological) and prepares those interested in teaching health education to teach sexuality education with diverse populations in a variety of settings (i.e., school or community agency). Students will increase their knowledge of sexuality and enhance their ability to educate about and promote sexual health. Students seeking certification in health must enroll in HEED 4330.

HEED 4340. PRINCIPLES OF HEALTH APPLICATIONS. 3 Hours.

Designed to integrate the information base of health studies into action plans for developing health education and promotion programs for organizations, agencies, and schools. Designed to integrate the information base of health studies into action plans for developing health education and promotion programs for organizations, agencies and communities. Includes planning and evaluation components recommended for students who plan to sit for ACSM/NPASPA certificate exam. Prerequisite: Junior standing and completion of KINE 2350.

HEED 4357. HEALTH PSYCHOLOGY. 3 Hours.

This course provides a broad introduction to health psychology and its interface with the medical world. The course provides a balanced presentation of the important issues in the field, as well as specific content topics that are especially relevant today to better understand health and illness. Offered as BIOL 4357, HEED 4357, and PSYC 4357. Students seeking science requirement credit must enroll in BIOL 4357; students seeking Certification in Health must enroll in HEED 4357. Prerequisite: PSYC 1315 or BIOL 1333 or BIOL 1441 or BIOL 2457; junior standing recommended.

HEED 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

HEED 4392. SPECIAL TOPICS IN HEALTH. 3 Hours.

Designed to present topics in health not currently offered in existing curriculum. May be repeated for credit when the topic changes.

Health Care Administration (HCAD)

COURSES

HCAD 5192. SPECIAL TOPICS IN HEALTH CARE ADMINISTRATION. 1 Hour.

In-depth study of selected topics in health care administration.

HCAD 5199. GRADUATE HEALTH CARE ADMINISTRATION INTERNSHIP. 1 Hour.

Practical training in health care administration. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

HCAD 5292. SPECIAL TOPICS IN HEALTH CARE ADMINISTRATION. 2 Hours.

In-depth study of selected topics in health care administration.

HCAD 5299. GRADUATE HEALTH CARE ADMINISTRATION INTERNSHIP. 2 Hours.

Practical training in health care administration. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

HCAD 5301. HEALTH CARE ADMINISTRATION I. 3 Hours.

Introduction to health care; legislation; reimbursement systems; characteristic administrative and clinical roles responsibilities and education; public health care structures; regulatory agencies; health industry trends; and advances in research and technologies.

HCAD 5302. HEALTH CARE ADMINISTRATION II. 3 Hours.

Managed care; types of health care delivery systems; national health care policy; teamwork in primary care; management of cost and quality of care; legal issues; ethical issues, including bioethics and business ethics; changing roles of health care professionals; varieties of domestic, public and international health care delivery systems.

HCAD 5305. FINANCIAL ACCOUNTING FOR HEALTH CARE INDUSTRY. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of financial accounting for health care industry.

HCAD 5306. MANAGERIAL ACCOUNTING FOR HEALTH CARE INDUSTRY. 3 Hours.

Introduction to concepts, purposes, problems, methodology, and terminology of managerial accounting for health care industry. Prerequisite: HCAD 5305.

HCAD 5310. HEALTH CARE LAW. 3 Hours.

Coverage of statutory and case law of the health care industry. Topics include patient rights and malpractice, employment and compensation matters, insurance and claims, and government agencies that regulate aspects of health services delivery.

HCAD 5315. STATISTICAL METHODS FOR HEALTH CARE ADMINISTRATORS. 3 Hours.

Statistical methods designed to prepare graduate students to become competent producers and consumers of data analyses and to use statistical thinking to approach managerial decision making. Students should be familiar with the effectiveness and limitations of various applicable techniques and should be able to recognize when additional statistical expertise is required. Topics include an introduction to evidenced based medicine, probability with an emphasis on the poor predictive value of imperfect diagnostics for rare conditions, standardizing and trending data, graphic and numeric descriptions of data, concepts of inference such as margins of error and significance of results, concepts of quality control including time series analysis and forecasting, and health care applications of discrete random variables with Poisson or binomial probability mass functions. It is recommended that students who have no recent courses in statistics take BSTAT 5301 prior to HCAD 5315.

HCAD 5316. HEALTHCARE FINANCE. 3 Hours.

Analysis of financial problems with an emphasis on the application of financial management principles and concepts to healthcare organizations.

HCAD 5330. SERVICES MARKETING MANAGEMENT. 3 Hours.

Examines conceptual frameworks and management practices particularly relevant to the health care industry. The course examines many concepts and theories from the service marketing industry and analyzes their values in crafting marketing strategies. Emphasis is on problem solving unique to the health care industry.

HCAD 5333. ECONOMICS OF HEALTH. 3 Hours.

Economic analysis applied to current health policy issues, including health expenditures, public and private insurance, incentives, provider education and labor markets, hospitals, prescription drugs, malpractice, long-term care, the Internet, and various proposals for reform. For HCAD majors only.

HCAD 5337. ETHICS, LEADERSHIP, AND TEAMWORK. 3 Hours.

Examines the leadership process, change management, and high-performance team-building strategies. Emphasis will be placed on the development of self-awareness and skills necessary to lead. Identification of values and ethical issues in health care administration will also be stressed through the application of ethical principles and theories of decision making in the analysis of ethical dilemmas.

HCAD 5340. HEALTH CARE STRATEGIC HUMAN CAPITAL. 3 Hours.

A high-performing workforce, developed through effective people practices, is the lifeblood of a health care organization. This course presents a strategic perspective on contemporary human resource management theory and practice. Key topics covered include workforce planning, staffing, diversity, development, performance measurement and management, and compensation; labor and employee relations, regulations, and legislation; as well as key concepts in team and organizational behavior.

HCAD 5350. HEALTH CARE INFORMATION SYSTEMS. 3 Hours.

Addresses issues in the development, integration, and management of health care information systems. Specifically, topics in financial information systems, patient care systems, and health care delivery applications will be discussed. Both case studies and real life applications will be studied.

HCAD 5377. HEALTH CARE QUALITY ASSESSMENT. 3 Hours.

Covers an integrated case study approach to organizational performance management resulting in the delivery of ever-improving value to patients, improved health care quality and organizational sustainability, improvement of overall organizational effectiveness as a health care provider, and organizational learning.

HCAD 5380. HEALTH CARE DATA ANALYTICS. 3 Hours.

Digitization of patient records and widespread use of digital technologies in healthcare organizations have created large repositories of data that can be analyzed to improve care delivery quality, lower cost, and increase patient satisfaction. This course introduces concepts, techniques, and tools for collecting and analyzing healthcare data to gain insight and support decision making by managers and policymakers in healthcare organizations. Data visualization techniques to effectively communicate results are also covered. The course will consist of lectures, case studies, hands-on exercises, and projects.

HCAD 5390. STRATEGIC MANAGEMENT FOR HEALTH CARE ORGANIZATIONS. 3 Hours.

Development of skills necessary for managing health care organizations from a strategic perspective. Particular emphasis is given to the use of systematic assessment of the environment and the organization, as well as the development and implementation of business strategies to meet the needs of stakeholders. Prerequisite: Must be taken in the last semester of the HCAD program.

HCAD 5392. SPECIAL TOPICS IN HEALTH CARE ADMINISTRATION. 3 Hours.

In-depth study of selected topics in health care administration.

HCAD 5398. RESEARCH IN HEALTH CARE ADMINISTRATION. 3 Hours.

Independent research under the supervision of a faculty member.

HCAD 5399. GRADUATE HEALTH CARE ADMINISTRATION INTERNSHIP. 3 Hours.

Practical training in health care administration. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Last semester of the program and permission granted by Graduate Advisor.

Health Informatics (NURS-HI)

COURSES

NURS-HI 3358. FUNDAMENTAL TELEHEALTH SKILLS. 3 Hours.

This course is designed to provide students with foundational knowledge of skills required for effective telehealth application and delivery. Prerequisite: undergraduate status or special student status.

NURS-HI 3359. INTRODUCTION TO HEALTH INFORMATICS. 3 Hours.

This course provides the foundation for the study of health informatics and covers topics such as health information management, clinical information systems (inpatient, outpatient, nursing, laboratory, pharmacy, radiology, etc.), decision support systems, clinical research and health-assessment systems, technology assessment, population health, ethics, security and confidentiality, social determinants of health and emerging trends. Prerequisite: undergraduate status or special student status.

NURS-HI 3360. INTERPROFESSIONAL COLLABORATIVE PRACTICE. 3 Hours.

This course is designed to provide students with foundational knowledge of interprofessional collaborative practice. Students will explore values and ethics for interprofessional practice, roles and responsibilities for collaborative practice, interprofessional communication strategies, and the interprofessional teamwork and team-based practice. This course will provide a framework for deliberate interprofessional collaborative practice with other health professionals to maintain a climate of mutual respect and shared values in today's complex health care environment, with the common goal of improving patient outcomes. Prerequisite: undergraduate status or special student status.

History (HIST)

COURSES

HIST 1301. HISTORY OF THE UNITED STATES TO 1865. 3 Hours. (TCCN = HIST 1301)

An introduction to the political, social, economic, and cultural history of the United States prior to 1865. This course is designed to help students understand and evaluate their society, comprehend the historical experience, and further develop reading and writing competencies and critical skills.

Prerequisite: completion of or concurrent enrollment in ENGL 1301.

HIST 1302. HISTORY OF THE UNITED STATES, 1865 TO PRESENT. 3 Hours. (TCCN = HIST 1302)

An introduction to the political, social, economic, and cultural history of the United States since 1865. This course is designed to help students understand and evaluate their society, comprehend the historical experience, and further develop reading and writing competencies and critical skills.

Prerequisite: completion of or concurrent enrollment in ENGL 1301.

HIST 1331. TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, I. 3 Hours.

An introduction to the major scientific discoveries and technological innovations that influenced the development of American society and culture from the pre-colonial period to the Civil War era. This course satisfies the University of Texas at Arlington core curriculum requirement in U.S. History.

HIST 1332. TECHNOLOGY AND SCIENCE IN AMERICAN SOCIETY, II. 3 Hours.

An introduction to the major scientific discoveries and technological innovations that have influenced American society and culture from the era of the Civil War to the present. This course satisfies the University of Texas at Arlington core curriculum requirement in U.S. History.

HIST 2311. WESTERN CIVILIZATION TO 1500. 3 Hours.

An introductory survey of the ideas, beliefs, cultures, and institutions that have influenced the development of Western civilization from the ancient world to the early sixteenth century. Examines achievements and experiences of great civilizations, emphasizing major historical figures and epochs, important ideas and religions, and factors of continuity and change.

HIST 2312. WESTERN CIVILIZATION, 1500 TO THE PRESENT. 3 Hours.

An introductory survey of the ideas, beliefs, cultures, and institutions that have influenced the development of Western civilization from the early sixteenth century to the present day with a particular focus on major trends such as exploration, industrialization, nationalism, the rise of political ideologies, and the process of globalization.

HIST 2313. HISTORY OF ENGLAND. 3 Hours. (TCCN = HIST 2313)

The history of Britain from prehistoric times to 1688. The development of English laws and institutions. Required of all pre-law majors.

HIST 2314. HISTORY OF ENGLAND. 3 Hours. (TCCN = HIST 2314)

British history from 1688 to the present. The growth of English laws and institutions. Required of all pre-law majors. HIST 2313 is not a prerequisite for this course.

HIST 2321. WORLD HISTORY TO 1400. 3 Hours.

An introduction to World History from the first human settlements to the late fifteenth-century Age of Exploration and Encounters. Introduces students to the historical forces that shaped the pre-modern world.

HIST 2322. WORLD HISTORY, 1400 TO THE PRESENT. 3 Hours.

An introduction to World History from the late fifteenth century to the present with a particular focus on major trends such as industrialism, nationalism, imperialism, socialism, and the more complex problems and conflicts of the present. Introduces students to the historical forces that have shaped the modern world.

HIST 2377. FLIGHT CULTURE AND THE HUMAN EXPERIENCE. 3 Hours.

An interdisciplinary, cross-cultural survey of the origins, development, and representation of human flight from the ancient world to the present.

HIST 3300. INTRODUCTION TO HISTORICAL RESEARCH. 3 Hours.

Introduction to the methods that historians use to conduct research and present their findings in written and oral form. Required for history majors. This course also satisfies the requirements for UNIV 1101.

HIST 3301. TECHNOLOGY, CULTURE, & SOCIETY. 3 Hours.

An investigation of the interaction between technological development, social and cultural change between the eighteenth-century Industrial Revolution and the unfolding Information Revolution of the present day. History majors may use the course to meet either their US or non-US course requirements.

HIST 3303. HISTORY OF VIDEO GAMES. 3 Hours.

A wide-ranging investigation of the development and growth of video games and the gaming industry from the origins of electronic computing to the present day. Students will be expected to play classic games (in emulation) as part of their weekly course preparations.

HIST 3305. MAPS AND MAPMAKERS. 3 Hours.

A history of geography and cartography with an emphasis on the development of geographical ideas and mapmaking from antiquity to the modern era. Offered as GEOG 3305 and HIST 3305; credit will be granted only once.

HIST 3306. HISTORY AND FILM. 3 Hours.

Using historically-themed films, this course explores the ways in which the dramatic design of film can contribute to an understanding of history. Specific topic varies. May be repeated twice if topics differ.

HIST 3307. HISTORY OF DISABILITY. 3 Hours.

Examines the history of ideas about disability, the historical lives of people with disabilities, and the history of disability policy. The growth of asylums, the rise of the eugenics movement, a historical look at freak shows, the impact of industrialization on experiences of disability, the evolution of special education, the role of ideas about disability in colonialism, the historical treatment of disabled veterans, and the development of the disability rights movement. Geographic focus will vary. Offered as HIST 3307 and DS 3307; credit will only be granted once. Prerequisite: HIST 1311 and HIST 1312.

HIST 3310. AMERICAN COLONIAL ERA TO 1763. 3 Hours.

Considers early American history within a continental and an international perspective that emphasizes conflicts between colonists and Indian peoples, the relationship between American freedom and slavery, and the growth of the British Empire in North America. Topics include religion and culture, immigration and ethnicity, and government and politics. Students will read both recent historians' works and examine primary documents from the colonial era.

HIST 3311. THE AMERICAN REVOLUTION AND THE CONSTITUTION, 1763-1789. 3 Hours.

The origins of the American Revolution, the transformation of American politics and society during the Revolutionary era, and the establishment of the new national government under the Constitution. Special topics include the development of law, civilian-military relations, slavery and race relations, and women's social experience.

HIST 3312. THE NEW NATION, 1789-1844. 3 Hours.

The development of the national government, the party system, the market economy, and reform movements from Jefferson through Jackson. The birth of modern American society and personality, with special emphasis on changing views of man, community, and society.

HIST 3313. THE COMING OF THE CIVIL WAR, 1820-1860. 3 Hours.

Sectional conflict in the United States from the Missouri Compromise of 1820 to the election of Abraham Lincoln in 1860. Southern separatism, slavery as a political issue, the antislavery movement, the breakup of the national political system, and the failure of sectional compromise. Offered as AAST 3313 and HIST 3313; credit will be granted in only one department.

HIST 3314. CIVIL WAR AND RECONSTRUCTION, 1860-1876. 3 Hours.

The background and causes of secession and the Civil War, the organization of the Confederate States of America, the progress of the war, and the attempts to solve the racial, social, political, and economic problems of the post-war period. Offered as AAST 3314 and HIST 3314; credit will be granted in only one department.

HIST 3315. THE AGE OF INDUSTRY AND REFORM, 1876-1920. 3 Hours.

Examines the emergence of the United States as an industrial and world power between Reconstruction and World War I. Investigates how corporate capitalism, labor conflicts, immigration, urbanization, racial tensions, and a diverse array of reform movements laid the foundation for a recognizably modern United States.

HIST 3316. HISTORY OF THE UNITED STATES, 1920-1945. 3 Hours.

The technological revolutions of the 1920s, the Great Depression, and World War II.

HIST 3317. CONTEMPORARY AMERICA, 1945-PRESENT. 3 Hours.

The origins of the Cold War, the problem of loyalty in a democratic nation, the Vietnam conflict, the Fair Deal and Great Society, the Civil Rights Movement, student unrest and the growth of the New Left, and the impact of Richard Nixon and subsequent presidents on American politics.

HIST 3320. AMERICAN INDIAN HISTORY. 3 Hours.

Representative Indian tribes within the continental limits of the United States from pre-history to the contemporary period. Special topics: tribal cultures, the impact of European contact, and the colonial and United States Indian policies.

HIST 3321. MEXICAN-AMERICAN HISTORY. 3 Hours.

The role of the Mexican American in the cultural and historical development of the United States with special emphasis on the Southwest. Offered as HIST 3321 & MAS 3321; credit will be granted only once.

HIST 3322. AFRICAN AMERICAN HISTORY TO 1863. 3 Hours.

History of blacks in America from their African origins to 1863. Emphasis on early African society, American slavery, and the development of black institutions and culture in the U.S. Offered as AAST 3322 and HIST 3322; credit will be granted in only one department.

HIST 3323. AFRICAN AMERICAN HISTORY SINCE EMANCIPATION. 3 Hours.

Emphasis on the transition from slavery to freedom and the political, social, and economic status of blacks in the late 19th century, 20th century black institutions and culture, and the evolution of the civil rights movements. Offered as AAST 3323 and HIST 3323; credit will be granted in only one department.

HIST 3324. U.S. WOMEN'S HISTORY. 3 Hours.

An examination of women in US politics, work and society from the colonial era to the present. Offered as HIST 3324 and WOMS 3324; credit will be granted only once.

HIST 3325. IMMIGRATION IN UNITED STATES HISTORY. 3 Hours.

Immigration to the United States from the arrival of European colonists to the present. An examination of different forms of migration--voluntary and involuntary, temporary and permanent, legal and illegal. Explores the similarities and differences between the experiences of various immigrant groups. Particular attention to the shifting definitions of race, ethnicity, and citizenship, and the impact of immigrants on society and politics in the United States. Prerequisites: HIST 1301 and HIST 1302.

HIST 3326. TWENTIETH-CENTURY AMERICAN CULTURAL HISTORY. 3 Hours.

The development of mass culture in 20th century America. The rise and social effects of popular culture, especially radio, film, television, advertising, and popular music.

HIST 3327. CITIES AND SUBURBS IN UNITED STATES HISTORY. 3 Hours.

Traces urban and suburban development from the colonial era to the present with special emphasis not only on the transformation of their physical appearance over time, but on their changing meaning and significance in American history. Focuses on the economic base of urban and suburban expansion, as well as the social, political, and cultural dynamics of metropolitan America.

HIST 3330. U.S. LEGAL AND CONSTITUTIONAL HISTORY, COLONIAL TO 1877. 3 Hours.

Traces the adaptation of laws to changing social and economic needs with emphasis on the interrelations of law, public opinion, the legal profession, judiciary, and the political process. Topics include the transatlantic origins of American law, slavery and indentured servitude, poor laws and dependency, family law and gender, developments in criminal and civil law, and the failure of Reconstruction.

HIST 3331. U.S. LEGAL AND CONSTITUTIONAL HISTORY, 1877 TO PRESENT. 3 Hours.

Traces the adaptation of laws to changing social and economic needs with emphasis on the interrelations of law, public opinion, the legal profession, judiciary, and the political process. Topics include civil rights, disability and the law, education, abortion, the death penalty, healthcare and social welfare, gun rights, eugenics, family law, and the impact of personality on judicial decision-making.

HIST 3332. HISTORY OF AMERICAN FOREIGN RELATIONS, 1775-1913. 3 Hours.

American foreign relations from the Revolution to the outbreak of World War I. Four topics will be explored in depth: the problems of the young republic in conducting foreign policy; the acquisition of continental empire; the rise of the United States to Great Power status: the acquisition and rule of overseas empire.

HIST 3333. HISTORY OF AMERICAN FOREIGN RELATIONS, 1913- PRESENT. 3 Hours.

American diplomacy from outbreak of World War I to the present. Four topics will be explored in depth: the problems of the young republic in conducting foreign policy; the acquisition of continental empire; the rise of the United States to Great Power status: the acquisition and rule of overseas empire.

HIST 3334. HISTORICAL GEOGRAPHY OF NORTH AMERICA. 3 Hours.

Examines the intersection of the disciplines of geography and history including the creation of cultural landscapes, the spatial organization of human activities over time, and the interaction of humans with their environment over time with an emphasis on North America. Course taught as HIST 3334 and GEOG 3334. Credit will be granted in only one department.

HIST 3336. ENVIRONMENTAL HISTORY OF THE UNITED STATES. 3 Hours.

People and the natural environment from the colonial period to the present. Ecological change, conservation movements, and artistic and literary interpretations of landscape and nature. Listed as GEOG 3336 and HIST 3336; credit will be granted only once.

HIST 3337. MILITARY HISTORY OF THE UNITED STATES. 3 Hours.

U.S. military history from the colonial period to the present. The role of the military establishment in the nation, the historical evolution of its organization, and the basic strategic and tactical concepts which it has employed.

HIST 3338. HISTORY OF AMERICAN CAPITALISM, 1607-PRESENT. 3 Hours.

Covers business and economic history in the North American colonies and the United States from 1607 to the present. Topics include slavery, trade, agriculture, industry, government actions and legislation, and the experiences of people from all walks of life. The course will also explore financial downturns and the causes of those so that students develop an understanding of what causes our economy to be "good" or "bad." Previously offered as HIST 3372 and HIST 3373; credit will only be granted once.

HIST 3340. HISTORY OF THE NORTH AMERICAN WEST. 3 Hours.

An introduction to the history of the North American West and the unique migration patterns, cross-cultural interactions and conflicts, and human-environmental relationships that have defined life in this region over time.

HIST 3342. THE OLD SOUTH, 1607-1863. 3 Hours.

Colonial origins of plantation agriculture, slavery, economics, King Cotton, politics and secession. Other topics include slave cultures, religion, slave insurrections, plantation lifestyle, honor, dueling and southern belles. Offered as AAST 3341 and HIST 3342; credit will be granted in only one department.

HIST 3343. THE NEW SOUTH, 1863-PRESENT. 3 Hours.

From military defeat to Sun Belt growth. Topics include Reconstruction, segregation, migration of Southerners to the North and West, depressions, reforms, Civil Rights, Moral Majority, cultural expressions in literature and music. Offered as AAST 3343 and HIST 3343; credit will be granted in only one department.

HIST 3345. TEXAS TO 1850. 3 Hours.

Multicultural heritage of Texas from pre-Colombian period to early statehood. Cultural contact; social, economic, and political change. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach in Texas schools. Offered as HIST 3345 and MAS 3363; credit will be granted in only one department.

HIST 3346. TEXAS SINCE 1845. 3 Hours.

Texas in the Mexican-American and Civil Wars. Political events and ethnic relations since annexation. Rise of cotton, cattle, and oil industries. Literature and music in the 20th century. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach history in Texas secondary schools. Offered as HIST 3346 and MAS 3364; credit will be granted in only one department.

HIST 3347. AMERICA'S BORDERS AND BORDERLANDS. 3 Hours.

Covers the historical evolution of U.S. borders from independence to the present, and of the hybrid societies that have emerged along with them. Examines how borders have changed over time, and the people, commodities, ideas, and cultures, etc. that have crossed or straddled them. Particular attention is given to changing patterns of migration, border enforcement, and cultural hybridization, and the impact these have had on American society and politics. Offered as GEOG 3347 and HIST 3347; credit will only be granted in one department.

HIST 3348. HISTORY OF THE DALLAS-FORT WORTH METROPLEX. 3 Hours.

The growth and development of Dallas and Fort Worth from competitive 19th-century trade centers in a rural setting to cooperative high-tech cities in a rapidly urbanizing metroplex. Political, economic, cultural, and spatial changes of this area are explored within a national urban context.

HIST 3350. ANCIENT GREECE. 3 Hours.

The origins, development and diversity, successes and failures of Ancient Greece from around 1500 to 31 B.C. Near Eastern and Bronze Age background; Archaic Age and the City State; Sparta and Athens; war and imperialism; democracy and culture; Alexander the Great and the Hellenistic Era.

HIST 3351. ANCIENT ROME. 3 Hours.

The origin, development, expansion, problems, and achievements of the Roman Republic and Empire. Roots and rise of Rome; Roman Imperialism; Republic and Revolution; Roman Empire, Emperors, and Peace; Paganism and Christianity; Late Empire.

HIST 3352. MEDIEVAL EUROPE I. 3 Hours.

The rise of new states and cultures in western Europe and Byzantium after the Roman Empire's breakdown; institutional Christianity and the medieval papacy; foundation of the Holy Roman Empire; Islam at Europe's borders.

HIST 3353. MEDIEVAL EUROPE II. 3 Hours.

The formation of national, religious, and ethnic identities in Europe; intellectual developments associated with universities and new religious movements; the expansion of Europe's borders; and the confrontation of Western Christianity with Islam.

HIST 3354. THE RENAISSANCE. 3 Hours.

The political, social, and intellectual events of the Renaissance period. The rise of the modern state, the emergence of individualism, and the incipient secularization of politics, arts, and letters.

HIST 3355. EUROPE: THE REFORMATION AND COUNTER-REFORMATION. 3 Hours.

The religious reawakening and reform that swept Europe in the 16th century with its consequent religious wars. The political effects of religious reform in the remaking of European attitudes in regard to politics, society, and religion.

HIST 3356. EARLY MODERN EUROPE, 1560-1715. 3 Hours.

The major social, economic, cultural, and political developments that occurred in the major European countries from the end of the Counter-Reformation to the early eighteenth century.

HIST 3357. MILITARY REVOLUTION. 3 Hours.

Changes in European art of war from advent of gunpowder to American rebellion. Effects of these changes upon demography, political institutions, industrial production, social structure, and taxation patterns.

HIST 3360. NINETEENTH-CENTURY EUROPE, 1789-1914. 3 Hours.

This course focuses on the political, cultural, social, and intellectual developments that shaped the European continent's "long" nineteenth century. Beginning with the dawn of modern politics in the salons and streets of revolutionary Paris and concluding with cultural crises that prefigured War in the summer of 1914, it examines in detail how European political and cultural forms came to dominate the globe during the nineteenth century while setting the stage for European decline in the first decades of the twentieth.

HIST 3361. TWENTIETH-CENTURY EUROPE, 1914-1991. 3 Hours.

This course introduces students to major developments in continental European history from the outbreak of World War I to the present time. Topics include: the First and Second World Wars and the ensuing Cold War confrontation between Communism and Democracy; the mechanisms of differing forms of dictatorial rule including Fascism, Nazism, and Stalinism; recurrent waves of democratization; and more recent efforts toward European integration.

HIST 3362. TUDOR-STUART ENGLAND, 1485-1714. 3 Hours.

The legacy of the Wars of the Roses: the so called new monarchy of the Tudors; The Protestant Reformation in England; constitutional implications of the controversy between crown and Parliament; changes in family and social structures; the emergence of England as a world power.

HIST 3363. ENGLAND, 1714-1848. 3 Hours.

English history in the age of revolution. Topics include the consolidation of aristocratic power, nature of Parliament, rise of Empire and the American rebellion, the Industrial Revolution, the governance of Ireland, wars of the French Revolution and Napoleon, the challenge of democratic radicalism and the alternative of political reform or revolution.

HIST 3364. ENGLAND, 1848-PRESENT. 3 Hours.

English history from Victorian grandeur to 20th century decline. Topics include the growth of social stability and democracy, the rise to and fall from world supremacy in industry and empire, the labor and women's movements, the problem of Ireland, World Wars I and II, the emergence of the socialist state, and its post-1980 revision by recent prime ministers.

HIST 3365. EARLY FRANCE: OLD REGIME AND REVOLUTION, 1610-1799. 3 Hours.

Society and politics from the assassination of Henry IV to Napoleon. The traditions of the French people and their kings, the splendor and misery of the Age of Louis XIV, the Enlightenment of Voltaire and Rousseau, the coming of the Revolution, the Reign of Terror, and the rise of Napoleon.

HIST 3366. MODERN FRANCE, 1799-PRESENT. 3 Hours.

From Napoleon to the emergence of a modern democratic state. Social and cultural trends together with the politics of two monarchies, two empires, five republics, and two German occupations. The acceleration of change in recent decades in contrast with earlier social patterns.

HIST 3367. GERMANY IN THE WORLD, 1815-1918. 3 Hours.

Prussian, German, and Hapsburg empires. Feudal society, absolutism, German romanticism, democratization, industrialization. The challenges of nationalism, colonialism, and the collapse of the empires.

HIST 3368. GERMANY AND THE WORLD, 1918-PRESENT. 3 Hours.

Social, political, and cultural history of Germany through World War I and II, division of Germany into East and West, and ultimate unification.

HIST 3369. HISTORY OF SPAIN AND PORTUGAL. 3 Hours.

The cultural, political and economic history of the Iberian peninsula from ancient times. The medieval epoch; the Catholic Church; the overseas empires of Spain and Portugal, and their artistic achievements. The monarchist ideal, as well as political ideologies such as liberalism, Marxism, anarchism, and fascism.

HIST 3371. THE RUSSIAN EMPIRE 1552-1917. 3 Hours.

The political, social, and cultural impact of Russian imperial rule between the sixteenth and twentieth centuries; interactions between the Russian state and non-Russian nationalities during the successive stages of the Russian expansion: the Siberian frontier in the 16th and 17th centuries; the "Western Borderlands" (Eastern Europe) from the 18th century on; the Russian presence in the Caucasus and Central Asia in the 19th century. Special focus on the structure and functioning of Russian imperial institutions; types of contact between Russians and non-Russians (strategies of conquest, resistance, forms of collaboration); and the production of culture and knowledge in the service of the Russian empire.

HIST 3372. THE SOVIET UNION, 1917-1991. 3 Hours.

The history of the Soviet Union from its birth as a utopian experiment in October 1917 to its final collapse, under the weight of institutionalized corruption, bureaucratic inertia, and political repression, in December 1991. Incorporating original documents, creative works, and artifacts of popular culture, the course examines the nature and evolution of Soviet political life as well as the social structures and cultural forms that shaped the Soviet experience.

HIST 3374. EAST CENTRAL EUROPE AND THE MODERN WORLD. 3 Hours.

An examination of the eastern regions of the European continent and their relationship with the broader world between the eighteenth century and the present. Focus on ideological "making" of Eastern Europe in 18th century; the region's role in globalization; travels and exchanges between Eastern Europe and the rest of the world; imperial experiences and legacies; Eastern Europe's economic "catching up" with the West; the role of Eastern Europe in relations with Western Europe, USSR, US and the "Third World" during the Cold War and experiences behind the iron curtain.

HIST 3375. LATIN AMERICAN HISTORY: ORIGINS THROUGH INDEPENDENCE. 3 Hours.

Latin America during the colonial period of Spanish and Portuguese rule. Pre-European civilizations; Iberian backgrounds; conquest of indigenous peoples; development of colonial institutions, economic patterns, social structures, and race relations; independence from Europe. Offered as MAS 3375 and HIST 3375; credit will be granted in only one department.

HIST 3376. LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT. 3 Hours.

The evolution of six Latin American nations during the 19th and 20th centuries. The social, economic, and political development of three social groups in three regions: the Europeanized southern cone area of Argentina, Chile, and Uruguay; the indigenous culture of the Andean mountains in Peru; the African background of Brazil and Cuba. Offered as MAS 3376 and HIST 3376; credit will be granted in only one department.

HIST 3377. HISTORY OF MEXICO. 3 Hours.

Mexican history from its pre-Colonial indigenous foundation to the current situation. A social and economic analysis of the major events in Mexican history with emphasis on the 19th and 20th centuries. The major theme in this class is the growth of Mexican nationalism and its relation to region, religion, and ethnicity. Offered as HIST 3377 and MAS 3377; credit will only be granted in one department.

HIST 3378. HISTORY OF THE CARIBBEAN. 3 Hours.

A comparative history of the different societies in the Caribbean (including Cuba, Jamaica, and Haiti) with emphasis on the coming of slavery and the consequences of emancipation. Traces the development of emerging new societies from intermingling of Amerindian, African and European elements. Offered as AAST 3378 and HIST 3378; credit will be granted in only one department.

HIST 3385. AFRICAN HISTORY I. 3 Hours.

Examines African prehistory, ancient civilizations, religion, gender issues, slavery, and commerce in precolonial Africa. Offered as AAST 3385 and HIST 3385; credit will be granted in only one department.

HIST 3386. AFRICAN HISTORY II. 3 Hours.

Africa from the "Scramble for Africa" through the establishment of the various colonial systems, through the beginnings of African nationalism, to the contemporary period. The African Revolution and the development of the independent African states. Offered as AAST 3386 and HIST 3386; credit will be granted in only one department.

HIST 3390. HONORS COLLOQUIUM. 3 Hours.

A multidisciplinary course designed to meet the needs of advanced undergraduates in the Honors College.

HIST 3391. MOOT COURT. 3 Hours.

Students will develop an understanding of legal debate and legal history through the study of constitutional law and legal research methods in preparation for simulated oral arguments before the Supreme Court of the United States. Attendance at statewide competitions required. May be repeated for total of 6 hours credit. This course does not satisfy distribution requirements.

HIST 3392. ARCHIVES AND THE ARCHIVES PROFESSION. 3 Hours.

This course provides an overview of the archival profession and the work that archivists do. Students develop an understanding of the historical development of the field of archives and learn about current issues, trends, and theories that are shaping the profession. Students also study the role of the archivist and the use of archives and historical collections by a range of users and become familiar with the theoretical considerations that underlie the core functions of archival administration. The course explores the legal and ethical responsibilities of archivists, as well as the codes of conduct and ethics that have been developed and debated within the profession. Students gain an understanding of how new technologies and digital records are shaping the way that archivists do their work and the skills they must develop to perform core archival functions with digital records.

HIST 3395. SELECTED TOPICS IN HISTORY. 3 Hours.

Subjects of immediate interest in the various fields of history. May be repeated for credit when the topic changes.

HIST 4191. UNDERGRADUATE CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in designated areas with tenure-track/tenured faculty. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the undergraduate advisor. The faculty member may petition for the student's exemption from these prerequisites.

HIST 4291. UNDERGRADUATE CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas with tenure-track/tenured faculty. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the undergraduate advisor. The faculty member may petition for the student's exemption from these prerequisites.

HIST 4302. WOMEN AND WORK IN TRANSATLANTIC PERSPECTIVE. 3 Hours.

Examines the history of women and work, both waged and nonwaged, in Europe and the Americas, including the United States. Highlights differences within women's work cultures as well as variation in women's employment opportunities and their efforts to achieve equality with men in the workplace, by ethnicity, region, and nation. Offered as HIST 4302 and WOMS 4302; credit will be granted only once.

HIST 4303. HISTORY OF ENGINEERING. 3 Hours.

The history of engineering from the ancient world to the present including: ancient and medieval technology and machines, experimentation and machine building in the era of the Scientific Revolution and Enlightenment, revolutions in industry and the Age of Synergy, World War II and the Cold War, engineering the modern consumer society, and engineering in the age of Big Science. Particular focus is paid to the political and social contexts of the rise and development of professional engineering, the role of engineers and engineering in shaping the modern world, engineering ethics, and cultural representations of engineers and engineering projects.

HIST 4304. REVOLUTIONS AND REVOLUTIONARIES IN HISTORY. 3 Hours.

A historical examination of the world's major revolutions, from the 16th through the 20th centuries.

HIST 4306. INTERCULTURAL TRANSFERS IN HISTORY. 3 Hours.

Recognizing the interconnectedness of the human experience in history, this class focuses on the transfers that occurred between cultures and societies during the last three centuries. Transfers occurred in all spheres of public life and contributed to the formation of modern societies and states.

HIST 4307. HISTORY OF MEDICINE. 3 Hours.

The history of medicine from the eighteenth century to the present including: pre-scientific medical beliefs and practices, the germ theory of disease, medical institutions, and the rise of the modern health care industry.

HIST 4308. GLOBAL HISTORY OF PHILANTHROPY. 3 Hours.

An examination of the historical development and dominant institutional forms of philanthropy and non-profits across the globe including foundations, endowments, voluntary associations, limited dividend companies, and cooperatives.

HIST 4309. SOCIAL DARWINISM AND EUGENICS. 3 Hours.

Examines the history of Social Darwinism, global spread of eugenic theory and practice, and history of genetics and gene manipulation. Topics may include debates over assisted suicide as well as links to disability, race, and gender.

HIST 4319. NATIVE AMERICANS, SCIENCE AND TECHNOLOGY. 3 Hours.

This course examines the relationship between Indigenous peoples, science, and technology from the pre-colonial period to the present. Case studies drawn from the Americas and Pacific Islands explore Native innovations and adaptations in agricultural engineering, transportation, weaponry, healing and medicine, and communication.

HIST 4320. RADICALISM IN MODERN AMERICA. 3 Hours.

An examination of the various movements that sought to radically alter the political and economic structure of the United States in the decades since the Civil War. This course examines the development of and differences between revolutionary movements such as anarchism, socialism, communism, and the New Left. Particular attention is given to the circumstances that gave rise to radical movements, the goals of these movements, how they attempted to achieve their goals, and the impact that they had on American society. Prerequisites: HIST 1301 and HIST 1302.

HIST 4321. WORK AND PLAY IN THE USA. 3 Hours.

Examines changing ideas and practices of work and leisure from colonial America to post-industrial society. Discusses how work and leisure rights developed according to social lines of class, gender, and race, and examines the impact of shifts in capitalist, industrial and consumer economies on those rights.

HIST 4324. NATIVE AMERICAN WOMEN. 3 Hours.

This course explores how settler colonialism affected Native women in particular ways from the late eighteenth century to the present. Topics include gender roles, kinship organization, women's work and economic activities, political and diplomatic roles, and everyday lives and relationships.

HIST 4325. HISTORY OF HIP HOP. 3 Hours.

Focused study of the origins and development of Hip Hop as an artistic genre and political and cultural movement. Topics include deejaying, emceeing, sampling and other musical techniques as well as issues of ethnic and other identities, commercialism, capitalism, cultural appropriation, and authenticity. Offered as HIST 4325 and AAST 4325; credit will be granted only once.

HIST 4327. CYBORGS AND PROSTHETICS. 3 Hours.

Explores the history, theories, and evolving representations of prosthetics, bionics, cyborgism, and the post-human. Investigates the origins and development of the prosthetics industry, historical experiences of prosthetics users, and cultural depictions and debates about human-technology interactions. Offered as DS 3327 and HIST 4327 and previously as DS 3321 and HIST 4388; credit will only be granted once.

HIST 4328. NATIVE AMERICANS IN POPULAR CULTURE. 3 Hours.

An examination of popular stereotypes of Native Americans and the manner in which these images and portrayals have effected US policy and changing perceptions of Native Americans over time. The course explores a range of visual and written media including art, film, social media, comics, hip hop, super heroes, and sports mascots.

HIST 4330. GREAT ANGLO-AMERICAN TRIALS. 3 Hours.

The historical development of criminal trial procedure in Britain and the United States: arrest and detention procedures; the roles of judge and jury; press coverage; political implications of celebrated and notorious cases.

HIST 4331. U.S. CIVIL LIBERTIES. 3 Hours.

The historical origins of individual liberties in the United States. Topics include Bill of Rights freedoms and histories of case law relating to speech, privacy, and religion.

HIST 4332. PRESIDENTIAL PERSONALITY. 3 Hours.

This course will examine in their historical contexts the dynamics of presidential behavior, personality and leadership. A select number of chief executives will be reviewed, whose backgrounds, careers, and management styles will enable students to understand the extent and limits of presidential power.

HIST 4333. COMPARATIVE CIVIL RIGHTS HISTORY. 3 Hours.

Explores the U.S. civil rights movement from a comparative perspective, exploring the African American civil rights movement, Chicano movement, women's liberation movement, gay liberation, and disability rights movement. Offered as AAST 4333 and HIST 4333; credit will be granted in only one department.

HIST 4340. HOLLYWOOD AND THE WEST. 3 Hours.

The way the American West has been portrayed and the part the Western myth has played in search for a national identity. First impressions of the new world; the West in colonial literature; fiction in the 19th and 20th centuries; art, music and film; Western themes in politics; recent variations of the Western myth; the way such developments have reflected changes in popular values and a sense of national purpose.

HIST 4341. IMAGES OF THE SOUTHWEST BORDERLANDS. 3 Hours.

Examines the changing culture, architecture, and landscapes of the American Southwest as depicted in literature, art, film, television, and advertising, including the role of popular culture and commerce in creating and marketing a regional "Southwestern style." Offered as GEOG 4341 and HIST 4341; credit will be granted only once.

HIST 4342. HISTORY OF THE NORTH AMERICAN FUR TRADE. 3 Hours.

This course examines the social, cultural, economic, and environmental history of the fur trade between 1500 and 1800. The goal of the course is to consider one of the earliest global businesses as historical precedent for many global businesses of the present-day. The following themes will be addressed: local/global intersections, cultural conflict and collaboration, capitalism and empire, people and nature.

HIST 4350. HISTORY OF ANCIENT SPORT. 3 Hours.

The nature, variety, and role of sports in ancient history. The origin and development of sport in Greece and Rome, the Olympic Games, religious and political implications, the nature of events and contests, intellectual and popular attitudes, and sport in art and society.

HIST 4351. MEDIEVAL TECHNOLOGY AND SCIENTIFIC THOUGHT. 3 Hours.

An examination of medieval technology and scientific thought in Western Europe, from c. 500 - c. 1500, with particular regard to cross-cultural influences, social context, and material culture.

HIST 4352. MEDIEVAL CRUSADE AND JIHAD. 3 Hours.

A history of the crusading movement of Western Europe, and the counter-crusades. This course will consider the events, ideas, and peoples involved, and their impacts on the civilizations of medieval Christendom, North Africa, and the Middle East.

HIST 4353. MEDIEVAL TRAVELERS. 3 Hours.

Medieval people traveled for a wide variety of reasons: exploration, survival, profit, belief. Students will study medieval travel accounts to understand how voyages and other travels illustrate cultural contact, communication, exchange, and diffusion of ideas.

HIST 4355. THE SCIENTIFIC REVOLUTION. 3 Hours.

An examination of the principal ideas, individuals, and institutions that contributed to the birth of "scientific" thinking between the mid-sixteenth and early eighteenth centuries.

HIST 4359. BRITISH CONSTITUTIONAL HISTORY. 3 Hours.

The development of the British constitution from its earliest beginnings to the present day, with special emphasis on the Anglo-Saxon institutions, the Norman constitutional development, the evolution of the major offices of the government, the development of Parliament, constitutional developments of the Stuarts, the Hanoverian constitution, the growth of democracy in the 19th and 20th centuries, and the imperial and commonwealth institutions.

HIST 4360. BRITISH EMPIRE. 3 Hours.

Examines the major parts of the empire--Ireland, Canada, West Indies, India, Australia/New Zealand, and South Africa--from 1600 to present. Also considers English attitudes and policies, and changing ideas of imperialism.

HIST 4361. THE GREAT WAR, 1914-1918. 3 Hours.

Beginning with a survey of the international Imperial order c. 1900 and concluding with an in-depth account of the human and economic costs of industrialized conflict, the course examines the fundamental global transformations wrought by history's first total war.

HIST 4362. WORLD WAR II, 1939-1945. 3 Hours.

Various aspects of the Second World War from American, European, and Asian perspectives. Origins of the conflict, national mobilization, the Holocaust, the Soviet-German confrontation, and the legacy of the most devastating conflict in modern history.

HIST 4366. HITLER'S GERMANY. 3 Hours.

A pivotal event in the history of the twentieth century, Hitler's Germany continues to elicit fascination, revulsion, and controversy. Dealing with this extraordinary and deeply disturbing historical phenomenon, the course explores the origin, nature, and demise of the Third Reich. Beginning with the rise of the National Socialism in Weimar Germany, it goes on to examine the Nazi seizure of power, the centrality of Hitler, the ideology and racial agenda of Nazism, and the destruction of the Reich in five years of war and genocide. These and other topics, such as popular opinion and everyday life, will be discussed from a variety of perspectives - cultural, political, and socioeconomic - to provide a broad interpretative framework for understanding the genesis, consolidation, and criminality of the Nazi State.

HIST 4367. HITLER: HISTORY AND IMAGE. 3 Hours.

Hitler has been vilified, ridiculed, idolized, and mythologized. This course examines Hitler, the historical figure, as well as the image of Hitler created through literature, theatre, and cinema.

HIST 4368. HISTORICAL MEMORIES OF RESISTANCE. 3 Hours.

This course focuses on the ways and methods in which Europeans chose to remember and to forget about those who resisted dictatorial rule. Students will be introduced to the processes and mechanisms that create and shape public memory.

HIST 4371. STALINISM: CULTURE & CIVILIZATION. 3 Hours.

This course examines the efforts of the Soviet state and society to build a civilization of a new type based upon the principles of Marxist-Leninist-Stalinist ideology. Emphasis on the period from 1924 through 1956.

HIST 4372. SOVIET UNION IN GLOBAL COLD WAR. 3 Hours.

The Cold War from Joseph Stalin to Mikhail Gorbachev. Themes may include: origins and end of the Cold War; roots and consequences of Soviet decision-making; relationships between the USSR, its satellite states and competing great powers; culture and ideas in the Cold War; Soviet citizens' experiences of the Cold War; legacies of the Cold War.

HIST 4374. EAST CENTRAL EUROPE IN THE AGE OF EXTREMES. 3 Hours.

Examination of political and social upheavals in East-Central Europe during the "short" twentieth century (1914-1991): Russian revolutions, left- and right-wing dictatorships and mass murder; the two world wars, communist takeover and half-century-long struggle between societies and the party-states culminating in the revolutions of 1989 and the breakup of the Soviet empire.

HIST 4376. AFRICAN DIASPORA I. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in the Atlantic, Mediterranean, and Indian Ocean areas from the earliest times to 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Diaspora. Offered as AAST 4376 and HIST 4376; credit will be granted in only one department.

HIST 4377. AFRICAN DIASPORA II. 3 Hours.

The major developments which have shaped the history of Africans and their descendants in Latin America, the Caribbean, and North America since 1800. Emphasis on the comparative history of Black Diasporic communities; linkages between Africans and their descendants in the Atlantic Diaspora. Offered as AAST 4377 and HIST 4377; credit will be granted in only one department.

HIST 4378. WEST AFRICA AND THE ATLANTIC DIASPORA. 3 Hours.

This course examines the history of West Africa and how this region was integrated into the Atlantic world through the Atlantic slave trade. The course adopts an interdisciplinary approach that integrates traditional classroom instruction with field-based learning in West Africa. This learning method, combined with cultural immersion, challenges students to develop their academic and cross-cultural knowledge and skills. Offered as AAST 4378 and HIST 4378; credit will be granted in only one department.

HIST 4379. HISTORY OF MODERN CHINA. 3 Hours.

The Ching dynasty and China's response to the West. Revolution and republic, warlords, and the Japanese occupation during World War II. Civil War and the development of the People's Republic of China.

HIST 4380. AMERICA AND THE VIETNAM WARS. 3 Hours.

American involvement in the Indochinese conflict; the causes, outcome, and consequences of the war.

HIST 4390. HISTORY INTERNSHIP. 3 Hours.

Supervised internship providing hands-on experience working in archives, records centers, museums, or other history-oriented agencies or organizations in the local community. Prerequisite: HIST 3300 with grade of C or better; permission of instructor.

HIST 4391. UNDERGRADUATE CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas with tenure-track/tenured faculty. Course may be repeated for credit once with a change in faculty. Prerequisite: Prior completion of an organized course with the intended conference faculty member, plus prior approval of the instructor and the undergraduate advisor. The faculty member may petition for the student's exemption from these prerequisites.

HIST 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

HIST 4395. HISTORY SEMINAR. 3 Hours.

Topic varies. A reading and research course focusing on a specific subject, theme, or era in history. May be used to fulfill the History major research requirement. Prerequisite: HIST 3300 with grade of C or higher.

HIST 5191. INDEPENDENT STUDY. 1 Hour.

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5291. INDEPENDENT STUDY. 2 Hours.

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5339. HISTORICAL THEORY AND METHODOLOGY. 3 Hours.

An examination of theories of historical knowledge, the history of the discipline, various historical methodologies, and research techniques. Required for all history M.A. and Ph.D. students.

HIST 5340. ISSUES AND INTERPRETATIONS IN U.S. HISTORY. 3 Hours.

A critical survey of U.S. historical scholarship from colonial times to the present. Required for all history M.A. students who are emphasizing U.S. history.

HIST 5341. APPROACHES TO WORLD HISTORY. 3 Hours.

A critical survey of approaches to the study of global and comparative history.

HIST 5342. PRINCIPLES OF ARCHIVES AND MUSEUMS I. 3 Hours.

The historical evolution of archival science, emphasizing the development of the archives profession, archival principles and theories, appraisal and acquisition techniques, the laws affecting archives, programming and outreach, automation, conservation and preservation, and administration of collections.

HIST 5343. PRINCIPLES OF ARCHIVES AND MUSEUMS II. 3 Hours.

Training in the methods and techniques of processing archives and historical manuscripts. Focuses on the day-to-day responsibilities of archivists and curators, such as appraising, accessioning, arranging, and describing collections.

HIST 5345. INTRODUCTION TO PUBLIC HISTORY. 3 Hours.

An overview of the field of public history focusing on public historians, their work, their relationship to academic historians, their accomplishments, and the ethical principles under which they operate.

HIST 5347. INTRODUCTION TO TEACHING COLLEGE HISTORY. 3 Hours.

Course discusses teaching philosophies, techniques and technologies in order to help students become more effective college instructors.

HIST 5348. TOPICS IN PUBLIC HISTORY. 3 Hours.

A detailed examination of some aspect of public history (e.g. historical editing, oral history, historic preservation). The particular topic will vary with the instructor.

HIST 5349. INTRODUCTION TO TRANSATLANTIC HISTORY. 3 Hours.

Provides overview of the field of Transatlantic history and introduction to historiographical debates.

HIST 5350. HISTORY OF CARTOGRAPHY. 3 Hours.

A history of maps and their making and cartographic documentation as a source for understanding historical development. An aspect of the history of science and technology and the history of discovery and exploration.

HIST 5360. READING COLLOQUIUM IN EARLY TRANSATLANTIC HISTORY. 3 Hours.

Course topic varies; focuses on topics in transatlantic history prior to 1850.

HIST 5361. READING COLLOQUIUM IN LATE TRANSATLANTIC HISTORY. 3 Hours.

Course topic varies; focuses on topics in transatlantic history after 1850.

HIST 5363. READING COLLOQUIUM IN NATIONAL HISTORIES. 3 Hours.

Course topic varies; focuses on a chronological period or theme within the history of a single nation-state.

HIST 5364. READING COLLOQUIUM IN TRANSNATIONAL HISTORY. 3 Hours.

Course topic varies; focuses on topics in transnational history.

HIST 5365. READING COLLOQUIUM: TOPICS. 3 Hours.

Course topic varies; focuses on themes and topics in history.

HIST 5390. DIRECTED STUDIES FOR MASTERS STUDENTS. 3 Hours.

Directed study for masters students who have arranged to pursue specific topics of historical inquiry.

HIST 5391. INDEPENDENT STUDY. 3 Hours.

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5392. HISTORICAL PERSPECTIVES ON THE HUMANITIES. 3 Hours.

An historical inquiry into problems and issues of contemporary relevance in the humanistic disciplines. The particular problems and issues investigated will vary with the instructor.

HIST 5395. NON-THESIS CAPSTONE. 3 Hours.

Readings in the non-thesis student's final semester, directed by the three-person faculty committee supervising the student's program of work. Required of all non-thesis history M.A. students.

HIST 5398. THESIS. 3 Hours.

For thesis history M.A. students.

HIST 5644. ARCHIVAL/PUBLIC HISTORY INTERNSHIP. 6 Hours.

Work experience for either Archival or Public History students. Archival Certification: Hands-on experience in archives, records centers, or historical manuscripts repositories. Public History: Placement in a history-oriented position in a private or public agency or organization in the community.

HIST 5655. PUBLIC HISTORY INTERNSHIP. 6 Hours.**HIST 5691. INDEPENDENT STUDY. 6 Hours.**

For masters students pursuing independent research or study under the supervision of a faculty member.

HIST 5698. THESIS. 6 Hours.

For thesis history M.A. students.

HIST 5998. THESIS. 9 Hours.**HIST 6190. DIRECTED STUDIES FOR PhD STUDENTS. 1 Hour.**

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6191. INDEPENDENT STUDY. 1 Hour.**HIST 6360. RESEARCH SEMINAR IN EARLY TRANSATLANTIC HISTORY. 3 Hours.**

Research seminar focuses on primary source research on topics in transatlantic history prior to 1850.

HIST 6361. RESEARCH SEMINAR IN LATE TRANSATLANTIC HISTORY. 3 Hours.

Research course focuses on primary source research on topics in transatlantic history after 1850.

HIST 6363. SEMINAR IN NATIONAL HISTORIES. 3 Hours.

Topic varies; this is a research seminar that focuses on the history of a given nation-state.

HIST 6364. SEMINAR IN TRANSNATIONAL HISTORY. 3 Hours.

Topics vary; this is a research seminar focusing on some aspect of transnational history.

HIST 6365. SEMINAR: TOPICS. 3 Hours.

Topics vary; this is a research seminar that will focus on an historical theme or topic.

HIST 6390. DIRECTED STUDIES FOR PhD STUDENTS. 3 Hours.

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6391. INDEPENDENT STUDY. 3 Hours.

For history Ph.D. students.

HIST 6399. DISSERTATION. 3 Hours.

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HIST 6690. DIRECTED STUDIES FOR PhD STUDENTS. 6 Hours.

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6691. INDEPENDENT STUDY. 6 Hours.

For history Ph.D. students.

HIST 6699. DISSERTATION. 6 Hours.

Dissertation research.

HIST 6990. DIRECTED STUDIES FOR PhD STUDENTS. 9 Hours.

Directed study for Ph.D. students who have arranged to pursue specific topics of historical inquiry.

HIST 6991. INDEPENDENT STUDY. 9 Hours.

For history Ph.D. students.

HIST 6999. DISSERTATION. 9 Hours.

HIST 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Honors (HONR)

COURSES

HONR 1100. ENRICHMENT SERIES. 1 Hour.

Provides an introduction and orientation to the Honors College. Designed to assist students in acquiring skills for academic survival, individual success, and pursuit of their Honors degree and career possibilities. Format varies; instruction by both faculty and Honors College student peer counselors.

HONR 1304. HONORS INDEPENDENT STUDY. 3 Hours.

Independent study courses are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2104. HONORS INDEPENDENT STUDY. 1 Hour.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2106. HONORS SEMINAR. 1 Hour.

The Honors Seminar will cover topics of general interdisciplinary interest to students from a wide variety of academic disciplines. Active learning will be stressed with all students expected to both moderate and participate in classroom discussions of seminar topics. Instructors and topics offered will vary. The course may be repeated for credit as topics change.

HONR 2111. HONORS COMMUNITY SERVICE LEARNING. 1 Hour.

Intensive course in the history and practice of community service learning (CSL). Readings will include general accounts of active learning, the institutional history of CSL in higher education, and a comparative study of CSL programs across the country. Students will design and implement a CSL project based on their major, and in conjunction with an area non-profit organization. Evaluation will be based on written work on both the readings and the CSL project.

HONR 2203. HONORS SPECIAL TOPICS. 2 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 2204. HONORS INDEPENDENT STUDY. 2 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2300. SEMINAR. 3 Hours.

Team-taught interdisciplinary course that introduces knowledge and perspectives from the arts, sciences, and humanities. Designed around a theme of current or historical significance. Writing-intensive. Depending on topic, may meet the literature, fine arts/humanities or social/cultural studies requirement of the core curriculum (consult departmental advisor for details).

HONR 2304. HONORS INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2403. SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 2404. HONORS INDEPENDENT STUDY. 4 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 2435. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

HONR 3103. INDEPENDENT STUDY. 1 Hour.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3104. SPECIAL TOPICS. 1 Hour.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3203. HONORS INDEPENDENT STUDY. 2 Hours.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 3204. SPECIAL TOPICS. 2 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3303. INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 3403. HONORS INDEPENDENT STUDY. 4 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 3404. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3435. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

HONR 3504. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 3535. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. may be repeated for credit as topics change.

HONR 4000. HONORS INDEPENDENT RESEARCH. 0 Hours.

Individualized research conducted under the supervision of a faculty member. This is a zero-credit course. May be repeated. Prerequisite: membership in the Honors College, permission of the supervising faculty member, and approval by the Dean of Honors.

HONR 4103. ADVANCED SPECIAL TOPICS. 1 Hour.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR 4104. HONORS INDEPENDENT STUDY. 1 Hour.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4106. HONORS ADVANCED SEMINAR. 1 Hour.

The Honors Advanced Seminar will cover topics of general interdisciplinary interest to students from a wide variety of academic disciplines. Active learning will be stressed with all students expected to research and prepare seminar presentations and moderate class discussions on assigned seminar topics. Instructors and topics offered will vary. The course may be repeated for credit as topics change. Prerequisite: Junior or Senior status or permission of the instructor.

HONR 4144. HONORS SERVICE LEARNING OPPORTUNITIES. 1 Hour.

Credit will be given for supervised service to a community agency. The service must be related to formal coursework and approved by a faculty mentor and a degree plan advisor. Prerequisite: Junior standing or permission of the Honors College Dean. Graded Pass/Fail.

HONR 4203. ADVANCED SPECIAL TOPICS. 2 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR 4204. HONORS INDEPENDENT STUDY. 2 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4244. HONORS SERVICE LEARNING OPPORTUNITIES. 2 Hours.

Credit will be given for supervised service to a community agency. The service must be related to formal coursework and approved by a faculty mentor and a degree plan advisor. Graded Pass/Fail.

HONR 4300. ADVANCED SEMINAR. 3 Hours.

Integrates substantive knowledge in the arts, sciences, and humanities around a theme of current or historical significance. May meet the Social/Cultural Studies requirement of the core curriculum.

HONR 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR 4304. HONORS INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4310. HONORS STUDY ABROAD. 3 Hours.

Interdisciplinary course in an out-of-country location around a theme or topic appropriate to the location. Journal, term papers, and/or examinations may be required. Meets the Social/Cultural Studies requirement of the core curriculum.

HONR 4320. HONORS INTERNSHIP. 3 Hours.

Supervised employment in student's area(s) of interest. Journal and term paper required. Reserved for students whose major department does not offer an Internship course.

HONR 4344. HONORS SERVICE LEARNING OPPORTUNITIES. 3 Hours.

Credit will be given for supervised service to a community agency. The service must be related to formal coursework and approved by a faculty mentor and a degree plan advisor. Graded Pass/Fail.

HONR 4394. HONORS SENIOR RESEARCH THESIS/CREATIVE PROJECT. 3 Hours.

A research thesis or creative project and oral presentation are required for the Honors degree. In consultation with the faculty thesis supervisor and the Honors Dean, a program of research and writing will be arranged. Planning for the Honors Thesis/Creative Project should begin early in the student's junior year. For more extensive projects additional credit may be earned. Full details for completing the Honors Research Thesis/Creative Project are provided on the Honors website, <http://www.honors.uta.edu/thesis/>. This course is reserved for departments and programs that do not list dedicated thesis courses in their inventories.

HONR 4403. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 4404. HONORS INDEPENDENT STUDY. 4 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4435. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

HONR 4503. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR 4504. HONORS INDEPENDENT STUDY. 5 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR 4535. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format and prerequisites to be determined by faculty offering the course. May be repeated for credit as topics change.

Honors-Architecture (HONR-AR)

COURSES

HONR-AR 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-AR 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-AR 4604. HONOR INDEPENDENT STUDY. 6 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

Honors-Business (HONR-BU)

COURSES

HONR-BU 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-BU 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-BU 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-BU 4311. LEADER AS COMMUNICATOR. 3 Hours.

Helps students excel in written and oral communication skills. Assignments include writing short papers, making oral presentations, and learning to critique one another. This course provides a perspective on leadership in formal organizations with emphasis on communication, exercising influence, decision-making, and conflict management. Prerequisite: Admission to the Goolsby Leadership Academy.

HONR-BU 4312. LEADER ETHICS. 3 Hours.

Addresses rule-based, consequential, and virtue ethics by examining intentions, actions, and consequences of individual behavior. The course emphasizes the development of character and personal integrity. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

HONR-BU 4313. SENIOR EXECUTIVE LEADERSHIP. 3 Hours.

Course consists of a series of lectures by executives who provide insight into their own unique leadership skills and development. Prerequisite: Admission to the Goolsby Leadership Academy.

HONR-BU 4314. GLOBAL MARKET PLACE. 3 Hours.

Designed to assist Goolsby Fellows to be competent in an intercultural world. The heart of the course is aimed at appreciating human diversity and variance. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

HONR-BU 4315. EXECUTIVE INTERNSHIP. 3 Hours.

This internship experience places Goolsby Fellows in field settings with executives from the college's Advisory Council and other executive leaders in specialized areas for students. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

HONR-BU 4394. HONORS SENIOR RESEARCH THESIS/CREATIVE PROJECT. 3 Hours.

A research thesis or creative project and oral presentation are required for the Honors degree. In consultation with the faculty thesis supervisor and the Honors Dean, a program of research and writing will be arranged. Planning for the Honors Thesis/Creative Project should begin early in the student's junior year. For more extensive projects additional credit may be earned. Full details for completing the Honors Research Thesis/Creative Project are provided on the Honors website, <http://www.honors.uta.edu/thesis/>. This course is reserved for departments and programs that do not list dedicated thesis courses in their inventories.

Honors-Education (HONR-ED)

COURSES

HONR-ED 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

Honors-Engineering (HONR-EN)

COURSES

HONR-EN 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-EN 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-EN 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-EN 4304. HONORS INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis with permission of an instructor. Performance may be assessed by oral or written examination, research or review paper as arranged.

Honors-Liberal Arts (HONR-LA)

COURSES

HONR-LA 1301. HONORS COMPOSITION I. 3 Hours.

Introduction to academic writing, with an emphasis research, synthesis of sources, and argumentation.

HONR-LA 1302. HONORS COMPOSITION II. 3 Hours.

A course in academic argumentation in which students learn how to conduct and organize research. The course typically focuses on a particular topic, which will vary by section and be interdisciplinary in nature. Successful completion satisfies the second-semester writing requirement. Prerequisite: membership in the Honors College.

HONR-LA 2300. SEMINAR. 3 Hours.

Team-taught interdisciplinary course that introduces knowledge and perspectives from the arts, sciences, and humanities. Designed around a theme of current or historical significance. Writing-intensive. Depending on topic, may meet the literature, fine arts/humanities or social/cultural studies requirement of the core curriculum (consult departmental advisor for details).

HONR-LA 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-LA 2407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

HONR-LA 3300. LIBERAL ARTS HONORS SEMINAR. 3 Hours.

Intensive small class lecture or seminar course addressing basic issues in various liberal arts disciplines. Topics will vary.

HONR-LA 3303. INDEPENDENT STUDY. 3 Hours.

Independent study topics are arranged on an individual basis. Performance may be assessed by oral or written examination, research or review paper as arranged.

HONR-LA 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-LA 3310. POLITICAL & COMMUNITY LEADERSHIP. 3 Hours.

This course examines theories and concepts of leadership in political and community contexts, and processes by which power and authority are exercised to foster political change in one's community. Emphasis is placed on application to actual leadership situations.

HONR-LA 3404. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-LA 3407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

HONR-LA 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-LA 4407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

Honors-Nursing (HONR-NU)

COURSES

HONR-NU 2203. HONORS SPECIAL TOPICS. 2 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-NU 3504. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-NU 4203. ADVANCED SPECIAL TOPICS. 2 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-NU 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-NU 4403. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-NU 4503. HONORS SPECIAL TOPICS. 5 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

Honors-Science (HONR-SC)

COURSES

HONR-SC 1313. LIBERAL ARTS HONORS MATHEMATICS. 3 Hours.

Topics include the development of the real number system, different orders of infinity, the idea of convergence and how this led to the development of calculus, the concept of a mathematical proof, the conceptual foundations of topology, networks, knot theory, and modern applications of mathematics to the sciences. Crosslisted with MATH 1313.

HONR-SC 1426. HONORS CALCULUS I. 4 Hours.

A more rigorous introduction to calculus than that provided by MATH 1426. Assignments include essay questions and problems that involve research on the development, meaning, and history of concepts emphasized in the course. Students are challenged to master more difficult material in a broader disciplinary context. Credit will be given for MATH 1426 OR HONR 1426 but not both.

HONR-SC 1443. HONORS GENERAL TECHNICAL PHYSICS. 4 Hours.

This course emphasized the methodology of physics, and is closely integrated with calculus. It introduces modern ideas and theories into introductory physics (as opposed to the traditional PHYS 1443, which covers physics before 1900). The Honors course stresses problem-solving skills over the learning of algorithms. Credit will be given for PHYS 1443 or HONR-SC 1443 but not both.

HONR-SC 1444. HONORS GENERAL TECHNICAL PHYSICS II. 4 Hours.

This course emphasized the methodology of physics, and is closely integrated with calculus. It introduces modern ideas and theories into introductory physics (as opposed to the traditional PHYS 1444, which covers physics before 1900). The Honors course stresses problem-solving skills over the learning of algorithms. Credit will be given for PHYS 1444 or HONR 1444 but not both.

HONR-SC 1451. HONORS CELL & MOLECULAR BIOLOGY. 4 Hours.

This course is designed for students who seek a challenge beyond that of the traditional introductory BIOL 1441. Advanced concepts are presented and their applications in contemporary society are explored. This is a rigorous lecture course supplemented with a variety of research-related reading and writing assignments. Credit will be given for BIOL 1441 or HONR 1451 but not both.

HONR-SC 1452. HONORS STRUCTURE AND FUNCTION OF ORGANISMS. 4 Hours.

This course is designed for students who seek a challenge beyond that of the traditional introductory BIOL 1442. Advanced concepts are presented and their applications in contemporary society are explored. This is a rigorous lecture course supplemented with a variety of research-related reading and writing assignments. Credit will be given for BIOL 1442 or HONR 1452 but not both.

HONR-SC 1461. HONORS GENERAL CHEMISTRY I. 4 Hours.

This course is designed for students who seek a challenge beyond that of the traditional introductory CHEM 1441. Many key concepts will not be explained in traditional lecture fashion. Rather, they will be probed by the class while working collaborative exercises. Students will also complete a collaborative digital video project. Credit will be given for CHEM 1441 or HONR 1461 but not both.

HONR-SC 1462. HONORS GENERAL CHEMISTRY II. 4 Hours.

This course is designed for students who seek a challenge beyond that of the traditional introductory CHEM 1442. Many key concepts will not be explained in traditional lecture fashion. Rather, they will be probed by the class while working collaborative exercises. Students will also complete a collaborative digital video project. Credit will be given for CHEM 1442 or HONOR 1462 but not both.

HONR-SC 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-SC 2407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

HONR-SC 2425. HONORS CALCULUS II. 4 Hours.

A more rigorous introduction to calculus than that provided by MATH 2425. Assignments include essay questions and problems that involve research on the development, meaning, and history of concepts emphasized in the course. Students are challenged to master more difficult material in a broader disciplinary context. Credit will be given for MATH 2425 or HONR 2425 but not both.

HONR-SC 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-SC 3305. HONORS SCIENTIFIC AND TECHNICAL WRITING. 3 Hours.

A more intensive section of BIOL 3305, offering additional reading, writing, and presentation assignments based on classic and influential literature in the biological sciences and greater attention to detail in communicating scientific and technical information efficiently and accurately for specialist audiences. Credit will be given for BIOL 3305 or HONR 3305 but not both.

HONR-SC 3407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

HONR-SC 4103. ADVANCED SPECIAL TOPICS. 1 Hour.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-SC 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

HONR-SC 4403. HONORS SPECIAL TOPICS. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-SC 4407. HONORS SPECIAL TOPICS WITH LAB. 4 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change. Completion of lab required. Prerequisite: Membership in the Honors College; other requirements as determined by faculty teaching the course.

Honors-Social Work (HONR-SW)

COURSES

HONR-SW 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-SW 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

Honors-Visual & Performing Arts (HONR-VP)

COURSES

HONR-VP 2103. SPECIAL TOPICS. 1 Hour.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-VP 2300. SEMINAR. 3 Hours.

Team-taught interdisciplinary course that introduces knowledge and perspectives from the arts, sciences, and humanities. Designed around a theme of current or historical significance. Writing-intensive. Depending on topic, may meet the literature, fine arts/humanities or social/cultural studies requirement of the core curriculum (consult departmental advisor for details).

HONR-VP 2303. HONORS SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-VP 3304. SPECIAL TOPICS. 3 Hours.

Topics, format, and prerequisites to be determined by faculty offering the courses. May be repeated for credit as topics change.

HONR-VP 4303. ADVANCED SPECIAL TOPICS. 3 Hours.

Advanced special topics in Honors. May be repeated for credit as topics change.

Humanities (HUMA)

COURSES

HUMA 2301. HUMANITIES I. 3 Hours. (TCCN = HUMA 1301)

An interdisciplinary study of the basic cultural patterns and traditions that inform our thinking. Provides a cross-cultural and cross-disciplinary introduction to the humanities, including literature, history, and philosophy. Credit may not be received for both PHIL 2301 (the predecessor course) and HUMA 2301.

HUMA 3300. MEDICAL HUMANITIES. 3 Hours.

Explores the ethical, historical, literary, philosophical, and religious dimensions of medicine or health. Includes instruction in art, cultural studies, economics, ethics, history, literature, medical anthropology, philosophy, religion and spiritual thought, science and technology, visual art, and writing.

HUMA 3301. INTERDISCIPLINARY RESEARCH METHODS. 3 Hours.

Research methods required for reading and writing across disciplinary lines in the humanities. Background information and reading in authors (for example, A.O. Lovejoy, Josiah Royce, LeRoy Ladurie, and Kenneth Burke) who have taken a wide cultural perspective; bibliographical and research methods; and techniques for writing major term papers and undergraduate theses involving more than one discipline.

HUMA 3340. TOPICS IN HUMANITIES. 3 Hours.

In-depth treatment of an issue or topic in or relevant to the humanities tradition. May be repeated for credit with permission of the department.

HUMA 3350. CLINICAL MEDICINE AND THE HUMAN EXPERIENCE. 3 Hours.

This is a survey course aimed at exploring the human experience through the lens of the different medical specialties and diverse patient perspectives. The course employs a variety of learning aids, such as videos, narratives, and visits by relevant professionals.

HUMA 3360. AMERICAN HEALTHCARE THROUGH FILM. 3 Hours.

This course explores current issues in American healthcare through the lens of film. Each class will include a movie and associated discussion pertaining to that theme. The final project will include a brief, student produced film with written synopsis, created with a home device such as a cell-phone, related to a current health issue.

HUMA 4191. CONFERENCE COURSE IN MEDICAL HUMANITIES. 1 Hour.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in the medical humanities. Requires permission of the department chair and the instructor.

HUMA 4291. CONFERENCE COURSE IN MEDICAL HUMANITIES. 2 Hours.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in the medical humanities. Requires permission of the department chair and the instructor.

HUMA 4301. CULTURE AND IDEAS. 3 Hours.

The way basic ideas of culture have been analyzed and applied in the humanities, recognizing that cultural analysis is not limited to a single discipline or perspective. Authors from the Classical and Renaissance periods who have sought to understand the interrelation of cultural development, the production of cultural artifacts (the fine arts, literary and dramatic arts, history), and philosophy. The work of major cultural analysts in a critical and historical context.

HUMA 4302. SOCIAL AND POLITICAL THEORY. 3 Hours.

Examination of the major social and political theories that have shaped Western thought. Topics may include the concept of the social, the role of the individual, the public/private distinction, and gender relations. Focus on particular theorists as well as issues.

HUMA 4391. CONFERENCE COURSE IN MEDICAL HUMANITIES. 3 Hours.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in the medical humanities. Requires permission of the department chair and the instructor.

HUMA 4395. INTERNSHIP IN MEDICAL HUMANITIES. 3 Hours.

Supervised internship through which students apply the academic skills they have acquired in medical humanities and bioethics courses. Interns work at an approved business, academic, or non-profit site that focuses on an area of medical humanities or bioethics. This course is intended to be completed as one of the final courses for the minor in Medical Humanities and Bioethics but is not required to earn the minor. Prerequisite: HUMA 3300 and PHIL 3319. Permission of director Medical Humanities and Biomedical Ethics is required.

HUMA 5300. CONCEPTUAL BASES OF THE HUMANITIES. 3 Hours.

Introduces students to fundamental concepts, methods, and issues central to the humanities. Particular attention will be given to a variety of epistemological approaches in humanistic inquiry, to theories of interpretation as applied to cultural constructs, and to recent issues and problems in the humanities. Required of all MA candidates in the humanities.

HUMA 5303. APPROACHES TO THE STUDY OF CULTURE. 3 Hours.

Examination of the theories and methods by which culture and society have been studied. Discussion of the relationship among natural scientific, social scientific, and humanistic methodologies. Fulfills Foundation requirement.

HUMA 5304. CULTURAL STUDIES. 3 Hours.

The study of how elements of culture, particularly texts, practices, and material objects, are interconnected with structures of power. Topics may include analyses of cultural studies in various humanities disciplines, theoretical approaches to cultural studies, and the relationship between cultural studies and the traditional humanities disciplines. Fulfills Foundation requirement.

HUMA 5306. CRITICISM, LANGUAGE, AND HISTORY. 3 Hours.

This course examines the ways in which linguistics, literary criticism and history have intersected in 20th century thought. Areas of analysis may include anthropology, historiography, poetics, rhetoric, semiotics, and/or structuralism. Fulfills Foundation requirement.

HUMA 5307. TOPICS IN GENDER STUDIES. 3 Hours.

Analysis of the role of gender studies in the humanities disciplines. Topics may include examination of the methods and conclusions of gender analysis in history, the social sciences, philosophy, or literary criticism. Fulfills Foundation requirement.

HUMA 5391. CONFERENCE COURSE IN THE HUMANITIES. 3 Hours.**HUMA 5392. TOPICS IN THE HUMANITIES. 3 Hours.**

Selected topics of interdisciplinary interest. May be repeated for credit when subject matter changes.

HUMA 5398. THESIS. 3 Hours.

The graduate student must be registered for this when in consultation over the thesis with the supervisory committee.

HUMA 5698. THESIS. 6 Hours.

The graduate student must be registered for this course (a) when in consultation over the thesis with the supervisory committee and (b) in the semester or term in which the Master of Arts degree will be conferred.

HUMA 6391. READINGS IN THE HUMANITIES. 3 Hours.

Supervised individual study for students preparing for the comprehensive examination. May be repeated for credit.

Industrial and Manufacturing Systems Engineering (IE)

COURSES

IE 1104. INTRODUCTION TO ENGINEERING. 1 Hour. (TCCN = ENGR 1101)

Introduction to basic engineering concepts. Students will become familiar with engineering and its many sub-fields, ethical responsibilities, creativity and design.

IE 1110. FIRST SEMESTER INDUSTRIAL ENGINEERING SEMINAR. 1 Hour.

This class focuses on creating a collaborative and inclusive environment for both freshmen and transfer students to the Industrial Engineering program at UTA. This course uses team building exercises, introduces faculty to students through presentations about their classes and research, and presents the curriculum within the "big picture" of how the courses fit together to prepare students for a successful career. This course is intended to provide students the opportunity to form productive study groups and to meet and interact with their professors.

IE 1205. INTRODUCTION TO INDUSTRIAL ENGINEERING AND COMPUTING. 2 Hours.

Introduction to basic industrial engineering concepts and industrial engineering as a field. Microsoft Excel skills are stressed and the software is used to analyze collected data. Some College of Engineering requirements are satisfied by the content of this course.

IE 1325. INTRODUCTION TO DATA ANALYSIS. 3 Hours.

This course is an introduction to organizing, manipulating, analyzing, and visualizing data. Students will become proficient in using Microsoft Excel functions, pivot tables, advanced analytics modules, visualization tools and external data sources. This class will prepare students for success in future industrial engineering classes. Prerequisite: IE 1110 or concurrent enrollment.

IE 2000. UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. May be taken a maximum of three times. Prerequisite: Departmental good standing and permission of instructor.

IE 2305. COMPUTER APPLICATIONS IN INDUSTRIAL ENGINEERING. 3 Hours.

An overview of Industrial Engineering concepts and issues important to the design and operation of industrial and service systems. Students will learn the use of software tools developed to enhance the Industrial Engineer's ability such as database management, high level programming languages, electronic spreadsheets, and computer graphics. Prerequisite: IE 1325 (or IE 1205).

IE 2308. ECONOMICS FOR ENGINEERS. 3 Hours.

Methods used for determining the comparative financial desirability of engineering alternatives. Provides the student with the basic tools required to analyze engineering alternatives in terms of their worth and cost, an essential element of engineering practice. The student is introduced to the concept of the time value of money and the methodology of basic engineering economy techniques. The course will provide the student with the background to enable them to pass the Engineering Economy portion of the Fundamentals of Engineering exam. Prerequisites: MATH 1426 or concurrent enrollment.

IE 3000. UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. May be taken a maximum of three times. Prerequisite: Departmental good standing and permission of instructor.

IE 3301. ENGINEERING PROBABILITY. 3 Hours.

Topics in engineering that involve random processes. Applications and backgrounds for topics in reliability, inventory systems, and queuing problems, including absolute and conditional probabilities, discrete and continuous random variables, parameter estimation, hypothesis testing, and an introduction to linear regression, experimental design, and analysis of variance. Prerequisite: MATH 2425.

IE 3312. ECONOMICS FOR ENGINEERS. 3 Hours.

Tools and methods used for determining the comparative financial desirability of engineering alternatives. Prerequisite: MATH 1426 or concurrent enrollment.

IE 3314. ENGINEERING RESEARCH METHODS. 3 Hours.

A continuation of IE 3301. Simple and multiple linear regression analysis, design of experiments, analysis of variance, and quality control statistics. Emphasis on the application of these methods to engineering data, with computerized data analysis. Prerequisite: IE 3301 and MATH 2326.

IE 3315. OPERATIONS RESEARCH I. 3 Hours.

An introduction to the major deterministic quantitative techniques of operations research and their application to decision problems. These techniques include linear programming, integer programming, network analysis, and nonlinear programming. Modeling with these techniques is emphasized. Appropriate solvers are used. Prerequisite: MATH 2326 or concurrent enrollment.

IE 3343. METRICS AND MEASUREMENT. 3 Hours.

This course presents methods for determining the most effective utilization of effort in the man-machine environment as well as systems and methods to measure enterprise performance. Prerequisite: MATH 2326, IE 2308 or concurrent enrollment, and IE 3301 or concurrent enrollment.

IE 4000. UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. May be taken a maximum of three times. Prerequisite: Departmental good standing and permission of instructor.

IE 4191. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING. 1 Hour.

The investigation of special individual problems in industrial engineering under the direction of a faculty member. Prerequisite: Consent of instructor and undergraduate advisor.

IE 4291. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING. 2 Hours.

The investigation of special individual problems in industrial engineering under the direction of a faculty member. Prerequisite: Consent of instructor and undergraduate advisor.

IE 4300. TOPICS IN INDUSTRIAL ENGINEERING. 3 Hours.

A study of selected topics in industrial engineering. May be repeated when topics vary. Prerequisite: consent of instructor and undergraduate advisor.

IE 4302. ENGINEERING ADMINISTRATION AND ORGANIZATION. 3 Hours.

A survey of administration, control and organization of engineering and research activities. Strategic planning as well as project planning and control are discussed. Prerequisite: accepted in an UTA engineering professional program.

IE 4303. PRODUCTION AND INVENTORY CONTROL. 3 Hours.

Fundamental theory and design of systems for the control of production, inventories and their economic interaction, particularly in cases involving uncertainty of demand, of supply availability, and of production rates. Prerequisite: IE 2305, IE 3301 and IE 3315.

IE 4304. ENTERPRISE SYSTEMS. 3 Hours.

An extension of Production and Inventory Control (IE 4303), this course covers enterprise resource planning systems (ERP) in manufacturing, E-Commerce and supply chain environments. ERP software and case studies are reviewed. Prerequisite: IE 4303.

IE 4305. ENGINEERING DECISION MAKING WITH DATA USING PYTHON. 3 Hours.

This course utilizes statistical tools using Python to analyze real world data on engineering applications. Students explore file handling, database access, and various case studies using Machine Learning techniques. Machine Learning topics include Regression, Classification, Clustering, Dimensionality Reduction, Ensemble Methods, Neural Networks and Deep Learning. Some programming experience is required. Prerequisite: IE 3301 and accepted into an UTA engineering professional program.

IE 4308. QUALITY SYSTEMS. 3 Hours.

A comprehensive coverage of modern quality systems techniques to include the design of statistical process control systems, acceptance sampling, and process analysis and design. Prerequisite: IE 3301 or concurrent enrollment.

IE 4310. INDUSTRIAL AND PRODUCT SAFETY. 3 Hours.

Scientific, managerial, and legal aspects of safety hazard control and elimination in the industrial workplace. Methods for enhancing product safety. Prerequisite: accepted in an UTA engineering professional program.

IE 4314. DATA MINING AND ANALYTICS. 3 Hours.

This course provides an introduction to data mining and pattern recognition. The basic theories, algorithms, key technologies in data analytics and machine learning will be discussed. Topics include data processing and visualization methods, supervised learning methods (parametric/non-parametric algorithms, KNN, decision tree, discriminant functions, Bayesian classification models, support vector machines, neural networks), unsupervised learning methods (clustering, dimensionality reduction, recommender systems), ensemble learning methods (random forests and adaptive boosting), feature selection methods, and deep learning methods. Prerequisite: IE 3301 and accepted into an UTA engineering professional program.

IE 4315. OPERATIONS RESEARCH II. 3 Hours.

A continuation of IE 3315 that includes probabilistic techniques of operations research and their application to decision problems. Topics include Markov chains, game theory, decision analysis, multiple-objective decision making, and queuing theory. Modeling with these techniques is emphasized. Appropriate solvers are used. Projects are required. Prerequisite: IE 3301, IE 3315, and MATH 3319 (or concurrent enrollment).

IE 4318. ENTERPRISE DESIGN. 3 Hours.

This course provides students with an introduction to enterprise systems. Students will be exposed to the technology and analysis methodologies for enterprise resource planning, system design, supply chain management. Also, modern and next-generation enterprise systems will be introduced and basic data mining and machine learning methods will be covered. Prerequisite: Accepted in an UTA engineering professional program.

IE 4322. ENTERPRISE SIMULATION. 3 Hours.

The design and analysis of complex manufacturing and service systems using computer-based discrete event simulation techniques. Topics include an introduction to simulation methods, and the design, construction and analysis of discrete-event simulation models, as well as their computer applications. The course also covers the execution and management of simulation projects and the formal presentation of their findings. Prerequisite: IE 3314 and IE 4315.

IE 4323. AGENT-BASED MODELING AND SIMULATION. 3 Hours.

A series of agent-based modeling topics will be covered including the fundamental concepts of agent-based modeling approach, when to apply, and how to design and implement agent-based simulation to represent complex systems and solve decision problems. Some programming experience and Excel basic knowledge is required. Prerequisite: IE 3301 and accepted into an UTA engineering professional program.

IE 4325. AUTOMATION AND ROBOTICS I. 3 Hours.

Study of the use of industrial automation and robotics technologies in manufacturing industries. The course introduces the major classes of industrial automation. Issues associated with the successful deployment of automation are presented. Laboratory exercises focus on a practical introduction to various automation technologies. Prerequisite: IE 4303 or concurrent enrollment.

IE 4339. PRODUCT DEVELOPMENT, PRODUCIBILITY AND ENTREPRENEURSHIP. 3 Hours.

This course covers the product and process development and engineering design process with focus on entrepreneurship; design disciplines, design for manufacturing, reliability design, testing, and product support considerations are emphasized. Prerequisite: Accepted in an UTA engineering professional program.

IE 4340. ENGINEERING PROJECT MANAGEMENT. 3 Hours.

Introduces engineering project management concepts and tools needed to form, develop and manage cross-disciplinary engineering design teams. Topics include: Understanding R&D organizations, teams and work groups, job design, organizational effectiveness, and leading technical professionals. Prerequisite: Admitted into an Engineering Professional Program.

IE 4343. FACILITIES PLANNING AND DESIGN. 3 Hours.

The course covers strategic facilities planning through detailed facilities layout design. Considerations include product flow, space and activity relationships, personnel requirements, material handling, and layout. Traditional and contemporary issues in manufacturing and their impact on facilities design including receiving, shipping, warehousing, and integration with manufacturing and supporting operations are explored. Facilities planning models and the process of evaluating, selecting, preparing, presenting, and implementing the facilities plan are covered. Prerequisite: IE 4303 or concurrent enrollment.

IE 4344. HUMAN FACTORS ENGINEERING. 3 Hours.

Study of the interactions between people and their work, workplace, and the environment. Involves identification, measurement, analysis, and evaluation of interactions via human physical and mental capacities and limitations, and social interactions. Prerequisite: IE 3301, IE 2308, and IE 3343.

IE 4345. DECISION ANALYSIS IN SYSTEM DESIGN. 3 Hours.

Application of decision theory principles and tools to evaluate alternative hardware/software system architectures based on technical design requirements such as mass, reliability, power and life cycle costs. Systems engineering trade study approaches are presented with applications in defense, aerospace, energy and related areas. Methods for dealing with technical data risk and uncertainty are presented. Prerequisite: Accepted into an engineering professional program at UTA.

IE 4349. INDUSTRIAL AUTOMATION. 3 Hours.

Project oriented course focusing on the design, implementation, and operation of technology. An in-depth study of the design and deployment of industrial technology to meet the needs of high-precision, multi-product environments. The laboratory activities associated with the course provide practical experience. Prerequisite: IE 4325.

IE 4350. INDUSTRIAL ENGINEERING CAPSTONE DESIGN. 3 Hours.

This course provides an open-ended design experience through the planning and design of an enterprise in which the student must demonstrate the ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy. Contemporary project management techniques are utilized. The design experience project includes submittal of several written and oral presentations culminating in a written project report and oral presentation at the end of the semester. IE 4350 is the capstone design course and draws on material from the total industrial engineering curriculum. The impact of engineering design on society is discussed. Prerequisite: all required 4000 level IE courses or concurrent enrollment.

IE 4351. FUNDAMENTALS OF SYSTEMS ENGINEERING. 3 Hours.

This course includes a survey of concepts, principles and processes required to engineer complex systems throughout the life-cycle from concept through disposal. Topics include systems thinking, technical and management processes, life cycle models, sustainability, and model-based systems engineering. Prerequisite: Accepted into an engineering professional program at UTA.

IE 4378. INTRODUCTION TO UNMANNED VEHICLES SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

IE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in IE 4378 and admission to the UVS certificate program.

IE 4391. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING. 3 Hours.

The investigation of special individual problems in industrial engineering under the direction of a faculty member. Prerequisite: Consent of instructor and undergraduate advisor.

IE 5191. ADVANCED STUDIES IN INDUSTRIAL ENGINEERING. 1 Hour.

Individually approved research projects and reading courses in industrial engineering. Such individual studies will be graded A, B, C, D, F or X. Subject to the approval of the Graduate Advisor, IE 5191, IE 5291 and IE 5391 may be repeated as the topics change. In addition, work on a thesis substitute will be performed under IE 5391. In this case, IE 5391 is graded P/F/R.

IE 5291. ADVANCED STUDIES IN INDUSTRIAL ENGINEERING. 2 Hours.

Individually approved research projects and reading courses in industrial engineering. Such individual studies will be graded A, B, C, D, F or X. Subject to the approval of the Graduate Advisor, IE 5191, IE 5291 and IE 5391 may be repeated as the topics change. In addition, work on a thesis substitute will be performed under IE 5391. In this case, IE 5391 is graded P/F/R.

IE 5300. TOPICS IN INDUSTRIAL ENGINEERING. 3 Hours.

A study of selected topics in industrial engineering. May be repeated when topics vary. Prerequisite: consent of instructor and Graduate Advisor.

IE 5301. INTRODUCTION TO OPERATIONS RESEARCH. 3 Hours.

An introduction to the major quantitative techniques of operations research and their application to decision problems. These techniques include linear programming, integer programming, network analysis, nonlinear programming, game theory, Markov Chains, and queuing theory. Modeling with these techniques is emphasized. Appropriate solvers are used. Prerequisites: IE 3301 or IE 5317 or equivalent.

IE 5302. INTRODUCTION TO INDUSTRIAL ENGINEERING. 3 Hours.

An introduction to the fundamental principles of Industrial Engineering. Topics include Human Factors Engineering, Metrics and Measurement, Production and Inventory Control, Quality Systems, Simulation and Optimization, and Facilities Planning and Design. Prerequisite: Graduate standing.

IE 5303. QUALITY SYSTEMS. 3 Hours.

Principles and practices of industrial quality control. Topics include the Deming philosophy, process improvements, statistical process control, process capability analysis and product acceptance. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 5304. ADVANCED ENGINEERING ECONOMY. 3 Hours.

Analysis of capital investments in engineering and technical projects. Topics include decision analysis methods, cash flows, revenue requirements, activity-based analysis, multi-attribute decisions, probabilistic analysis and sensitivity/risk analysis. Prerequisite: graduate standing.

IE 5305. LINEAR OPTIMIZATION. 3 Hours.

Theory and applications of linear programming including linear programming formulation, the simplex method, duality, revised simplex, general linear programs, infeasibility, the dual simplex method, column generation, and network flow problems. Prerequisite: IE 3315, or IE 5301, or equivalent.

IE 5306. DYNAMIC OPTIMIZATION. 3 Hours.

Dynamic optimization methods including dynamic programming, the calculus of variations, and optimal control theory. Emphasis is on the modeling and solution of practical problems using these techniques. Prerequisites: IE 5317 or equivalent or IE 5318 concurrent.

IE 5307. QUEUEING THEORY. 3 Hours.

The fundamentals of queueing theory including Markovian birth-death models, networks of queues, and general arrival and service distributions. Prerequisites: IE 3301, or IE 5317, or equivalent.

IE 5309. STOCHASTIC PROCESSES. 3 Hours.

The study of probabilistic model building including the fundamentals of both discrete and continuous Markov chains, queueing theory and renewal theory. Prerequisite: IE 3301, IE 5317, or equivalent.

IE 5310. PRODUCTION SYSTEMS DESIGN. 3 Hours.

Methods for the design and analysis of manufacturing and logistics systems. Emphasis is placed on reducing cycle time, increasing throughput, lowering variation, and improving both quality and customer responsiveness through modeling techniques. Prerequisites: IE 3301, or IE 5317, or equivalent; IE 5301 current or equivalent; IE 5329 concurrent or equivalent.

IE 5311. DECISION ANALYSIS. 3 Hours.

A survey of methods for making optimal decisions. Topics include decision models, formal logic, fuzzy controls, statistical decision theory, game theory, multiobjective decisions, stochastic programming, information theory and qualitative aspects of the decisions. Prerequisites: IE 3301, or IE 5301, or equivalent.

IE 5312. PLANNING AND CONTROL OF ENTERPRISE SYSTEMS. 3 Hours.

A continuation of IE 5329 covering enterprise resource planning systems (ERP) and other advanced production control techniques. Computer modeling is emphasized. Prerequisite: Graduate standing.

IE 5313. RELIABILITY AND ADVANCED QUALITY CONTROL TOPICS. 3 Hours.

Includes advanced quantitative topics in reliability design and quality control. Management of reliability and quality control functions are also included. Prerequisites: IE 4308, or IE 5303, or equivalent.

IE 5314. SAFETY ENGINEERING. 3 Hours.

Methods to identify, measure, analyze, and evaluate safety hazards in the workplace. Scientific and managerial methods to prevent or control safety hazards. Prerequisite: graduate standing.

IE 5315. DATA SCIENCE PROJECT MANAGEMENT. 3 Hours.

Management and control of multifaceted science and engineering projects. Coordination and interactions between client and various service organizations. Project management selection. Typical problems associated with various phases of project life cycle. Case studies illustrate theories and concepts. Students will be expected to demonstrate an understanding of communication and collaboration, including workflow, reproducibility, codebase management, collaboration tools, oral and written communication, presentation, storytelling, and team management, as well as ethics, such as understanding bias, fairness, credibility and misinformation, security, privacy and codes of conduct. Prerequisite: Graduate standing.

IE 5317. INTRODUCTION TO PROBABILITY AND STATISTICS. 3 Hours.

Topics include descriptive statistics, set theory, combinatorics, mathematical expectation, probability distributions, confidence interval estimation, regression analysis, analysis of variance, and design of experiments. Prerequisite: MATH 1426, or equivalent and permission of advisor.

IE 5318. APPLIED REGRESSION ANALYSIS. 3 Hours.

An in-depth study of one predictor variable followed by the matrix approach to multiple linear regression. Topics include estimation, prediction, analysis of variance, residual analysis, transformations, multicollinearity, model selection, weighted least squares, ridge regression, and robust regression. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 5319. ADVANCED STATISTICAL PROCESS CONTROL AND TIME SERIES ANALYSIS. 3 Hours.

Design of control schemes for statistical monitoring and control of modern manufacturing systems. Topics include charts for process control, effect of autocorrelation on SPC charts, and sampling plans for acceptance inspection. Prerequisite: IE 3301 and IE 5303 or equivalent.

IE 5320. ENTERPRISE ENGINEERING METHODS. 3 Hours.

A survey of enterprise engineering methods. Topics include system development methodology, discussion of enterprise architectures, activity modeling, business modeling, activity-based performance analysis, and process improvement. Prerequisite: Graduate standing.

IE 5321. ENTERPRISE ANALYSIS AND DESIGN. 3 Hours.

An in-depth study of techniques useful for the analysis and design of the manufacturing enterprise. This course presents an advanced process description technique that is used, with simulation and activity based costing, to facilitate analysis and design. Prerequisites: Graduate standing.

IE 5322. SIMULATION AND OPTIMIZATION. 3 Hours.

An in-depth study of discrete event simulation theory and practice. Optimization and search techniques used in conjunction with simulation experiments are introduced. A commercial simulation software application is used. Prerequisite: IE 5317 or equivalent or IE 5318 concurrent.

IE 5323. AGENT BASED SIMULATION. 3 Hours.

Topics include the fundamental concepts of agent-based modeling and implementing agent-based simulation. Students are expected to be proficient in programming and Excel. Prerequisite: IE 5317.

IE 5326. INDUSTRIAL BIOMECHANICS. 3 Hours.

The development and application of biomechanical models of physical work tasks, especially manual materials handling and hard-arm work activities. Prerequisite: Graduate Standing.

IE 5327. ADVANCED STATISTICS. 3 Hours.

Continuation of IE 5317. Topics include multiple linear regression analysis, design of experiments, analysis of variance, and quality control statistics. Prerequisite: IMSE advisor approval.

IE 5329. PRODUCTION AND INVENTORY CONTROL SYSTEMS. 3 Hours.

The fundamentals of production and inventory control systems. The economic impacts of fluctuating demand, supply availability and production rates are examined. Prerequisite: Graduate standing in IMSE, or permission of IMSE advisor.

IE 5330. AUTOMATION AND ADVANCED MANUFACTURING. 3 Hours.

The design of automated and advanced production processes for manufacturing. Topics include numerical control, robotics, group technology, just-in-time, automated inspection and flexible manufacturing systems. Prerequisite: Graduate standing in IMSE or permission of IMSE advisor.

IE 5331. INDUSTRIAL ERGONOMICS. 3 Hours.

The analysis and design of physical work, workplace, and hand tools using ergonomic principles for enhancing performance, health, and safety. Work refers mainly to whole body and hand-arm activities, while workplace refers to industrial and computerized office environments. Applications focus on people's anthropometric, musculoskeletal and psychological characteristics. Prerequisite: Graduate standing in IMSE or permission of IMSE advisor.

IE 5332. NONLINEAR PROGRAMMING. 3 Hours.

Methods for nonlinear optimization including classical theory; gradient methods; sequential unconstrained methods; convex programming; genetic algorithms; simulated annealing; and separable, quadratic, and geometric programming. Prerequisite: Graduate standing.

IE 5333. LOGISTICS TRANSPORTATION SYSTEMS DESIGN. 3 Hours.

The design and analysis of domestic and international transportation systems of people, processes, and technology. Topics include the role of transportation in the extended enterprise, transportation modeling and optimization techniques, value-added supply chain issues, and financial performance measures. Prerequisites: IE 3301, or IE 5317, or equivalent or IE 5318; IE 5301 concurrent or equivalent.

IE 5334. LOGISTICS DISTRIBUTION SYSTEMS DESIGN. 3 Hours.

The design and analysis of distribution systems of people, processes and technology. The focus is on distribution, warehousing and material handling. Topics include the role of the warehouse in the extended enterprise, warehouse planning, process design, layout, equipment selection, workforce and workplace issues, and financial performance measures. Prerequisites: IE 3301, or IE 5317, or equivalent.

IE 5335. ADVANCED OCCUPATIONAL ENVIRONMENTAL HYGIENE ENGINEERING. 3 Hours.

Interaction of workers with physical environmental agents such as heat, cold, noise, vibration, illumination, radiation, and gravity. The design of work and the workplace to control environmental stresses, and their effects on workers' performance, health and safety. Prerequisite: Graduate standing.

IE 5338. HUMAN ENGINEERING. 3 Hours.

Human structural, physiological, psychological, and cognitive capacities and limitations in the workplace, and their effects on the design of work systems to enhance productivity, and maintain health and safety. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 5339. PRODUCT DESIGN, DEVELOPMENT, PRODUCIBILITY, AND RELIABILITY DESIGN. 3 Hours.

This course covers product development and engineering design process with a focus on collaborative design. Software, manufacturing, reliability, testing, logistical and product support considerations are emphasized. Prerequisite: graduate standing.

IE 5342. METRICS AND MEASUREMENT. 3 Hours.

Work measurement, methods improvements, and performance measurement. A survey of enterprise and management measurement systems is presented. Prerequisite: IE 3301, or IE 5317 or equivalent.

IE 5343. HEALTHCARE SYSTEMS ENGINEERING. 3 Hours.

Application of continuous process improvement tools in the analysis of healthcare systems. Plan and execute studies that impact healthcare quality and costs. Evaluates the effectiveness of healthcare and administrative processes and procedures. Prerequisite: graduate standing.

IE 5345. MANAGEMENT OF KNOWLEDGE AND TECHNOLOGY. 3 Hours.

Review of contemporary issues in knowledge management, databases, decision support systems, and intelligent systems. Topics include knowledge acquisition, intelligent database design, decision support systems, data mining, knowledge transfer, and collaborative development. Prerequisite: Graduate standing.

IE 5346. TECHNOLOGY DEVELOPMENT AND DEPLOYMENT. 3 Hours.

Review of management issues in developing and implementing new technologies and methodologies into an organization. Topics include technology forecasting, management of technology based projects, technological competitiveness, technology alliances, and collaboration. Prerequisite: Graduate standing.

IE 5350. GRADUATE DESIGN CAPSTONE. 3 Hours.

Practicum consisting of professional level experience in a relevant company, agency, or institution. Students will be expected to demonstrate an understanding of communication and collaboration, including workflow, reproducibility, management, collaboration tools, oral and written communication, presentation and storytelling, and team management, as well as ethics, such as understanding bias, fairness, credibility and misinformation, security, privacy, and codes of conduct. Prerequisite: 9 hours of graduate work.

IE 5351. INTRODUCTION TO SYSTEMS ENGINEERING. 3 Hours.

This course includes a survey of concepts, principles and processes required to engineer complex systems throughout the life-cycle from concept through disposal. Topics include systems thinking, technical and management processes, life cycle models, sustainability, and model-based systems engineering. Prerequisite: Graduate standing.

IE 5352. REQUIREMENTS ENGINEERING. 3 Hours.

This course focuses on system requirements engineering and related processes and methods. System verification will also be covered. Students will be introduced to model-based systems engineering related to the processes covered in the class. Prerequisite: graduate standing in engineering or consent of instructor.

IE 5353. SYSTEMS ARCHITECTURE & DESIGN. 3 Hours.

This course focuses on systems architecting and design for complex systems. Topics covered include logical and physical system architecture analysis, system design, implementation, transition to use, and enabling products. Students will be introduced to model-based systems engineering related to the processes covered in the class. Prerequisite: graduate standing in engineering or consent of instructor.

IE 5354. MANAGEMENT OF COMPLEX SYSTEMS. 3 Hours.

This course focuses on the management of the engineering of complex systems including key systems engineering management processes. Prerequisite: graduate standing in engineering or consent of instructor. Prerequisite: graduate standing in engineering or consent of instructor.

IE 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Permission of instructor.

IE 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: Permission of instructor.

IE 5391. ADVANCED STUDIES IN INDUSTRIAL ENGINEERING. 3 Hours.

Individually approved research projects and reading courses in industrial engineering. Such individual studies will be graded A, B, C, D, F or X. Subject to the approval of the Graduate Advisor, IE 5191, IE 5291 and IE 5391 may be repeated as the topics change. In addition, work on a thesis substitute will be performed under IE 5391. In this case, IE 5391 is graded P/F/R.

IE 5398. THESIS. 3 Hours.

Graded F, R.

IE 5698. THESIS. 6 Hours.

Graded P, F, R.

IE 6197. RESEARCH IN INDUSTRIAL ENGINEERING. 1 Hour.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6297. RESEARCH IN INDUSTRIAL ENGINEERING. 2 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6301. ENTERPRISE ARCHITECTURES AND FRAMEWORKS. 3 Hours.

A survey of enterprise architectures and analysis frameworks that have been proposed for the integration of large complex enterprise systems. Emphasis is placed on state-of-the-art approaches. Prerequisite: IE 5320.

IE 6302. FACILITIES PLANNING AND DESIGN. 3 Hours.

Facilities planning through layout design. Product flow, space-activity relationships, personnel requirements, and material handling are considered, as well as receiving, shipping, warehousing, and integration with manufacturing. Facilities planning models are explored. Prerequisite: IE 3301, or IE 5317, or equivalent; IE 5301 concurrent or equivalent.

IE 6303. COMBINATORIAL OPTIMIZATION. 3 Hours.

A survey of problems and algorithms in combinatorial optimization. Topics include integer programming formulation, branch-and-bound and cutting plane algorithms, computational complexity, and polyhedral theory. Prerequisite: IE 5301 or consent of instructor.

IE 6305. ENGINEERING MANAGEMENT I. 3 Hours.

The management of the engineering function in high-technology industry with principal emphasis on the historical development of industrial management principles, decision-making and planning. Prerequisite: Graduate standing.

IE 6306. ENGINEERING MANAGEMENT II. 3 Hours.

The management of the engineering function in high-technology industry with principal emphasis on human resources and staffing, directing and leading, and controlling. Prerequisite: Graduate standing.

IE 6308. DESIGN OF EXPERIMENTS. 3 Hours.

Introduction to statistical design and analysis of experiments with applications from engineering, health care and business. Analysis includes analysis of variance, multiple comparisons and model adequacy. Designs include complete factorial, complete block, incomplete block, Latin square, Youden, two-level fractional factorial and hierarchically nested. Prerequisite: IE 3301, or IE 5317, or equivalent.

IE 6309. RESPONSE SURFACE METHODOLOGY AND COMPUTER EXPERIMENTS. 3 Hours.

Empirical model building and process optimization using experimental design and statistical modeling. The first half of the course covers first and second order models and designs, multiresponse experiments and mixture experiments. The second half introduces designs based on Latin hypercubes, orthogonal arrays, and number-based theoretic methods, plus models using kriging, multivariate adaptive regression splines and neural networks. Prerequisite: IE 6308.

IE 6310. INDUSTRIAL APPLICATIONS. 3 Hours.

Project oriented course focusing on the requirements and selection criteria for the integration of technology into simple and complex industrial activities. Prerequisite: IE 5330 or equivalent.

IE 6318. DATA MINING & ANALYTICS. 3 Hours.

An in-depth introduction to data mining and pattern recognition. Basic theories, algorithms, and key technologies in data analytics will be discussed. Case studies and real-world applications will be presented. Prerequisite: IE 3301 or IE 5317 or equivalent.

IE 6397. RESEARCH IN INDUSTRIAL ENGINEERING. 3 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6399. DISSERTATION. 3 Hours.

Graded F, R.

IE 6697. RESEARCH IN INDUSTRIAL ENGINEERING. 6 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6699. DISSERTATION. 6 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F, or W.

IE 6997. RESEARCH IN INDUSTRIAL ENGINEERING. 9 Hours.

Supervised research projects directed toward the dissertation. Graded P, R, F.

IE 6999. DISSERTATION. 9 Hours.

Supervised research projects directed toward the thesis. Graded P, R, F, or W.

IE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Information Systems (INSY)

COURSES

INSY 2303. INTRODUCTION TO M.I.S. AND DATA PROCESSING. 3 Hours.

Introduction to business data processing, computer programming, management information systems, and problems involved in business information processing systems. Selected software tools are presented and managerial applications are required. Formerly BUSA 2303; credit will be granted only once.

INSY 3300. INTRODUCTION TO PROGRAMMING. 3 Hours.

An introductory programming course that teaches students how to solve business problems using the scripting language, Python. Students will be exposed to object-oriented programming concepts, file handling, database access, and graphical user interfaces. Prerequisite: INSY 2303.

INSY 3303. COMPUTER NETWORKS AND DISTRIBUTED COMPUTING. 3 Hours.

Concepts of computer networks and data communications. Topics include principles of communication and networking protocols, hardware and software, architectures, and management issues. Formerly INSY 4304; credit will be granted only once. Prerequisite: INSY 2303.

INSY 3304. DATABASE MANAGEMENT SYSTEMS. 3 Hours.

Comprehensive coverage of database technology and applications. Data models, query processing (SQL), relational database design, and implementation. Topics covered are hierarchical, network, relational, and object-oriented models, data dictionaries, distributed databases, evaluation and selection of database management systems (DBMS), and data administration. Formerly INSY 4302; credit will be granted only once. Prerequisite: INSY 3300.

INSY 3305. INFORMATION SYSTEMS ANALYSIS AND DESIGN. 3 Hours.

This is a survey of the concepts and methods of information systems analysis and design, system development life cycle (SDLC) and methodologies associated with the SDLC. Course covers feasibility analysis, requirements definition, systems design, data design, coding design, programming, and implementation. Prerequisite: INSY 3304 and INSY 4305. INSY 4305 may be taken concurrently.

INSY 3330. INTRODUCTION TO E-COMMERCE. 3 Hours.

Examines current and projected developments in electronic commerce. Topics include the information technologies upon which electronic commerce is based, such as the telecommunications infrastructure; new perspectives on space, time and money in business; electronic consumers and advertising; the effect of e-commerce on logistics and supply chain management; electronic financial markets and digital payment mechanisms; marketing through digital storefronts and virtual corporations; new frontiers of business such as electronic auctions and business to business e-commerce; the relationship between e-commerce and successful business strategy; and finally, public policy. Formerly BUSA 3330; credit will be granted only once. Prerequisite: INSY 2303.

INSY 4191. STUDIES IN INFORMATION SYSTEMS. 1 Hour.

Advanced studies, on an individual basis, in the various fields of information systems. May be repeated for credit with consent of department chair. Prerequisite: Senior standing and permission of instructor.

INSY 4291. STUDIES IN INFORMATION SYSTEMS. 2 Hours.

Advanced studies, on an individual basis, in the various fields of information systems. May be repeated for credit with consent of department chair. Prerequisite: 90 credit hours and permission of instructor.

INSY 4305. ADVANCED APPLICATION DEVELOPMENT. 3 Hours.

This is a comprehensive Java programming course that not only covers the fundamental object-oriented programming (OOP) topics but also includes advanced Java programming concepts. Topics include structured programming concepts like control structures and methods as well as OOP concepts like encapsulation, composition, inheritance, polymorphism, dynamic binding, and interfaces. The course will also cover Swing components, exception and error handling, and the basics of file processing. Prerequisite: INSY 3300.

INSY 4306. ADVANCED SYSTEMS DEVELOPMENT. 3 Hours.

This course will address systems development, testing and deployment using Java. Students will be exposed to advanced Java concepts, including networking, multithreading, JDBC, advanced file handling, and regular expressions. The course will also cover web services and test-driven development using JUnits. Prerequisite: INSY 4305 and INSY 3305. INSY 3305 may be taken concurrently.

INSY 4307. CLOUD COMPUTING. 3 Hours.

This course teaches fundamental aspects of Cloud Computing including Virtualization, Cloud Infrastructure, Networking, and Autoscaling. Students will be taught both concept and practical skills through hands-on assignments using a major Cloud provider's environment (a base for Cloud certifications). Prerequisite: INSY 3300 or equivalent.

INSY 4312. INTRODUCTION TO CYBERSECURITY. 3 Hours.

This course provides an introduction to the field of Information Security. It covers terminology, history, management, technology and practice of Information Security. It will address topics in many of the Security Domains specified by ISC2. Prerequisite: INSY 3303.

INSY 4313. BLOCKCHAIN TECHNOLOGY. 3 Hours.

Students are introduced to fundamental concepts of blockchain technology. First, second, and third generation blockchain technologies are discussed. Students are also assigned case studies and recent research on blockchain to learn the latest developments in the industry.

INSY 4315. ADVANCED WEB DEVELOPMENT. 3 Hours.

Concepts and techniques for Web application development. The course will emphasize the use of Web development tools and techniques to develop web applications. Topics include web application development using technologies such as HTML/DHTML/XHTML, client-side scripting, XML/XSL and server-side scripting. Prerequisite: INSY 3300.

INSY 4324. ENTERPRISE BUSINESS PROCESS DESIGN. 3 Hours.

This course introduces the concepts and practices of business process design and the execution of common business processes in enterprise resource planning (ERP) systems. Students will learn to describe key business processes, identify integration points across business processes, and understand the cross-functional nature of business processes. Prerequisite: Junior standing.

INSY 4325. ENTERPRISE SYSTEMS MANAGEMENT. 3 Hours.

Enterprise systems allow for the integration of firm-wide information. This course focuses on applying IT to satisfy the needs of an organization, and to improve its performance. Knowledge of enterprise systems and how to implement and manage them is essential for managers and for making better decisions. Through case studies and research projects, this course addresses various aspects of enterprise systems and their management, including data integration and standardization. It will also cover advanced topics such as data analytics, cloud computing, Blockchain, AI, and security and privacy. Prerequisite: Prerequisite or concurrent enrollment: INSY 3305 or BANA 4308.

INSY 4331. SEMINAR IN INFORMATION SYSTEMS. 3 Hours.

Readings and discussion of special topics in information systems. May be repeated for credit with consent of department. Prerequisite: 60 or 90 credit hours and consent of instructor.

INSY 4391. STUDIES IN INFORMATION SYSTEMS. 3 Hours.

Advanced studies, on an individual basis, in the various fields of information systems. May be repeated for credit with consent of department chair. Prerequisite: 90 credit hours and permission of instructor.

INSY 4393. INFORMATION SYSTEMS INTERNSHIP. 3 Hours.

Practical training in information systems. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

INSY 5182. INDEPENDENT STUDIES IN INFORMATION SYSTEMS. 1 Hour.

Extensive analysis of an information systems topic. Prerequisite: permission of instructor.

INSY 5199. GRADUATE INFORMATION SYSTEMS INTERNSHIP. 1 Hour.

Practical training in information systems. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

INSY 5299. GRADUATE INFORMATION SYSTEMS INTERNSHIP. 2 Hours.

Practical training in information systems. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

INSY 5309. OBJECT-ORIENTED BUSINESS PROGRAMMING. 3 Hours.

Topics include fundamental programming structures, objects and classes, inheritance, and other basic concepts related to OO programming.

INSY 5335. APPLIED DATABASE MANAGEMENT. 3 Hours.

Concepts, tools, and technologies associated with the design, implementation and management of large databases are presented. Topics include data models (with emphasis on E/R model and relational model), database design and implementation, database query language, transaction management, and distributed databases. Recent advances in data management are also discussed. Use of a commercial DBMS is required. Prerequisite: INSY 5309 or INSY 5336 or approval of MSIS Graduate Advisor.

INSY 5336. PYTHON PROGRAMMING. 3 Hours.

An introductory programming course that teaches students how to solve business problems using the scripting language, Python. Students will be exposed to object-oriented programming concepts, file handling, database access, and graphical user interfaces.

INSY 5337. DATA WAREHOUSING AND BUSINESS INTELLIGENCE. 3 Hours.

This course covers concepts, tools, and technologies associated with the design and implementation of data warehousing (DW) and business intelligence (BI) applications. Topics covered include data warehouse architecture and infrastructure, dimensional modeling, Extraction Transformation and Loading (ETL), On Line Analytical Processing (OLAP), data quality, and planning and implementation of a DW & BI application. The course objectives are met through a combination of lectures, class projects and homework assignments. Hands-on experience in developing and deploying a DW & BI application is provided. Prerequisite: INSY 5335 or consent of graduate advisor.

INSY 5339. PRINCIPLES OF BUSINESS DATA MINING. 3 Hours.

This course will cover the foundations of business data mining. It will examine tools and techniques from the fields of machine learning and statistics used in practical data mining for finding, and describing, structural patterns in data. Topics may include: Knowledge representation and different types of data; Techniques for data pre-processing, cleaning, reduction, transformation, and visualization; Methods for Classification, Clustering, and Association Rules, including Decision Trees, Rules, Naive Bayes, k Nearest Neighbor, Neural Networks, Regression (linear & logistic), A-Priori, K-means, and hierarchical and density-based clustering; Performance evaluation of data mining algorithms using metrics. This course uses real world data sets and widely used statistical packages and programming languages. Prerequisite: BSTAT 5325 or equivalent. May be taken concurrently.

INSY 5340. MANAGING THE DIGITAL ENTERPRISE. 3 Hours.

This course examines a wide variety of topics important to understanding and managing the Digital Enterprise. Topics may include: Internet infrastructure and related technologies; e-business models; security; ethical, legal, global, and social concerns; and managerial and marketing issues.

INSY 5341. ANALYSIS AND DESIGN. 3 Hours.

Analysis and design phase of systems development life cycle. Topics include systems survey, functional specification, interface specification, data design, program design, system testing, and implementation. Prerequisite: INSY 5335.

INSY 5342. ADVANCED SYSTEMS DESIGN. 3 Hours.

This course provides an understanding of state-of-the-art software development methodologies, including those that are fast emerging. The focus will be on how these new methods differ from traditional practices and what research opportunities they afford to IS researchers. There will be a strong emphasis on technical as well as on socio-technical aspects of software development in the context of these new methodologies. Prerequisite: INSY 5341.

INSY 5343. DATA COMMUNICATIONS AND NETWORKING. 3 Hours.

Technological and managerial issues related to design, operation and maintenance of computer networks. Topics include communication architectures and protocols, LANs and WANs, ATM and frame relay, cellular and satellite communication, the World Wide Web, the Internet, and electronic commerce.

INSY 5345. CLOUD COMPUTING - THEORY AND PRACTICE. 3 Hours.

Cloud Computing has become an important component in Digital Transformation and Analytics. This course covers technical aspects of Cloud Computing including Software Defined Networking, Virtual Machines, Data Storage, Cybersecurity, APIs, Load Balancing, Auto-Scaling, Containers, etc. In addition to learning concepts, students will also obtain the highly demanded technical skills through hands-on assignments using a major Cloud provider's environment (a base for Cloud certifications). Business aspects from the Cloud providers' and users' perspectives will also be addressed. Prerequisite: INSY 5336 or equivalent. May be taken concurrently.

INSY 5346. BUSINESS INNOVATION THROUGH BLOCKCHAIN TECHNOLOGY. 3 Hours.

This course covers topics on components of blockchains, cryptocurrencies, smart contracts, tokens, and blockchain governance. Issues such as whether, how, and why businesses in a variety of industries are exploring Blockchain technology to devise potentially disruptive business strategies are also discussed.

INSY 5347. PRINCIPLES OF INFORMATION SECURITY. 3 Hours.

Starting with an introduction to Information Security concepts, this course will address security terminology, history, management, technology and practice based on the Security Domains specified by ISC2. The course will address strategies and tools, managerial, technological, legal, ethical and operational issues related to Information Security. Topics in developing Security Blueprint, Incidence Response, Business Continuity planning and Disaster Recovery will be addressed. Prerequisite: INSY 5343.

INSY 5350. HEALTH CARE INFORMATION SYSTEMS. 3 Hours.

Addresses issues in the development, integration, and management of health care information systems. Specifically, topics in financial information systems, patient care systems, and health care delivery applications will be discussed. Both case studies and real life applications will be studied. Prerequisite: Cohort HCAD Major.

INSY 5352. TOPICS IN OBJECT TECHNOLOGY. 3 Hours.

Coverage of current topics in Object Technology to include the study of object-oriented agents, components, object request Brokers, distributed objects and related implementations of object-oriented software. Also includes the study of design patterns in object-oriented software design. Prerequisite: INSY 5309.

INSY 5357. ENTERPRISE RESOURCE PLANNING. 3 Hours.

An introduction to enterprise resource planning (ERP), a business management paradigm that integrates all facets of the business, including planning, manufacturing, sales, finance and marketing. Course will cover both the methodology and practice of ERP using commercial software packages.

INSY 5360. COMPUTATIONAL TECHNIQUES FOR BUSINESS ANALYTICS. 3 Hours.

Computer software is the primary analytical tool for business analytics and modern research methods. Data analysts, statisticians, and researchers need technologies and skills using the computer as a tool for structuring and cleaning data sets, creating validation samples, conducting analyses, fitting models, simulating stochastic systems, model validation, and model presentation. Emphasis is placed on the use of data analytic software. Cross-listed with INSY 5360. Prerequisite: BSTAT 5325 or equivalent.

INSY 5373. INFORMATION SYSTEMS PROJECT MANAGEMENT. 3 Hours.

This course introduces students to the concepts and practices of project management and their importance to improving the success of information technology projects. Distinct aspects or characteristics of IT projects which cause these projects to behave differently in the corporate world than do other, non-technical, projects will be discussed.

INSY 5375. MANAGEMENT OF INFORMATION TECHNOLOGIES. 3 Hours.

This course covers topics on the management of information technologies (IT) from the view point of senior managers. Subjects discussed include the strategic role of IT to gain competitive advantage, Internet-based business models, building a lean and agile organization through IT, managing IT security and reliability, evolving models of IT service delivery, such as cloud computing and open source, management of outsourcing, IT governance, and ethical issues in the digital era. In addition to classroom lectures, the course relies heavily on case analysis and discussion to provide a real world perspective of issues related to IT management.

INSY 5376. BIG DATA ANALYTICS. 3 Hours.

Machine Learning and Artificial Intelligence (AI) are transforming the way organizations harness data to draw business insights. This advanced course focuses on advanced machine learning techniques and deep learning algorithms. Students will receive hands-on training on deep learning models/architectures, including sequential and functional models, convolutional neural networks (CNNs), recurrent neural networks (RNNs), long-short term memory (LSTM), autoencoders, and adversarial networks. The foundations of distributed cluster-computing frameworks, including map-reduce and Spark will also be covered. Prerequisite: INSY 5378.

INSY 5377. WEB AND SOCIAL ANALYTICS. 3 Hours.

This course introduces the concepts, techniques, and tools of collecting and analyzing digital data on how users interface with an organization through the web and social media. The Internet and mobile technologies provide the vast sources of user data that describe or imply their behaviors, experiences, and attitudes. Analyzing these web (click) stream data and social media data serves the purposes of strengthening customer relationship management, improving online marketing (e.g. advertising, recommendation, pricing), and increasing the bottom line. The course will consist of lectures, case studies, hands-on exercises, and projects. Prerequisite: BSTAT 5325 or equivalent.

INSY 5378. DATA SCIENCE: A PROGRAMMING APPROACH. 3 Hours.

The world is awash in data and companies are now trying to discern patterns and predict behaviors of both consumers and competitors to gain and sustain a competitive advantage. This course provides an in-depth understanding of data preprocessing/feature engineering as well as machine learning concepts and algorithms using Python. Students will receive hands-on training on supervised learning algorithms such as KNN, Naïve Bayes, Linear and Logistic Regression, Support Vector Machines, Decision Trees and Ensembles, and Artificial Neural Networks (ANNs). The course will also cover the foundations of Natural Language Processing (NLP), Social Network Analysis, and unsupervised learning algorithms such as K-Means, Hierarchical Clustering, t-SNE, and DBSCAN. Prerequisite: INSY 5336 and INSY 5339.

INSY 5379. BUSINESS ANALYTICS CAPSTONE PROJECT. 3 Hours.

This is a hands-on, project-oriented course that gives students an opportunity to engage with the business community and apply their learning to a real-world problem. Students will draw on their repertoire of analytical to develop an appropriate solution to a problem faced by an organization. In addition to preparing a detailed report, students will present their findings to faculty and/or members of the business community. The course places considerable emphasis on problem-solving as well as on written and oral communication skills. Prerequisite: INSY 5378.

INSY 5380. SOCIAL NETWORK ANALYSIS. 3 Hours.

The enormous amount of data being generated by social networking sites as well as social media has the potential to provide insights into the behaviors of people and/or organizations. The course covers various aspects of social network analysis (SNA), including computation of structural characteristics of a network, analysis of ego and complete networks, position and role analysis, and statistical methods used in testing hypotheses related to social networks. In addition to covering the theoretical underpinnings of social networks, the course also emphasizes the analysis of real-world social network data using popular software applications/languages. Prerequisite: INSY 5336.

INSY 5382. INDEPENDENT STUDIES IN INFORMATION SYSTEMS. 3 Hours.

Extensive analysis of an information systems topic.

INSY 5392. SELECTED TOPICS IN INFORMATION SYSTEMS. 3 Hours.

In-depth study of selected topics in information systems. May be repeated when topics vary.

INSY 5398. THESIS. 3 Hours.

Graded F,R,P.

INSY 5399. GRADUATE INFORMATION SYSTEMS INTERNSHIP. 3 Hours.

Practical training in information systems. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

INSY 5698. THESIS. 6 Hours.

Graded F, R, P.

INSY 6182. INDEPENDENT STUDY IN INFORMATION SYSTEMS. 1 Hour.

Doctoral level study of information systems topics. Prerequisite: Doctoral standing.

INSY 6301. SEMINAR IN RESEARCH FOUNDATIONS. 3 Hours.

Integrative analysis of research in information systems, including research philosophies and methodologies, contemporary research topics, dissertation research and future directions for information systems research. Prerequisite: Doctoral standing.

INSY 6306. SEMINAR IN INFORMATION TECHNOLOGIES. 3 Hours.

Focuses on contemporary technology issues in IS development and deployment. Prerequisite: Doctoral standing and INSY 6301.

INSY 6307. SEMINAR IN IS MANAGEMENT. 3 Hours.

Focuses on managerial and organizational issues in IS. Prerequisite: Doctoral standing and INSY 6301.

INSY 6382. INDEPENDENT STUDIES IN INFORMATION SYSTEMS. 3 Hours.

Extensive analysis of an information systems topic.

INSY 6392. SELECTED TOPICS IN INFORMATION SYSTEMS. 3 Hours.

Advanced doctoral level topics in Information Systems. May be repeated when topics vary. Prerequisite: Doctoral standing.

Insurance (INSU)

COURSES

INSU 4329. PROPERTY AND CASUALTY RISK MANAGEMENT. 3 Hours.

Fire, marine, and automobile insurance; business, professional, and personal liability insurance; theft insurance; disability and miscellaneous casualty coverage, surety bonds, rate structures, and multiple line contracts. Prerequisite: 60 credit hours.

INSU 4330. LIFE AND HEALTH RISK MANAGEMENT. 3 Hours.

Principles underlying the fields of life and health insurance. Types of life, health, and annuity contracts; determination of premiums; policy provisions, reserve provisions, and legal requirements. Prerequisite: 60 credit hours.

Interdisciplinary Studies (INTS)

COURSES

INTS 1310. INTRODUCTION TO POPULAR CULTURE. 3 Hours.

This course will introduce students to the role of popular culture in American society. It examines culture as a process through which people make symbolic meaning out of the world. Since everyone has access to popular culture, it constructs the way that people think about the world around them. The course will explore the creation, production, dissemination, reception and consumption of popular culture.

INTS 2301. ENVISIONING INTERDISCIPLINARITY. 3 Hours.

This foundational course is designed to introduce students to a variety of academic discourses and modes of knowledge-making, and to present some of the key concepts and aims of interdisciplinary studies. Students must complete the course with a "B" or better to enter or continue in the Interdisciplinary Studies Program.

INTS 2388. SPECIAL TOPICS INTERDISCIPLINARY STUDIES. 3 Hours.

Special topics or problems that lend themselves to an interdisciplinary approach. May be repeated for credit when the topic changes.

INTS 3320. INTERDISCIPLINARY THEORY. 3 Hours.

This course examines the important theories that form the foundation for interdisciplinary studies. These theories are put into a historical context that not only covers the origins of the disciplines, but the theories and ideas that have come to dominate the 21st century outlook on knowledge and the world. Prerequisite: Junior Standing or Permission of the instructor.

INTS 4388. SPECIAL TOPICS INTERDISCIPLINARY STUDIES. 3 Hours.

Special topics or problems that lend themselves to an interdisciplinary approach. May be repeated for credit when the topic changes. Prerequisite: Completion of INTS 2301 with a grade of B or better, or Honors College approval.

INTS 4391. INTERDISCIPLINARY STUDIES SENIOR SEMINAR. 3 Hours.

The purpose of this course is to allow students to engage with each other across disciplines and areas of interest at the end of their academic career. The seminar includes both readings on a topic of general academic interest and guest speakers from across campus to engage topics from an interdisciplinary perspective. This will provide students the opportunity to reflect on their own interdisciplinary degrees at the same time that they see how their peers envisioned interdisciplinarity. Students are encouraged to use the seminar as a foundation for the Honors College Senior Project. Prerequisite: Completion of INTS 2301 with a grade of B or better, or Honors College permission.

INTS 4392. INTERDISCIPLINARY STUDIES SERVICE LEARNING. 3 Hours.

Students work with a UTA faculty mentor to produce a detailed, substantive written project that focuses on a disciplinary problem and documents how the community service learning project helped them in addressing and/or understanding the problem. Students are encouraged to use the service learning project as a foundation for the Honors College Senior Project/INTS Thesis/Project. May be repeated with permission. Prerequisite: Completion of INTS 2301 with a grade of B or better, or Honors College permission.

INTS 4394. INTERDISCIPLINARY STUDIES SENIOR THESIS/PROJECT. 3 Hours.

Students complete sustained original research or creative activity under the guidance of a UTA faculty mentor in their area(s) of concentration. Prerequisite: Completion of INTS 2301 with a grade of B or better.

INTS 4395. INTERDISCIPLINARY STUDIES INTERNSHIP. 3 Hours.

Students work with a UTA faculty mentor to produce a detailed, substantive written project that focuses on a disciplinary problem and documents how the internship helped them in addressing and/or understanding the problem. Students are encouraged to use the internship project as a foundation for the Honors College Senior Project/INTS Thesis/Project. Prerequisites: Completion of INTS 2301 with a grade of B or better, or approval of the Honors College.

INTS 4396. INTERDISCIPLINARY STUDIES STUDY ABROAD. 3 Hours.

Students work with a UTA faculty mentor to produce a detailed, substantive written project that focuses on a disciplinary problem and documents how a study abroad experience helped them in addressing and/or understanding the problem. Students are encouraged to use the study abroad experience as a foundation for the Honors College Senior Project/INTS Thesis/Project. Prerequisite: Completion of INTS 2301 with a grade of B or better, or approval of the Honors College.

Interior Design (INTD)

COURSES

INTD 1101. ACADEMIC SUCCESS SKILLS INTERIOR DESIGN. 1 Hour.

This is a required course intended to establish a solid overview of the School of Architecture and the interior design program for all first semester UTA students who intend to declare as an interior design major. Topics for the class include: critical thinking, presentation techniques, internships, attendance of exhibitions and lectures, navigating the advising process, portfolio review and techniques, and utilizing the library and other university resources. Other topics may be discussed. This course may be taken only once for credit.

INTD 1191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Permission of the instructor and the architecture undergraduate advisor required. Restricted to interior design-intended majors.

INTD 1342. DESIGN COMMUNICATION II. 3 Hours.

Introduction to concepts of design and building of interior spaces including ideation, visualization, and creative processes to solve more complex problems. Drawing and communication skills are developed using traditional and digital methods and architectural graphic conventions emphasized. This course is offered as ARCH 1342; credit will be granted only once. Prerequisite: ARCH 1301, ARCH 1341. Restricted to Interior Design-Intended, INTD_UCOL, Architecture-Intended, and ARCH_UCOL majors.

INTD 2343. DESIGN COMMUNICATION III. 3 Hours.

This is an introductory digital design course that develops visual awareness of the digital environment enabling students to express ideas graphically. This survey course focuses on general exposure to computer visualization software from 2D and 3D modeling and rendering, to technical drawings for design and construction documents. Emphasis is placed on the relationship of digital and graphic skills to the communication of ideas in both digital and printed media. This course was previously offered as INTD 3343; credit will only be granted once. Prerequisite: ARCH 2303, ARCH 2551, credit or concurrent enrollment in ARCH 2304. Restricted to Interior Design-Intended, INTD_UCOL, Architecture-Intended, and ARCH_UCOL majors.

INTD 2391. TOPICS IN INTERIOR DESIGN. 3 Hours.

Selected topics in concepts, philosophy, and models of interior design and allied arts of design.

INTD 2552. DESIGN STUDIO: INTERIOR DESIGN I. 5 Hours.

Exploration of the concepts and methods that shape interior spaces. Introduction to information gathering, exploration of three-dimensional spatial relationships and integration of color, light, and materials. Basics of interior construction, building components and professional standards are introduced. Emphasis on concept development, diagramming, space planning and human-centered design as applied to design solutions. This course offered as INTD 2552 and ARCH 2552; credit will not be granted for both. Prerequisite: ARCH 2303, ARCH 2551, credit or concurrent enrollment in ARCH 2304 and INTD 2343. Restricted to Interior Design-intended and Architecture-intended majors.

INTD 3305. HISTORY OF INTERIOR DESIGN. 3 Hours.

This course is a chronological survey that spans from the late nineteenth century to the present and explores a range of scales (micro to macro) from furniture, lighting, fine and decorative arts in the interior, to the related fields of architecture, landscape design, and city planning. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3321. MATERIALS AND RESOURCES. 3 Hours.

Survey of materials and resources in the design of the built environment in terms of aesthetics, function, and well-being. Exploration of construction processes, application, building codes, and life-cycle cost. Emphasis on understanding and specification of materials based on performance criteria and environmental sustainability. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3322. MATERIALS AND TECHNOLOGY. 3 Hours.

A course to investigate and explore the application of new and emerging materials in the context of sustainability, innovation and global perspective. Through the integration of technology, digital fabrication and prototyping, and emerging methodologies students explore new concepts in the use of materials that contribute to design of the built environment and human-centered design. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3323. LIGHTING DESIGN. 3 Hours.

An introduction to lighting technologies, luminaires, and design concepts. Exploration of creative and functional application of light sources relative to the impact on human experience, well-being, and environmental considerations. Course content emphasizes the integrated aspects of architectural lighting in the context of building systems. Prerequisite: Junior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3338. BUILDING CODES AND REGULATIONS. 3 Hours.

This course examines laws, codes, and regulatory processes applied to the built environment including Federal, State, and local codes. Students learn the integration of codes, Federal laws, and standards in the design process and apply concepts to design solutions. Awareness of building systems is emphasized as students learn about the codes and standards organizations, communication strategies, and processes that impact the practice of interior design and their role on interdisciplinary teams. This course is offered as INTD 3338 and ARCH 4338; credit will be granted only once. Prerequisite: Credit or concurrent enrollment in INTD 3553. Junior standing in the program. Restricted to Interior Design and Architecture majors.

INTD 3357. BUILDING INFORMATION MODELING & VISUALIZATION. 3 Hours.

An introduction to Building Information Modeling software to develop interior construction detailing and rendering techniques. The course is an overview of the development of an integrated set of interior construction documents, including plans, elevations, details, and schedules as well as visualization strategies. This course is offered as INTD 3357 and ARCH 4357; credit will only be granted once. Prerequisite: INTD 2343 and Junior standing in program. Restricted to Architecture and Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3361. ENVIRONMENTAL DESIGN & SUSTAINABILITY. 3 Hours.

An exploratory course that considers the impact of design decisions on the environment. Principles of sustainable design are reviewed including theoretical frameworks, concepts, certifications and standards of practice. Environmental stewardship and ethics are introduced as a model for professional practice. Concepts of adaptive re-use, historic preservation, and restoration are introduced. Prerequisite: Junior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3553. DESIGN STUDIO: INTERIOR DESIGN II. 5 Hours.

A studio course in the application of interior design principles to complex problems. Emphasis on concept development, programming, and the integration of building systems as part of the design process. Introduction to research strategies to inform design decisions and global awareness. Advanced presentation skills and use of technology are integrated to communicate the design solution. Prerequisite: Credit or concurrent enrollment in INTD 3321, INTD 3323, and INTD 3338. Junior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 3554. DESIGN STUDIO: INTERIOR DESIGN III. 5 Hours.

A studio course in the application of interior design principles to complex problems. Emphasis on concept development, programming, and the integration of building systems as part of the design process. Introduction to research strategies to inform design decisions and global awareness. Advanced presentation skills and use of technology are integrated to communicate the design solution. Prerequisite: INTD 3553 and credit or concurrent enrollment in INTD 3357. Junior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor. Junior or senior standing in the program. Restricted to Interior Design majors.

INTD 4195. SELECTED TOPICS IN INTERIOR DESIGN. 1 Hour.

Studio and lecture course to explore and present selected topics in interior design. May be repeated for credit as topics change. Prerequisite: Permission of the Instructor or the Architecture Undergraduate Advisor. Junior standing in program. Restricted to Interior Design majors.

INTD 4314. HISTORIC PRESERVATION AND RESTORATION. 3 Hours.

Concepts and implementation of the restoration and preservation of historic structures and places, including archaeological, bibliographic, legislative, institutional, and physical parameters to the retention and adaptive re-use of significant architecture. This course is offered as ARCH 4314 and INTD 4314; credit will be granted only once. Prerequisite: ARCH 2303, ARCH 2304. Junior standing in program. Restricted to Architecture and Interior Design majors.

INTD 4332. PROFESSIONAL PRACTICE IN INTERIOR DESIGN. 3 Hours.

Introduction to business practices and procedures for interior design including ethics, governmental regulations, financial awareness, and project management. Students develop portfolio, resumes, and other marketing materials through individual and teamwork. Exploration of new models for practice and life-long learning in a global market. Prerequisite: Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4344. DESIGN COMMUNICATION IV. 3 Hours.

A digital design course focusing on advanced visual communication skills. The class investigates the digital realm as a tool to develop and communicate ideas graphically, analytically, and conceptually. Application of 3D computer drawing, modeling, lighting, mapping, and rendering to explore concepts and present individual and team-based design solutions. Prerequisite: INTD 4368 and INTD 4556. Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4345. ARCHITECTURAL GRAPHICS. 3 Hours.

Graphic and signage considerations for interior environments. Wayfinding methods will be addressed. Senior standing in the program. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability. Prerequisite: Senior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4365. VR+AR+SR ENVIRONMENTS. 3 Hours.

This course explores the use of immersive technology to develop virtual, augmented and simulated reality environments. Specifically, emphasis will be placed on understanding the differences and opportunities between the three modalities, the software employed and applications for the design and visualization process. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program and permission of the Interior Design Program Director. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4366. HUMAN CENTERED DESIGN. 3 Hours.

This course explores design from the perspective of human interaction with the environment in which they live. A focus on the physical, social, psychological, social, and cultural factors that influence design decisions. is a fundamental premise of this course. Students understand that the design of the built environment is based on the continual motion of life, social systems, and symbiotic human relationships. Human behavioral theories are integrated into the course. Prerequisite: Senior standing in the program. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4368. INTERIOR DETAILING. 3 Hours.

Application of design communication to interior construction detailing using more advanced software. Develop skills in articulating designs and detailing special elements related to the interior and understand installation processes. The course reviews interior construction documents, details, and schedules. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4369. FURNITURE DESIGN AND CONSTRUCTION. 3 Hours.

A studio course in the design, detailing, and construction of furniture. Prerequisite: INTD 3553 and INTD 3555. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4391. CONFERENCE COURSE. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: permission of instructor. Junior or senior standing in the program. Restricted to Interior Design majors.

INTD 4394. DESIGN RESEARCH METHODS AND APPLICATION. 3 Hours.

Research conducted by undergraduate students that contributes to ongoing faculty research within the Interior Design program or the School of Architecture. Research must be conducted under the supervision of a full-time Interior Design or Architecture faculty member. Prerequisite: Senior standing in the program and permission of the Interior Design Program Director. Open to Architecture majors as an elective based on space availability. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4395. SPECIAL TOPICS IN INTERIOR DESIGN. 3 Hours.

This course addresses areas of special interest to Interior Design studies and gives students an opportunity for a more in-depth exploration of selected topics than is possible within the embedded content of the core course requirements. Prerequisite: Junior standing in the program. Restricted to Interior Design majors but open to Architecture majors as an elective based on space availability.

INTD 4493. INTERIOR DESIGN INTERNSHIP. 4 Hours.

Workplace or professional experience: internship agreement negotiated between intern and site supervisor requiring program approval. Duties should be challenging, productive, and develop professional skills. documentation of work performed, weekly timesheets and final presentation required. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program and permission of the Interior Design Program Director. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4556. DESIGN STUDIO: INTERIOR DESIGN IV. 5 Hours.

Research for evidence based design decision-making in the context of emerging design practice. Introduction to research methodologies including primary and secondary research to frame design problems. Application of design theories and principles to understand human interaction with the built environment. Emphasis on application of interior knowledge to solve complex design problems. Prerequisite: INTD 3553 and INTD 3554. Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4557. DESIGN STUDIO: INTERIOR DESIGN V. 5 Hours.

Synthesis of design knowledge to a complex project scenario. Students apply critical and creative thinking to communicate understanding of large scale interior environments; focus on building systems and technology to communicate concepts and solutions. The impact of interior design on human well-being in the context of global issues is explored. Prerequisite: INTD 4368 and INTD 4556. Senior standing in the program. Restricted to Interior Design majors. Minimum 2.8 GPAs both cumulative and within the major required.

INTD 4591. CONFERENCE COURSE. 5 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: INTD 3553 and INTD 3555. Senior standing in program. Restricted to Interior Design majors.

INTD 4595. SELECTED TOPICS IN INTERIOR DESIGN. 5 Hours.

Studio and lecture courses to explore and present selected topics in interior design. May be repeated for credit as topics change. Prerequisite: permission of the Instructor or the Architecture Undergraduate Advisor. Senior standing in program. Restricted to Interior Design majors. The course may be repeated up to four times as the topics change.

Introduction to Liberal Arts (COLA)

COURSES

COLA 1100. INTRODUCTION TO LIBERAL ARTS. 1 Hour.

Introduction and orientation to the College of Liberal Arts. Involves academic survival skills, individual success, and career possibilities. Explore new experiences. May be in format with student peer counselors or with faculty instructor. Elective only. Pass-Fail grades awarded.

Journalism (JOUR)

COURSES

JOUR 2330. INTRODUCTION TO JOURNALISM. 3 Hours. (TCCN = COMM 2302)

Providing an overview of ethics, history, principles and fundamentals of journalism as reflected in current practices.

JOUR 2340. PHOTOJOURNALISM I. 3 Hours. (TCCN = COMM 1316)

Basic theory and techniques of photojournalism; introduction to electronic digital photography and editing; professional, technical, and aesthetic values.

Prerequisite: A grade of C or better in both COMM 2311 and JOUR 2330.

JOUR 2346. REPORTING. 3 Hours. (TCCN = COMM 2310)

Complex journalistic stories with emphasis on ethics, researching, interviewing, and writing of general news stories, news features, and specialized stories. Prerequisite: COMM 2311 with a grade of C or better. JOUR majors and JOUR intended: COMM 2311 and JOUR 2330 both with a grade of C or better.

JOUR 3330. DATA JOURNALISM. 3 Hours.

Use of data management skills and software to report stories, using journalistic principles and writing style as well as visualization. Prerequisite: JOUR 2346 with a C or better.

JOUR 3341. PHOTOJOURNALISM II. 3 Hours.

Advanced electronic imaging techniques as applied to newspapers, magazines, and public relations. Prerequisite: JOUR 2340 with a grade of C (2.0/4.0) or better.

JOUR 3345. COPY EDITING. 3 Hours.

Focus on the function of editors, copy editors and copy editing for journalistic and other publications in print and online formats. Prerequisite: A grade of C or higher in both JOUR 2330 and JOUR 2346, or permission of the department.

JOUR 3360. SPORTS REPORTING. 3 Hours.

Reporting on sports across multiple platforms. Credit will not be given for both BCMN 3360 and JOUR 3360. Prerequisite: A grade of C or better in both JOUR 2340 and JOUR 2346.

JOUR 4325. SPECIALIZED REPORTING. 3 Hours.

This course focuses on the unique demands of a specialized form of journalism. Subjects include such topics as sports reporting, business reporting, health and science reporting, travel reporting and writing for new media. Prerequisite: JOUR 2346 with a grade of C or higher and COMM 3315.

JOUR 4326. FEATURE AND OPINION WRITING. 3 Hours.

Nature, function, and structure of articles for print and online media. Prerequisite: JOUR 2346 with a grade of C or better and COMM 3315.

JOUR 4341. DIGITAL STORYTELLING. 3 Hours.

Creating multimedia packages in news, illustrative, and narrative formats. Conducting social media journalism. Readings in newsroom practices, law, and ethics of digital communication. Prerequisites: COMM 3315, and a grade of C (2.0/4.0) or better in JOUR 2340 and JOUR 2346.

JOUR 4346. PUBLIC AFFAIRS REPORTING. 3 Hours.

Research in planning and writing techniques required for covering such public affairs news sources as governmental offices, bureaus, and agencies. Experience in covering local government agencies, including agency budgets. Investigative and in-depth methods of news gathering; extensive practice in news writing. Prerequisite: COMM 3315, JOUR 2346 with a grade of C or higher, and completion or concurrent enrollment in JOUR 3330.

JOUR 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

JOUR 4393. SPECIAL TOPICS. 3 Hours.

Special studies in journalism. Topic varies from semester to semester. May be repeated as topics vary. Prerequisite: JOUR 2346, 60 or more hours earned, and permission of the department.

JOUR 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research while working with business and industry. Individual conference to be arranged. Graded P/F. Prerequisite: 60 or more hours earned and permission of the department.

Kinesiology (KINE)

COURSES

KINE 1100. LAB SKILLS IN KINESIOLOGY AND EXERCISE SCIENCE. 1 Hour.

The course is designed to provide basic lab measurement and testing experiences for Kinesiology and Exercise Science students. Prerequisite: or Co-requisite: KINE 1300.

KINE 1230. FIRST AID / CPR / AED TRAINING. 2 Hours.

This course is designed to cover the components of Standard First Aid, Cardio-Pulmonary Resuscitation (CPR) for the Professional Rescuer, and Automated External Defibrillator (AED) training. Certification is possible upon successful course completion. Offered as HEED 1230 and KINE 1230. Students seeking credit in HEED should enroll in HEED 1230 and students seeking credit in KINE should enroll in KINE 1230. Credit will not be granted for both courses.

KINE 1300. INTRODUCTION TO KINESIOLOGY AND EXERCISE SCIENCE. 3 Hours.

Introduction to key concepts concerning the anatomical, motor, biomechanical, and physiological basis of exercise science. The student is introduced to cardiovascular responses to training, analysis of human and motor behavior, and basic principles of exercise prescription.

KINE 1315. INTRODUCTION TO PHYSICAL EDUCATION AND SPORT. 3 Hours.

This course is an introduction to, and observation of, practices in pedagogical kinesiology and sports leadership.

KINE 1400. INTRODUCTION TO EXERCISE SCIENCE. 4 Hours.

Introduction to key concepts concerning the anatomical, biomechanical, and physiological basis of exercise science. Through lecture and laboratory experiences, the student is introduced to cardiovascular responses to training, analysis of human movement, and basic principles of exercise prescription. Credit cannot be given for both KINE 1400 and the combination of courses it replaces: KINE 1124 and KINE 1314.

KINE 2130. ATHLETIC TRAINING CLINICAL PRACTICUM I. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Clinical Proficiencies with an instructional emphasis on preventive and protective taping and wrapping procedures. This course requires the completion of 120 clinical hours under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI).

KINE 2230. INTRODUCTION TO MUSCULOSKELETAL INJURIES. 2 Hours.

This course is designed to introduce students to the mechanisms of musculoskeletal injury and their associated signs, symptoms, and tissue responses. Students will also be introduced to the basic principles of musculoskeletal assessment. This course is a prerequisite for admission to the Athletic Training Education Program. Prerequisite: KINE 2120, KINE 2320; must be concurrently enrolled in KINE 2130.

KINE 2301. TEACHING GAMES FOR UNDERSTANDING. 3 Hours.

The course will provide students with theoretical concepts with which they can design and analyze various short- and long-term plans related to the Teaching Games for Understanding theoretical model. Students will learn various tactical strategies and modification principles for applying learned concepts in instructional settings. The instructor will use expertise from given sports to help students transfer the common themes across the spectrum of the model's category of games. KINE 1315 is a co-requisite for this course. Prerequisite: Co-requisite KINE 1315.

KINE 2302. DANCE AND MOVEMENT ACTIVITIES. 3 Hours.

This course is designed to enhance the students performance knowledge of skills and strategies in dance and movement activities to acquaint them with effective teaching behaviors appropriate for these activities. Co-requisite KINE 1315. Prerequisite: Co-requisite KINE 1315.

KINE 2307. SPORTS AND SOCIETY. 3 Hours.

This course will examine the bidirectional impact of sport and societal institutions. The class will explore the co-dependent nature of sport and society and attempt to separate fact from fiction to aid in the understanding of the true role of sport as it fits into society. Topics to be addressed include the potentially controversial areas of race, gender, disability, institutional rule violations, and ethics in the contemporary sports arena. This is a lower level elective. Credit cannot be received for this course and KINE 3307.

KINE 2330. CARE AND PREVENTION OF ATHLETIC INJURIES. 3 Hours.

An introduction to the profession of Athletic Training. Common sports-related injuries and illnesses will be discussed with an emphasis on the proper methods for prevention, recognition, and immediate care. Offered as HEED 2330 and KINE 2330. Kinesiology majors must take KINE 2330.

KINE 2350. PUBLIC HEALTH: PRINCIPLES AND POPULATIONS. 3 Hours.

This course will provide students with an overview of Public Health: what it is, how it works, and why it is important. Topics include current health issues, global health, health disparities and how Public Health impacts community settings. Class requirement includes participation in community-based, experiential-learning activities. Examination of public health concepts, values and functions. Exploration of the underlying science of human health and disease as that is impacted by socioeconomic, behavioral, biological, environmental and other factors that impact human health and contribute to health disparities. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

KINE 2351. HEALTH ISSUES IN DIVERSE & VULNERABLE POPULATIONS. 3 Hours.

Cultural competence is attracting increased attention across the spectrum of public health. However, many vulnerable populations continue to be "invisible," resulting in a lack of awareness and knowledge in public health and healthcare workers. This course provides students with information related to the multi-faceted disparities that exist beyond ethnic differences to investigate the many other facets of cultural diversity and health issues.

KINE 2420. INTRODUCTION TO ATHLETIC TRAINING. 4 Hours.

Classroom and laboratory experiences that provide an introduction to the profession of Athletic Training with an emphasis on prevention and immediate care of sports related injuries. Specific topics will include injury prevention techniques; emergency first aid and acute care; superficial application of therapeutic modalities; proper use and fitting of protective equipment; and environmental considerations. Credit cannot be given for KINE 2420 and the combination of courses it replaces: KINE 2320 and KINE 2120.

KINE 3130. ATHLETIC TRAINING CLINICAL PRACTICUM II. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. This course requires the completion of 250 hours of clinical experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisites: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3320.

KINE 3131. ATHLETIC TRAINING CLINICAL PRACTICUM III. 1 Hour.

Laboratory and clinical experiences that provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. This course requires the completion of 250 hours of clinical education experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisite: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3324.

KINE 3300. FUNCTIONAL ANATOMY. 3 Hours.

A study of the musculoskeletal anatomy to include bony landmarks, muscle origin, insertion and action, as well as nerve innervation. Knowledge of the functional anatomy is crucial to the understanding of sports performance, the design of strength training programs, and injury prevention. Prerequisite: KINE 1300, KINE 1100 and BIOL 2457.

KINE 3302. SPORT AND EXERCISE PSYCHOLOGY. 3 Hours.

Analysis of exercise and sport activities in terms of psychological skills and strategies. Topics include motivation, arousal regulation, focus, concentration, group cohesion & imagery.

KINE 3303. ORGANIZATIONAL PRINCIPLES OF EXERCISE AND SPORT ACTIVITIES. 3 Hours.

An organizational analysis of exercise and sport in terms of participation rules, regulations, and responsibilities. Emphasis on knowledge and understanding of the principles governing the organization and conduct of exercise and sport activities.

KINE 3304. ADAPTED PHYSICAL EDUCATION & SPORT. 3 Hours.

Analysis of conditions that impact individuals with special needs. Emphasis on adapted physical education and sport strategies that facilitate the learning of this population. KINE 3388 is a co-requisite for this course. Prerequisite: KINE 1100, KINE 1300 and KINE 1315. Co-requisite KINE 3388.

KINE 3306. MOTOR INTEGRATION. 3 Hours.

Principles of motor skill acquisition, performance, and control. Topics include practice strategies, memory, neuromotor functioning, attention, and learning (assessment, transfer & stages). Prerequisite: KINE 1315, and KINE 1400, or permission of instructor.

KINE 3307. SPORT AND SOCIETY: ISSUES AND DEBATES. 3 Hours.

This course will examine the bidirectional impact of sport and societal institutions. The class will explore the co-dependent nature of sport and society and attempt to separate fact from fiction to aid in the understanding of the true role of sport as it fits into society. Topics to be addressed include the potentially controversial areas of race, gender, disability, institutional rule violations, and ethics in the contemporary sports arena. This is an upper level elective. Credit cannot be received for this course and KINE 2307.

KINE 3309. FOUNDATIONS OF RECREATION. 3 Hours.

Leisure time in our social structure and the agencies which have developed to provide leisure time activities. Program development and leadership skills in the recreation profession.

KINE 3311. RECREATION AND LEISURE SERVICE. 3 Hours.

Application of management and organizational principles, objectives, and procedures involved in implementing recreational and leisure service programs.

KINE 3312. COACHING INVASION GAME PRINCIPLES. 3 Hours.

The course will provide students with theoretical concepts with which they can design and analyze various short and long-term plans related to invasion games. Students will learn various tactical strategies and modification principles for applying learned concepts in instructional settings. The instructor will use expertise from given sports to help students transfer the common themes across the spectrum of invasion games.

KINE 3313. COACHING OF NET/WALL GAME PRINCIPLES. 3 Hours.

The course will provide students with theoretical concepts with which they can design and analyze various short and long-term plans related to net/wall games. Students will learn various tactical strategies and modification principles for applying learned concepts in instructional settings. The instructor will use expertise from given sports to help students transfer the common themes across the spectrum of net/wall games.

KINE 3320. LOWER EXTREMITY EVALUATION. 3 Hours.

A study of the common orthopedic and musculoskeletal injuries involving the lower extremities and lumbar spine, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisite: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3130.

KINE 3324. UPPER EXTREMITY EVALUATION. 3 Hours.

A study of the common orthopedic and musculoskeletal injuries involving the upper extremities, spine, head, face, abdomen, and thorax, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisite: BIOL 2457, Athletic Training Majors only or permission of instructor. Corequisite: KINE 3131.

KINE 3325. UNDERGRADUATE RESEARCH METHODS. 3 Hours.

Current practices in the conduct of quantitative research, measurement, and evaluation processes applied to programs related to exercise science, pedagogical kinesiology, athletic training and related fields will be examined. Enrolled students will develop and conduct a research project based on their declared discipline. Prerequisite: KINE 1300, KINE 1100, MATH 1302, MATH 1308.

KINE 3330. PATHOLOGY AND PHARMACOLOGY. 3 Hours.

Study of acute and chronic illness and their response to, and impact on, physical activity. Discussion of pharmacological agents used in the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: BIOL 2458, acceptance into the Athletic Training Education Program or permission of instructor.

KINE 3333. THERAPEUTIC INTERVENTION II. 3 Hours.

This course is designed to provide the student with an understanding of upper extremity and low back rehabilitation protocols and the use of electric therapeutic modalities like ultrasound, diathermy, laser, and electric stimulation. Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of electrical therapeutic modalities and how they can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common upper extremity and low back injuries. Both surgical and non-surgical rehabilitation models for the upper extremity and low back will be discussed with a special emphasis on the use of functional progressions. Prerequisites: BIOL 2457 and BIOL 2458. Concurrent enrollment in KINE 4131 is required for all Athletic Training Education Program students.

KINE 3342. SOCIOLOGY OF THE HUMAN BODY. 3 Hours.

Drawing from the social sciences, cultural and gender studies, and exercise physiology, this course in body sociology addresses several contemporary issues relating to diet, nutrition and exercise. Specific topics include eating disorders, factory farming, and "body industries" involving weight-loss diets, gyms, fashion, and cosmetic and bariatric surgery. The medical model of bodies is also examined. Also listed as SOCI 3342; credit will not be granted for both KINE 3342 and SOCI 3342.

KINE 3350. URBANIZATION AND VULNERABLE POPULATIONS. 3 Hours.

Investigation of diversity of individuals and populations in a community, including how diversity may influence policies, programs, services, and the health of a community, and the importance for a diverse public health workforce.

KINE 3351. PUBLIC HEALTH INFORMATICS. 3 Hours.

Explain and apply ethical principles that apply to the use of information technology as those pertain to accessing, collecting, analyzing, using, maintaining, and disseminating data and information. Prerequisite: KINE 2350 and KINE 3350.

KINE 3352. INTRODUCTION TO PUBLIC HEALTH EPIDEMIOLOGY. 3 Hours.

Analysis of factors that affect the health of a community, including how disease spreads, legal aspects of epidemics, and how data is used to drive public health decision making. Overview of how public health practice and science come together to protect the health of the public, or of a specific population. Prerequisite: MATH 1301 or MATH 1302 or MATH 1303 or MATH 1426 and MATH 1308 and KINE 2350 required.

KINE 3353. HEALTH AND THE HUMAN CONDITION IN THE GLOBAL COMMUNITY. 3 Hours.

Study of the history, philosophy and contemporary issues of public health as those apply to public health in both urban and global societies.

KINE 3354. EMERGENCY PREPAREDNESS & MANAGEMENT. 3 Hours.

Inquiry into the structures, functions, and authorizations of governmental public health programs. Identification of tools, processes, and activities related to both practice and policy used to support community responses to public health emergencies and other disasters. Prerequisite: KINE 2350.

KINE 3355. ADDICTIVE BEHAVIORS. 3 Hours.

Students will examine substance abuse including alcohol, drugs (illegal and prescription), smoking, vaping, and gaming from a population-based approach. There will also be a focus on compulsive behaviors including topics such as food over- and undereating, gambling, shopping and internet/technology addictions. While the course emphasis is on addictive behaviors, material and learning activities will also address how diverse and vulnerable populations are impacted by addictive behaviors as those relate to injury and illness prevention.

KINE 3356. PUBLIC HEALTH IN ACADEMIC SETTINGS. 3 Hours.

Public Health in Academic Settings This course addresses common health issues found throughout educational settings. Topics include chronic stress, health and well-being, school violence and the roles of hunger and obesity as concerns in the school environment. A focus on school climate, the role of school-based healthcare and preventing dropout from public health perspectives will be included.

KINE 3357. PHYSICAL ACTIVITY IN PUBLIC HEALTH. 3 Hours.

Designed for public health and health/fitness/wellness professionals who are interested in the promotion of physical activity in a variety of areas of public health. Emphasis on advocating for the importance of integration of physical activity in community health. This course prepares students to sit for the American College of Sports Medicine/National Physical Activity Society Physical Activity in Public Health Specialist certification examination.

KINE 3388. THEORY AND APPLICATION IN MOTOR DEVELOPMENT. 3 Hours.

A study of motor skill development from infancy to adolescence with emphasis upon motor development theory and aspects that effect motor competence, underlie movement control, and influence change in the acquisition of motor skills. Prerequisite: KINE 1100 and KINE 1300.

KINE 3401. BIOMECHANICS OF HUMAN MOVEMENT. 4 Hours.

Quantitative and qualitative analyses of human movement. Emphasis is on the application of the principles of human movement, with consideration of functional anatomy, kinesiology and mechanical concepts to exercise, sport, and activities of daily living. Course credit may not be granted for both KINE 3301 and KINE 3401. Prerequisite: KINE 1300, KINE 1100, BIOL 2457 and Math 1302.

KINE 3415. PHYSIOLOGY OF EXERCISE. 4 Hours.

Provides the physiology background necessary for an understanding of the acute and chronic effects of exercise on the body. Physiological concepts and their relationship to exercise, sport, and health programs are examined. Laboratory experiences are designed for evaluating physiological responses to exercise. Course credit may not be granted for both KINE 3315 and KINE 3415. Prerequisite: Restricted to Kinesiology, Athletic Training and Exercise Science Majors. KINE 1300, KINE 1100, BIOL 2457, BIOL 2458, and MATH 1302 required.

KINE 4130. ATHLETIC TRAINING CLINICAL PRACTICUM IV. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. The instructional emphasis is the development of functional rehabilitation programs for musculoskeletal injuries and common orthopedic surgeries. This course requires the completion of 250 hours of clinical experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisite: BIOL 2457 and BIOL 2458; Athletic Training Majors only or permission of instructor. Corequisite: KINE 4336.

KINE 4131. ATHLETIC TRAINING CLINICAL PRACTICUM V. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. Instructional emphasis is on the selection and clinical application of therapeutic modalities. This course requires the completion of 250 hours of clinical experience performed under the supervision of an Approved Clinical Instructor (ACI) or Clinical Instructor (CI). Prerequisite: BIOL 2457 and BIOL 2458; Athletic Training Majors only or permission of instructor. Corequisite: KINE 3333.

KINE 4132. ATHLETIC TRAINING CLINICAL PRACTICUM VI. 1 Hour.

Laboratory and clinical experiences designed to provide students with formal instruction and evaluation in the Entry Level Athletic Training Competencies and Clinical Proficiencies. This course requires the completion of 200 hours of clinical experience performed under the supervision of an Approved Clinical Instructor. Prerequisite: KINE 3130, KINE 3131, KINE 3320, KINE 3324, KINE 3330, KINE 3333, KINE 4130, KINE 4131, KINE 4336, and acceptance into the Athletic Training Education Program or approval of instructor. Must be concurrently enrolled in KINE 4233.

KINE 4188. CLINICAL HEALTH PROFESSIONS INTERNSHIP. 1 Hour.

Individualized academic training in an internal or external clinical health professions setting (e.g. university, hospital, physical therapy clinic, or physician's office) under the direct supervision of a health care professional (MD, PT, OT, PA). Prerequisite: Corequisite: KINE 4315 or successful completion of KINE 4315 and proof of sufficient professional liability insurance.

KINE 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

KINE 4193. PHYSICAL EDUCATION TEACHER CERTIFICATION PRACTICUM. 1 Hour.

In this course students will be prepared for the TExES PE-EC-12 and PPR- EC-12 exams and prepared for the professional dispositions associated with being a Physical Educator with an emphasis on ethics, interviewing, and role modeling. The students will take and review the PE Content and Pedagogy and Professional Responsibilities practice teaching licensure exams. Through this process teacher candidates will be cleared for official TExES registration. This course is to be taken the semester immediately prior to the student teaching semester.

KINE 4201. ADVANCED TECHNIQUES AND TACTICS OF BASEBALL. 2 Hours.

Development and analysis of skills, offensive and defensive strategies used in the sport of baseball.

KINE 4202. ADVANCED TECHNIQUES AND TACTICS OF BASKETBALL. 2 Hours.

Development and analysis of skills, offensive/defensive strategies used in the sport of basketball.

KINE 4203. ADVANCED TECHNIQUES AND TACTICS OF FOOTBALL. 2 Hours.

Development and analysis of skills, offensive and defensive strategies used in the sport of football.

KINE 4204. ADVANCED TECHNIQUES AND TACTICS OF TRACK AND FIELD. 2 Hours.

Development and analysis of track and field event techniques and strategies.

KINE 4205. ADVANCED TECHNIQUES AND TACTICS OF VOLLEYBALL. 2 Hours.

Development and analysis of skills, offensive and defensive strategies used in the sport of volleyball.

KINE 4233. ATHLETIC TRAINING ORGANIZATION & ADMINISTRATION. 2 Hours.

A study of the administrative issues and management theories that may be encountered in athletic training. Special emphasis is placed on the practical application of concepts related to legal liability, facility design and maintenance, documentation, financial management, health insurance, and general day-to-day operations. Prerequisite: KINE 3130, KINE 3131, KINE 3320, KINE 3324, KINE 3330, KINE 3333, KINE 4130, KINE 4131, KINE 4336, and acceptance into the Athletic Training Education Program or approval of instructor.

KINE 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

KINE 4293. SEMINAR IN ATHLETIC TRAINING. 2 Hours.

Synthesis of theories and concepts in athletic training. Review of the competencies and proficiencies in athletic training with special emphasis on professional development and the refinement of clinical decision-making. Prerequisite: KINE 3320, KINE 3324, KINE 3330, KINE 3333, KINE 4233, KINE 4336; Athletic Training Majors only.

KINE 4296. SPECIAL TOPICS IN EXERCISE AND SPORT. 2 Hours.

Designed to meet the current needs of students. May be repeated for credit when the topic changes.

KINE 4316. FITNESS PROGRAMMING. 3 Hours.

This course will provide students with practical and theoretical applications of fitness programming. The successful student will acquire a level of proficiency in the development of fitness programs and plans based upon client specific fitness assessment characteristics. Fitness programs shall include, but not be limited to: musculoskeletal symmetry, strength, and flexibility; body composition; cardiovascular endurance, and nutritional recommendations. Additionally, successful students will become proficient in the application of client related historical, nutritional, medical, psychological, and psychosocial factors that impact the development of a properly designed exercise program. Prerequisite: Current CPR certification, MATH 1302, KINE 3300, KINE 3315, and KINE 4315, or permission of instructor.

KINE 4317. EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS. 3 Hours.

This course will discuss the pathophysiology of prevalent cardiovascular, metabolic and pulmonary diseases. Methods of exercise prescription and issues of concern will also be presented for these populations, as well as, low back pain, pregnancy, osteoporosis, cancer, children, older adults, fibromyalgia, multiple sclerosis and cardiac disease. Prerequisite: MATH 1302, MATH 1308, BIOL 2457, BIOL 2458, KINE 3300, KINE 3415 and KINE 3325.

KINE 4319. FITNESS, HEALTH AND OUTDOOR ADVENTURE ACTIVITIES EDUCATION. 3 Hours.

The course will provide students with theoretical health-related concepts with which they can design and apply fitness learning into various physical education settings. In addition, this course is designed to introduce students to outdoor and adventure education activities and adventure-based learning. Time will be spent on low element group initiatives and high element adventure activities. Prerequisite: KINE 2301 and KINE 2302.

KINE 4320. TEACHING SECONDARY PHYSICAL EDUCATION. 3 Hours.

Designed to enhance teacher candidates' understanding of curriculum development as it applies to theory of motor learning and the sciences of kinesiology. These progressions are synthesized into a collaborative service-learning project with secondary public school partner(s). Candidates take responsibility for creating, coordinating, and facilitating learning experiences that are developmentally appropriate, motivating, and based on research. Prerequisite: KINE 3304, KINE 3388.

KINE 4321. TEACHING ELEM PHYSICAL EDUCATION. 3 Hours.

This course is designed to synthesize the sciences of anatomy and physiology, biomechanics, motor integration and motor control with sound pedagogical knowledge into an applied elementary physical education setting. Criminal background check required. Prerequisite: KINE 3304 and KINE 3388.

KINE 4323. MOTOR CONTROL AND LEARNING. 3 Hours.

This course will expose students to the theoretical perspectives and current principles associated with the control and learning of movement skills. Specifically, the neural and mechanical mechanisms underlying motor behavior and the variables influencing motor learning will be addressed. Throughout the course, application of theoretical concepts to instructional and clinical settings will be emphasized. Prerequisite: KINE 1300, KINE 1100, MATH 1308, and KINE 3325.

KINE 4329. STRENGTH & CONDITIONING IN SPORT AND PERFORMANCE. 3 Hours.

This course covers the physiology and biomechanics of strength training and conditioning. Additional topics include: testing and evaluation of athletes, resistance training techniques, training program design, and organization administration of a strength training facility. This course is designed to prepare students to take the CSCS, Certified Strength and Conditioning Specialist, certification examination. Prerequisite: MATH 1302, MATH 1308, BIOL 2457, BIOL 2458, KINE 3300, KINE 3415, KINE 3325.

KINE 4330. PROGRAM DESIGN & ADMINISTRATION. 3 Hours.

The development and operation of health/wellness programs and facilities will be presented, including: program design and administration, facility design, organizational development, management theory, marketing, financial management, legal issues, strategic planning, and evaluation models. The student will participate in all phases of program and facility development, such as budget development, recruiting and retaining employees and clients, market niche, and conflict resolution. Prerequisite: KINE 3415 and KINE 3325.

KINE 4331. OBESITY & WEIGHT MANAGEMENT. 3 Hours.

This course is a review of the scientific literature on the causes and consequences of obesity. Topics include: techniques for assessing body composition, metabolic factors promoting obesity, the role of obesity in metabolic and cardiovascular disease, traditional and non-traditional weight loss programs, economic consequences and contributors of obesity, and psychosocial consequences and contributors of obesity. Prerequisite: KINE 3415 and KINE 3325.

KINE 4335. GRADED EXERCISE TESTING & PRESCRIPTION. 3 Hours.

The knowledge and skills necessary for assessment of health history and appraisal, blood pressure, electrocardiogram, cardiovascular fitness and function will be acquired in lecture and laboratory sessions. Various test modalities and protocols will be discussed for health and diseased populations. Prerequisite: BIOL 2457, BIOL 2458, and KINE 3315, KINE 4315, or permission of instructor.

KINE 4336. THERAPEUTIC INTERVENTION I. 3 Hours.

This course is designed to provide the student with an understanding of the scientific theory and the basic principles of musculoskeletal rehabilitation and therapeutic modalities. Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of superficial heating and cooling therapeutic modalities and how manual treatments (e.g., traction, muscle energy and massage) can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common lower extremity injuries. Both surgical and non-surgical rehabilitation models for the lower extremity will be discussed with a special emphasis on the use of functional progressions. Prerequisites: BIOL 2457 and BIOL 2458. Concurrent enrollment in KINE 4130 is required for all Athletic Training Education Program students.

KINE 4337. STRENGTH AND CONDITIONING IN GENERAL POPULATIONS: HEALTH AND DISEASE. 3 Hours.

This course covers the physiology and biomechanics of strength training and conditioning as it applies to the general populations across the spectrum of health and disease. This includes: testing, evaluation, resistance training techniques and training program design for individuals with orthopedic injuries and rehabilitation concerns, metabolic conditions (e.g., diabetes), youth, elderly, and pregnant or post-prenatal women. This course is designed to prepare students to take the NSCA-CPT, and apply the skills needed to be a leader within the personal training and physical therapy career paths. Prerequisite: KINE 3415 and KINE 3325.

KINE 4339. SPORTS LEADERSHIP AND MANAGEMENT INTERNSHIP. 3 Hours.

Individualized training and experience in a youth, college, professional or other sport-based organization. Students will work with a mentor and university supervisor in a community-based setting to better understand, explore, and apply principles of coaching and operations. Prerequisite: KINE majors and Senior standing.

KINE 4350. SPORTS PSYCHOLOGY. 3 Hours.

The course will provide an overview of the growing field of Sports Psychology, which involves applying psychological science to sports. Topics such as maximizing sports performance, elite performance and personality, motivation techniques in sports, leadership skills in sports, etc., will be covered.

KINE 4351. ETHICAL PRACTICES IN HEALTH PROFESSIONS. 3 Hours.

Study of ethical standards and how those are incorporated into practice and decision-making that relate to interactions with individuals, organizations, and communities. Exploration of strategies for public health, health care, and other allied healthcare organizations to work together or individually to impact the health of a community. Prerequisite: Junior status, KINE 2350 and KINE 3350.

KINE 4352. PUBLIC HEALTH SCIENCES AND METHODS. 3 Hours.

Identify scientific concepts and research methods of population health, along with the basic processes, approaches, and interventions that identify and address the major health-related needs and concerns of populations. Analysis of project implementation such as planning, assessment and evaluation. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, and KINE 3354.

KINE 4354. PUBLIC HEALTH ADVOCACY AND LEADERSHIP. 3 Hours.

Appraisal of leadership philosophies and actions that reflect and model effective strategies for protecting and promoting the public's health. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354, MANA 4326, KINE 4352, KINE 4355, KINE 4357, HEED 4311. Concurrent enrollment in KINE 4353 recommended.

KINE 4355. COMMUNICATION FOR HEALTH PROFESSIONALS. 3 Hours.

Information and experiences that identify the health literacy of populations, including assessment of barriers and unique situations for vulnerable populations. Communication of information through appropriate, culturally competent methodologies. Integration of basic concepts of public health-specific communication into technical and professional writing. The use of mass media and electronic technology. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353 and KINE 3354.

KINE 4356. PUBLIC HEALTH PROJECT DESIGN & ADMINISTRATION. 3 Hours.

This course includes content designed to develop the knowledge, skills and competencies necessary for public health project management. The course includes experiential learning activities and case studies that integrate practice-based learning on topics such as project design, team dynamics, project evaluation and quality improvement measures. Prerequisite: KINE 2350 and junior status.

KINE 4357. PREPARATION FOR THE PUBLIC HEALTH WORKFORCE. 3 Hours.

The development and operational systems and processes in public health programs and facilities will be presented, including: concepts and experiences necessary for success in the workplace, community dynamics, independent work and development of a personal work ethic, networking and professional communication, and teamwork. The student will participate in multiple career readiness learning experiences through a co-curricular collaboration with UTA Career Services. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354 and MANA 4326.

KINE 4358. APPLIED APPROACHES TO DIVERSITY AND CULTURAL AWARENESS IN PUBLIC HEALTH ORGANIZATIONS. 3 Hours.

Applied Approaches to Diversity and Cultural Awareness in Public Health Organizations This course examines the changing demographics of the public health workforce and organizations, presenting students with varied perspectives, approaches and competencies required for understanding and appreciation of greater diversity across the public health and healthcare systems.

KINE 4359. PUBLIC HEALTH CUMULATIVE EXPERIENCE. 3 Hours.

Individualized learning opportunity to integrate, synthesize and apply knowledge through cumulative and experiential activities. All students complete a cumulative, integrative and scholarly or applied experience or inquiry project that serves as an optimum point to the education experience. These experiences may include, but are not limited to, internships, service-learning projects, senior seminars, portfolio projects, research papers or honors theses. Students are encouraged to gain exposure to local-level public health professionals and/or agencies that engage in public health practice. To be taken during the final semester prior to graduation. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354, KINE 4352, KINE 4355, KINE 4357 and MANA 4326 required. Corequisite: KINE 4354.

KINE 4387. EXERCISE SCIENCE PRACTICUM. 3 Hours.

Academic training within the internal setting of U.T. Arlington's exercise science laboratories. Each student will receive 135 hours of professional practicum experience in a variety of exercise science settings including wellness, physical fitness activity classes, physical fitness theory classes, the physical fitness center, and/or other exercise science settings. Prerequisite: Current CPR certification, KINE 4315, KINE 4316, and permission of instructor.

KINE 4388. EXERCISE SCIENCE INTERNSHIP. 3 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 135 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4389. FITNESS MANAGEMENT INTERNSHIP. 3 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 135 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4390. PRACTICUM IN SPORT PERFORMANCE. 3 Hours.

Designed on an individual basis as a field experience in the observation of sport performance, and the application of performance principles to sport participation. Students must make application for enrollment prior to October 1 for Spring Semester and prior to April 1 for Fall Semester.

KINE 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in the designated area. Prerequisite: permission of department chairperson.

KINE 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

KINE 4395. INDIVIDUAL STUDY IN EXERCISE AND SPORT. 3 Hours.

The completion of an existing course on an individual basis as contracted with an approved faculty member. This procedure is limited to emergency situations, and must be identified through the departmental advising process.

KINE 4396. SPECIAL TOPICS IN EXERCISE AND SPORT. 3 Hours.

Designed to meet the current needs of students. May be repeated for credit when the topic changes.

KINE 4400. APPLIED EXERCISE PHYSIOLOGY. 4 Hours.

Application of physiological principles of training of physical fitness and sport; examination of factors influencing anaerobic and aerobic training methods and their effect on fitness. Physiological responses studied include cardiovascular, bioenergetics, and extreme environments. Site visits, laboratory experiences and a research project enhance the student's understanding of physiological changes and career paths in exercise science. Prerequisite: KINE 3315, KINE 3325, KINE 4315, MATH 1302 and MATH 1308.

KINE 4415. FITNESS ASSESSMENT/PROGRAMMING. 4 Hours.

Classroom and laboratory experiences provide the student with an opportunity to become familiar with the assessment of physical fitness including graded exercise testing, metabolic studies, basic ECG interpretation, and body composition. The student will also learn risk factor identification and exercise prescription. Course credit may not be granted for both KINE 4315 and KINE 4415. Prerequisite: KINE 4315 and KINE 3325.

KINE 4420. APPLIED MOTOR BEHAVIOR. 4 Hours.

Application of motor behavior and biomechanical principles as well as factors influencing learning, re-learning and enhancing motor skills will be examined. Students will craft a research project to enhance their understanding of principles of motor behavior and will be involved in several case studies that can help understand how to apply motor behavior in their career paths. Prerequisite: KINE 3325; KINE 3388; KINE 4323.

KINE 4490. EXERCISE SCIENCE INTERNSHIP. 4 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 180 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4491. MRS INTERNSHIP. 4 Hours.

Individualized academic training in an external professional movement or rehabilitation setting (e.g., hospital, OT clinic, SLP clinic, school, recreation center, therapy setting, etc) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 180 hours in the field is required for completion of the course. Prerequisite: KINE 3388; KINE 3415.

KINE 4589. EXERCISE SCIENCE INTERNSHIP. 5 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, cardiac rehabilitation, fitness center) under the direct supervision of an exercise science professional or licensed therapist. Proof of sufficient professional liability insurance is required for enrollment. A minimum of 225 hours in the field is required for completion of the course. Prerequisite: KINE 4415 (or Corequisite).

KINE 4639. SPORTS LEADERSHIP AND MANAGEMENT INTERNSHIP II. 6 Hours.

Individualized training and experience in a youth, college, professional or other sport-based organization. Students will work with a mentor and university supervisor in a community-based setting to better understand, explore, and apply principles of coaching and operations. Prerequisite: KINE majors and Senior standing.

KINE 4647. CLINICAL TEACHING PHYSICAL EDUCATION EC-12. 6 Hours.

This supervised course is designed as a culminating field experience of pre-service professional preparation giving an opportunity to practically apply theoretical and pedagogical knowledge in real school settings. Applied experience will be attained in both Elementary and Secondary settings. Criminal background check required. Prerequisite: KINE 1315, KINE 2301, KINE 3304, KINE 3306, KINE 3325, KINE 3388, KINE 4193, KINE 4319, KINE 4320, KINE 4321, LIST 4343, and EDUC 4340.

KINE 4659. PUBLIC HEALTH EXTENDED CUMULATIVE EXPERIENCE. 6 Hours.

Individualized practice-based public health work experience in a professional public health-related setting (e.g., public health agency, nonprofit organization, legislative representative office, hospital) under the direct supervision of a public health professional. To be taken during the final semester prior to graduation. Prerequisite: KINE 2350, KINE 3350, KINE 3351, KINE 3352, KINE 3353, KINE 3354, KINE 4352, KINE 4355, KINE 4357 and MANA 4326 required. Corequisite: KINE 4354.

KINE 4689. FITNESS MANAGEMENT INTERNSHIP. 6 Hours.

Designed on an individual basis to allow the student to apply academic training in a professional fitness center under the direct supervision of a fitness specialist. Prerequisite: Current CPR certification, KINE 4315, KINE 4316, KINE 4387 (or concurrent enrollment), proof of sufficient professional liability insurance, and permission of instructor.

KINE 4988. EXERCISE SCIENCE INTERNSHIP. 9 Hours.

Individualized academic training in an external professional exercise science setting (e.g., hospital, physical therapy, university laboratory) under the direct supervision of an exercise science professional. Prerequisite: KINE 4315, KINE 4316, KINE 4387 (or concurrent enrollment), current CPR certification, proof of sufficient professional liability insurance, and permission of instructor.

KINE 4989. FITNESS MANAGEMENT INTERNSHIP. 9 Hours.

Designed on an individual basis to allow the student to apply academic training in a professional fitness center under the direct supervision of a fitness specialist. Prerequisite: Current CPR certification, KINE 4315, KINE 4316, KINE 4387 (or concurrent enrollment), proof of sufficient professional liability insurance, and permission of instructor.

KINE 5120. ATHLETIC TRAINING CLINICAL I. 1 Hour.

Clinical experiences performed in an athletic training setting or other health care facility under the supervision of a program approved health care provider. Course will also focus on professional development and evidence based practice topics. Prerequisite: Admission to the MSAT Program.

KINE 5125. IMMUNOLOGY. 1 Hour.

This course will include a brief review of the immune system and factors that affect immune function with emphasis on the effect of exercise and stress on muscle and overall immune function. The effect of nutrition and over-training on the immune system and associated syndromes/diseases will also be presented.

KINE 5128. CLINICAL DIAGNOSTIC PROCEDURES. 1 Hour.

This course provides fundamental clinical knowledge of commonly utilized diagnostic procedures and tests in medical practice. Emphasis will be placed on understanding of indications, contraindications, and clinical implications of diagnostic tests and understanding of normal and diseased states. Correlation and integration of test results into clinical examination findings and clinical plan of care will be addressed. Prerequisite: Admission to MSAT Program.

KINE 5130. Clinical Athletic Training II. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisites: KINE 5420, KINE 5220, KINE 5120.

KINE 5140. Clinical Athletic Training III. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisite: KINE 5130.

KINE 5150. Clinical Athletic Training IV. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisite: KINE 5140.

KINE 5160. Clinical Athletic Training V. 1 Hour.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of 250 hours of clinical experience under the supervision of a program approved clinical preceptor. Prerequisite: KINE 5150.

KINE 5170. JOURNAL CLUB IN PHYSIOLOGY. 1 Hour.

This course is designed to provide the students an opportunity to learn the art of critically reading and interpreting research articles. There will be emphasis on identifying strengths and weakness of research studies. There will also be an opportunity for the students to present their research study ideas and / or their preliminary findings of their research to the class. This will provide an opportunity for students to interact and receive / provide feedback regarding methodological approaches and interpretation of findings. Lastly, the student will learn how to prepare and deliver presentations to an audience.

KINE 5190. SPECIAL TOPICS IN KINESIOLOGY. 1 Hour.

In-depth study of selected topics in physical education and exercise science. May be repeated when topics vary. Prerequisite: consent of instructor.

KINE 5191. INTERNSHIP IN CARDIOPULMONARY REHABILITATION. 1 Hour.

The student will complete 400 internship hours in an approved Cardiopulmonary rehabilitation setting. The student may take two semesters of KINE 5191 at 200 hours each. The student will be involved in patient/client assessment, training, rehabilitation, risk factor identification and lifestyle management services provided for individuals with or at risk for cardiovascular, pulmonary, and metabolic diseases. In addition the student will observe common cardiac surgeries and diagnostic procedures to better understand the pathophysiology and treatment of cardiovascular, pulmonary and metabolic disease.

KINE 5192. INTERNSHIP IN GRADED EXERCISE TESTING FOR HIGH RISK POPULATIONS. 1 Hour.

The student will complete 200 hours of graded exercise testing in an approved hospital or outpatient clinical setting which conducts exercise tests for high risk populations, including clients with suspected cardiopulmonary and metabolic diseases. The student will be exposed to noninvasive (echocardiography and graded exercise testing) and invasive methods used to diagnose cardiopulmonary and metabolic disease, including procedures conducted in cath and nuclear testing laboratories.

KINE 5193. PHYSIOLOGY OF EXERCISE INTERNSHIP. 1 Hour.

Individualized academic training in an external professional exercise physiology setting (e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5194. RESEARCH IN KINESIOLOGY. 1 Hour.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5195. INTERNSHIP IN GRADED EXERCISE TESTING FOR HIGH RISK POPULATIONS. 1 Hour.

The student will complete 200 hours of graded exercise testing in an approved hospital or outpatient clinical setting which conducts exercise tests for high risk populations, including clients with suspected cardiopulmonary and metabolic diseases. The student will be exposed to noninvasive (echocardiography and graded exercise testing) and invasive methods used to diagnose cardiopulmonary and metabolic disease, including procedures conducted in cath and nuclear testing laboratories.

KINE 5196. LABORATORY TECHNIQUES IN EXERCISE SCIENCE. 1 Hour.

A primary objective of this course is to further your understanding of exercise physiology. A second but equally important objective is to enhance your ability for critical thinking on exercise physiology through the scientific process. This includes formation of a research question, hypothesis, designing an experiment, and inferring conclusions from data. Secondary objectives include improving technology skills to assist collecting and analyzing data, and writing and oral communication skills for demonstrating understanding of the physiological principles.

KINE 5198. THESIS. 1 Hour.**KINE 5220. PREVENTATIVE AND ACUTE CARE TECHNIQUES IN ATHLETIC TRAINING. 2 Hours.**

Classroom and laboratory experiences designed to provide students with formal instruction and evaluation in the prevention and acute care of activity related injuries and illnesses.

KINE 5221. CLINICAL ATHLETIC TRAINING II. 2 Hours.

Clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will also provide instruction in taping, bandaging, orthotics, casting, and durable medical equipment. Prerequisite: KINE 5120, KINE 5230, KINE 5231.

KINE 5222. CLINICAL ATHLETIC TRAINING III. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will also include content related to psychosocial aspects of athletic training. Prerequisite: KINE 5221, KINE 5232, KINE 5348.

KINE 5223. CLINICAL ATHLETIC TRAINING IV. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of clinical hours of experience under the supervision of a program approved clinical preceptor. The course will also focus on professional development and cultural competence for the athletic trainer. Prerequisite: KINE 5222, KINE 5233, KINE 5354, KINE 5355.

KINE 5224. CLINICAL ATHLETIC TRAINING V. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will include review of major content and steps to prepare for professional exams. Prerequisite: KINE 5223, KINE 5234, KINE 5341, KINE 5356.

KINE 5225. CLINICAL ATHLETIC TRAINING VI. 2 Hours.

Lecture and associated clinical experiences in selected health care settings that provide students the opportunity to integrate their knowledge and skills into actual patient care. Emphasis will be placed on the development of clinical decision-making skills. This course requires the completion of hours of clinical experience under the supervision of a program approved clinical preceptor. The course will also include topics related to effective transition to practice upon graduation. Prerequisite: KINE 5333, KINE 5227, KINE 5224.

KINE 5226. PATHOPHYSIOLOGY AND PHARMACOLOGY II. 2 Hours.

Further study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological agents used in the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5348.

KINE 5227. LITERATURE AND RESEARCH FOR THE ATHLETIC TRAINER. 2 Hours.

This course is an overview of concepts and procedures necessary for designing, conducting, and critically appraising research in Athletic Training from multiple research paradigms. The course will focus on the steps involved in the administration of a research project, including literature review, design, data collection and analysis. Prerequisite: KINE 5223, KINE 5234, KINE 5341, KINE 5356.

KINE 5228. SEMINAR IN ATHLETIC TRAINING. 2 Hours.

A capstone course designed to provide students the opportunity to synthesize and integrate the athletic training theories and concepts taught in the previous courses. Class discussions and projects will emphasize health care administration, professional development, cultural competence, transition to practice, inter-professional education and skills required of the entry-level athletic trainer. Prerequisite: KINE 5333, KINE 5227, KINE 5224.

KINE 5229. FUNCTIONAL ANATOMY AND BIOMECHANICS FOR THE ATHLETIC TRAINER. 2 Hours.

This course builds on prerequisite knowledge of human musculoskeletal anatomy to describe human movement. Principles of biomechanics and kinesiology will guide the understanding of mechanical and physiologic interactions between muscles and joints to form the basis of understanding normal and pathological movement. Prerequisite: Admission to MSAT Program.

KINE 5230. FOUNDATIONS OF ORTHOPEDIC ASSESSMENT AND THERAPEUTIC INTERVENTIONS. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to develop fundamental skills in orthopedic injury assessment and an understanding of the theory and the basic principles of therapeutic interventions including planning, implementing, documenting, and evaluating intervention programs for the rehabilitation and reconditioning of injuries and illnesses of those involved with physical activity. Prerequisite: Admission to MSAT Program.

KINE 5231. FUNDAMENTALS OF ATHLETIC TRAINING I. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to provide an introduction to the profession and the role of athletic trainers in the overall health care environment. Emphasis will be placed on the epidemiology of orthopedic injuries, orthopedic trauma, emergency planning and care, cold and hot therapeutic modalities, and prevention of sudden death. Prerequisite: Admission to MSAT Program.

KINE 5232. FUNDAMENTALS OF ATHLETIC TRAINING II. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to further their development as an athletic trainer in a dynamic health care system. Emphasis will be placed on interprofessional practice, prevention of sudden death, nutrition for the physically active, ergonomics, body composition assessment, and fitness assessment/programming. Prerequisite: Admission to MSAT Program.

KINE 5233. THERAPEUTIC MODALITIES. 2 Hours.

This course is designed to provide the entry level athletic training student with classroom and laboratory experiences to provide an understanding of the theory and application of common therapeutic modalities for the treatment of musculoskeletal injuries. Emphasis will be placed on using the disablement model to plan, implement, and document the use of therapeutic modalities for the treatment and rehabilitation of injuries and illnesses of those involved with physical activity. Critical appraisal of research studies regarding the effectiveness and efficacy of therapeutic modalities will also be emphasized. Prerequisite: Admission to MSAT Program.

KINE 5234. CLINICAL REASONING AND DECISION MAKING. 2 Hours.

This course is designed to provide an understanding and application of theories and frameworks to clinical decision making. Students will work toward becoming an effective practitioner, able to make clinical decisions by studying clinical situations and how health care professionals make clinical decisions. Emphasis will be placed on problem solving strategies, decision making and evidence based rationale. Clinical reasoning will be developed while integrating knowledge and skills in management of complex clinical conditions using scientific and contemporary evidence-based clinical knowledge. Prerequisite: Admission into MSAT Program.

KINE 5235. ADVANCED FUNCTIONAL ASSESSMENT AND CORRECTIVE EXERCISE. 2 Hours.

This course will provide classroom and laboratory experiences that introduce functional assessment and corrective exercises. Specific topics will include advanced manual therapy techniques designed to restore body symmetry and theories of functional movement. Evidence-based application of functional assessment, evaluation and assignment of corrective exercises will be emphasized along with the critical appraisal of research studies regarding the effectiveness and efficacy of a variety of advanced therapeutic interventions. Prerequisite: Admission to MSAT Program.

KINE 5290. SPECIAL TOPICS IN KINESIOLOGY. 2 Hours.

In-depth study of selected topics in physical education and exercise science. May be repeated when topics vary. Prerequisite: consent of instructor.

KINE 5291. INTERNSHIP IN CARDIOPULMONARY REHABILITATION. 2 Hours.

The student will complete 400 internship hours in an approved Cardiopulmonary rehabilitation setting. The student may take two semesters of KINE 5191 at 200 hours each. The student will be involved in patient/client assessment, training, rehabilitation, risk factor identification and lifestyle management services provided for individuals with or at risk for cardiovascular, pulmonary, and metabolic diseases. In addition the student will observe common cardiac surgeries and diagnostic procedures to better understand the pathophysiology and treatment of cardiovascular, pulmonary and metabolic disease.

KINE 5292. SPECIAL TOPICS IN KINESIOLOGY. 2 Hours.**KINE 5293. PHYSIOLOGY OF EXERCISE INTERNSHIP. 2 Hours.**

Individualized academic training in an external professional exercise physiology setting (e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5294. RESEARCH IN KINESIOLOGY. 2 Hours.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5298. THESIS. 2 Hours.**KINE 5300. RESEARCH METHODS IN KINESIOLOGY. 3 Hours.**

This course is an overview of concepts and procedures necessary for designing, conducting, and analyzing research in Kinesiology from multiple research paradigms. The course will focus on the steps involved in the administration of a research project, including literature review, design, data collection and analysis.

KINE 5305. APPLIED STATISTICAL PRINCIPLES IN KINESIOLOGY. 3 Hours.

The course covers descriptive statistics, elementary probability, one- and two-population mean and variance comparisons, ANOVA, simple linear regression, and correlations. In addition, more advanced principles in parametric and non-parametric statistics will be emphasized.

KINE 5320. ADVANCED PHYSIOLOGY OF EXERCISE. 3 Hours.

Lecture and laboratory sessions are designed to investigate concepts of energy metabolism, lactate production and accumulation, energy expenditure, excess post exercise oxygen consumption, cardiovascular and temperature regulation, neuromuscular control, aerobic and anaerobic adaptations and ergonomics.

KINE 5322. METABOLISM & EXERCISE BIOCHEMISTRY. 3 Hours.

This course will address the regulation of exercise metabolism as well as the distinct biochemical pathways through which energy transduction occurs. This will allow the student to appreciate not only the end result of metabolism, ultimately the production and maintenance of cellular ATP levels, but also the pathways that biological machines use to achieve ATP homeostasis. Calorimetry, respiratory exchange ratio, and substrate utilization during exercise will be assessed as part of the laboratory section of this course.

KINE 5323. MOTOR CONTROL AND LEARNING. 3 Hours.

This course advances on fundamental concepts of motor behavior and performance combining theoretical principles to a variety of realistic contexts to provide the basis of skilled behavior. Contemporary research in human motor behavior models is used to identify effective solutions to practical problems and to spark ideas for optimizing development, learning, and control of motor skills.

KINE 5326. CARDIOCIRCULATORY PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of the cardiovascular and circulatory system will be studied, as well as, cardiac control, the cardiac cycle, cardiac output, hemodynamics, vascular resistance, arterial-venous oxygen difference and oxygen delivery and consumption. Heat production and thermal control during exercise will also be addressed in lecture and laboratory sessions.

KINE 5327. PULMONARY PHYSIOLOGY OF EXERCISE. 3 Hours.

Examines the structure and function of the pulmonary system including mechanics of breathing, lung capacity tests, pulmonary circulation, lung diseases, gas exchange, ventilation, diffusing capacity, acid/base balance, neural and chemical regulation of breathing, and blood flow with respect to rest and exercise values in healthy and diseased populations. Prerequisite: KINE 5320.

KINE 5328. NEUROMUSCULAR PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of muscle, including the motor unit, control and integration, central and peripheral modifiers of neuromuscular control and biochemical characteristics of fibers will be studied. These concepts will also be applied to concepts in strength and power development.

KINE 5329. STRENGTH & CONDITIONING IN SPORT AND PERFORMANCE. 3 Hours.

The course covers the physiology and biomechanics of strength training and conditioning. Additional topics include: testing and evaluation of athletes, resistance training techniques, training program design, and organization administration of a strength training facility. This course is designed to prepare students to take the CSCS certification examination. Prerequisite: current CPR certification, KINE 3300, KINE 3301, KINE 3315, or permission of the instructor.

KINE 5330. ENVIRONMENTAL PHYSIOLOGY OF EXERCISE. 3 Hours.

This course will address the impact of environmental stress (e.g., thermal, gravitational, microgravity, etc.) on the cardiovascular system. Related focus will be given to cardiac function, blood pressure regulation and thermoregulation. Topics will be addressed in lecture and laboratory sessions. *Doctoral students will be required to complete an additional research-related assignment.

KINE 5331. OBESITY & WEIGHT MANAGEMENT. 3 Hours.

This course is a review of the scientific literature on the causes and consequences of obesity. Topics include techniques for assessing body composition, factors promoting fat metabolism and deposition, traditional and non-traditional weight-loss programs, and adherence to weight-loss programs. Offered as KINE 4331 and KINE 5331. Credit will be granted only once. Prerequisite: KINE 5320 or permission of department.

KINE 5333. HEALTH CARE ADMINISTRATION. 3 Hours.

A study of the administrative issues and management theories that may be encountered in overseeing an athletic training/sports medicine program. Special emphasis is placed on the practical application of concepts related to legal liability, facility design and maintenance, financial and budget management, common health insurance models, insurance contract negotiation, strategic planning as a means to assess and promote organizational improvement, the impact of organizational structure on the daily operations of a healthcare facility, components of developing and implementing a basic business plan, medical record and documentation systems, federal and state infection control regulations and guidelines, risk management plan development, emergency action planning, and general day to day operations. Prerequisites: KINE 5223, KINE 5234, KINE 5341, KINE 5356.

KINE 5334. Seminar in Athletic Training. 3 Hours.

Synthesis of theories and concepts in athletic training. Review of the competencies and proficiencies in athletic training with special emphasis on professional development and the refinement of clinical decision-making.

KINE 5335. GRADED EXERCISE TESTING AND PRESCRIPTION. 3 Hours.

The knowledge and skills necessary for assessment of health history and appraisal, blood pressure, electrocardiogram, cardiovascular fitness and function will be acquired in lecture and laboratory sessions. Various test modalities and protocols will be discussed for health and diseased populations.

KINE 5336. ECG INTERPRETATION. 3 Hours.

Principles of electrocardiography will be explored, with emphasis on interpretation of resting and stress ECGs. Interpretation of dynamic rhythm strips will prepare students to work in cardiac rehabilitation and other allied health professions.

KINE 5337. STRENGTH AND CONDITIONING IN GENERAL POPULATIONS: HEALTH AND DISEASE. 3 Hours.

This course covers the physiology and biomechanics of strength training and conditioning as it applies to the general populations across the spectrum of health and disease. This includes: testing, evaluation, resistance training techniques and training program design for individuals with orthopedic injuries and rehabilitation concerns, metabolic conditions (e.g., diabetes), youth, elderly, and pregnant or post-prenatal women. This course is designed to prepare students to take the NSCA-CPT, and apply the skills needed to be a leader within the personal training and physical therapy career paths. Prerequisite: KINE 3300, KINE 3315, and KINE 3325.

KINE 5338. EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS. 3 Hours.

This course will discuss the pathophysiology of prevalent cardiovascular, metabolic and pulmonary diseases. Methods of exercise prescription and issues of concern will also be presented for these populations, as well as, low back pain, pregnancy, osteoporosis, cancer, children, older adults, fibromyalgia, multiple sclerosis and cardiac disease.

KINE 5340. ENVIRONMENTAL PHYSIOLOGY. 3 Hours.

This course will address the impact of environmental stress (e.g., thermal, gravitational, microgravity, etc.) on the cardiovascular system. Related focus will be given to cardiac function, blood pressure regulation and thermoregulation. Topics will be addressed in lecture and laboratory sessions.

KINE 5341. ADVANCED IMMEDIATE AND EMERGENCY CARE. 3 Hours.

This course is designed to provide knowledge and skills related to the immediate and emergent care of injuries/conditions in work settings of athletic trainers. Prerequisite: KINE 5231.

KINE 5342. IMMEDIATE AND EMERGENCY CARE 2. 3 Hours.

This course is designed to build off of Immediate and Emergency Care 1 and include didactic and clinical experiences surrounding best practices in general emergency care and acute management of injuries and illness. Students will also be required to complete a scholarship project concerning general emergency care and acute management of injuries and illnesses. Clinical hours will be required in an emergency medicine environment.

KINE 5343. LITERATURE AND RESEARCH FOR THE ATHLETIC TRAINER. 3 Hours.

This course is an overview of concepts and procedures necessary for designing, conducting, and critically appraising research in Athletic Training from multiple research paradigms. The course will focus on the steps involved in the administration of a research project, including literature review, design, data collection and analysis. Prerequisite: KINE 5432.

KINE 5344. SCHOLARSHIP IN ATHLETIC TRAINING PRACTICE. 3 Hours.

This course is designed to build off of the foundations of Literature and Research for the Athletic Trainer with further study of data collection and analysis as well as evidence-based practice principles. Students will be expected to complete a scholarship project related to athletic training practice. Prerequisite: KINE 5227.

KINE 5345. SPORT NUTRITION. 3 Hours.

Overview of nutrients necessary for healthful living and nutritional impact on reducing risk factors of lifestyle diseases. Application of nutrient recommendations for sports and exercise activities, including fluid replacement, sports supplements, and ergogenic aids. In addition, students will construct plans for dietary intake of athletes during training and competition for both endurance and resistance training. Offered as KINE 5345 and KINE 3301. Credit will be granted only once.

KINE 5346. ADVANCED FUNCTIONAL ASSESSMENT AND CORRECTIVE EXERCISE. 3 Hours.

Classroom and laboratory experiences that provide an introduction to functional assessment and corrective exercises. Specific topics will include an analysis of common biomechanics of movement and the evidence-based application of functional assessment and assignment of corrective exercises. Prerequisite: KINE 5420, KINE 5430, KINE 5431, KINE 5433, KINE 5434.

KINE 5347. ADVANCED FUNCTIONAL ASSESSMENT AND CORRECTIVE EXERCISE. 3 Hours.

Classroom and laboratory experiences that provide an introduction to functional assessment and corrective exercises. Specific topics will include an analysis of common biomechanics of movement and the evidence-based application of functional assessment and assignment of corrective exercises. Prerequisite: KINE 5420, KINE 5430, KINE 5431, KINE 5433, KINE 5434.

KINE 5348. PATHOPHYSIOLOGY AND PHARMACOLOGY I. 3 Hours.

This course provides an introduction to the study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological principles will be incorporated as it relates to the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5120, KINE 5231.

KINE 5350. APPLIED BIOMECHANICS. 3 Hours.

Application of Newtonian mechanics to human movement analysis. Biomechanical models using three-dimensional video and force plate data will be used to analyze human movement.

KINE 5353. LOWER EXTREMITY ASSESSMENT AND REHABILITATION. 3 Hours.

This course will focus on common orthopedic injuries involving the lower extremities, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Additionally, students will learn to implement rehabilitation programs and therapeutic techniques for lower extremity injuries. Prerequisite: Admission to MSAT Program.

KINE 5354. UPPER EXTREMITY ASSESSMENT AND REHABILITATION. 3 Hours.

This course will focus on common orthopedic injuries involving the upper extremities, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Additionally, students will learn to implement rehabilitation programs and therapeutic techniques for upper extremity injuries. Prerequisite: Admission to MSAT Program.

KINE 5355. PATHOPHYSIOLOGY & PHARMACOLOGY II. 3 Hours.

This course provides further study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological principles will be incorporated as it relates to the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5348.

KINE 5356. HEAD AND SPINE ASSESSMENT AND REHABILITATION. 3 Hours.

This course will focus on common orthopedic injuries involving the head and spine, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Additionally, students will learn to implement rehabilitation programs and therapeutic techniques for head and spine injuries. Prerequisite: KINE 5353, KINE 5354.

KINE 5357. PREVENTATIVE MEDICINE AND POPULATION HEALTH. 3 Hours.

This course will highlight the athletic trainer's role in promoting and maintaining the health and well-being of individuals and populations. Development, implementation, and assessment of preventative measures to reduce injury risk and long-term health conditions across the lifespan will be addressed. Emphasis will also be placed on population-level problems, including health risks and determinants as well as individual and behavioral factors that affect health outcomes. Prerequisite: Admission to MSAT Program.

KINE 5360. FUNDAMENTAL PRINCIPLES OF INTEGRATIVE PHYSIOLOGY. 3 Hours.

This course is designed to provide a fundamental understanding of human physiology. Physiological function is a complex process that involves a complex interaction among the various physiological systems. As such there will be an emphasis on the integration of cellular, cardiovascular, renal, autonomic, respiratory, and endocrine physiology.

KINE 5362. PRINCIPLES OF MOVEMENT NEUROSCIENCE. 3 Hours.

This course focuses on principles of movement that have emerged from the computational study of motor control. The principles and application to processes such as motor planning, control, estimation, prediction and learning are explored.

KINE 5363. CONDITIONS OF THE MOTOR SYSTEM IN CHILDHOOD. 3 Hours.

This course explores a prevalent dysfunction of the motor system in childhood, known as Developmental Coordination Disorder (DCD). This class explores potential causes of DCD, common mechanisms and impairments, intervention methods and their effectiveness, and associated co-morbidities. In addition, students will understand the current state of research in the field and understand future avenues for research.

KINE 5364. CURRENT PERSPECTIVES IN MOTOR LEARNING AND CONTROL. 3 Hours.

This course explores five aspects of the new directions in research in the Motor Learning and Control field: Perception-Action mechanisms, Dynamical systems, Motor disorders, Learning and intervention for motor behavior, and neural mechanisms.

KINE 5365. ADVANCED MOTOR DEVELOPMENT. 3 Hours.

This course explores the current field of research in Motor Development applied to typical and special populations. More specifically, it discusses issues related to motor skill learning in childhood, the development of motor control, the relationship between motor competence and general health, and how lack of appropriate motor skills affect several domains of development (Developmental Coordination Disorder). To that, we use current research articles that discuss each one of these topics from different perspectives.

KINE 5370. GLOBAL HEALTH. 3 Hours.

Today's public health practice requires an awareness of health threats beyond U.S. borders. "Global health" implies health concerns and solutions that are shared worldwide. In this course, students will study global health priorities among different populations, cultures, and health systems. Students will examine health challenges and disease threats faced in resource-constrained countries, and the roles of health determinants, socioeconomics and health equity in improving health outcomes. In addition, students will learn about the foundational elements of global health, including globalization and health, water, sanitation, the burden of infectious and chronic diseases, human rights and global health partnerships.

KINE 5371. PUBLIC HEALTH PROGRAM PLANNING AND EVALUATION. 3 Hours.

Before we can effectively receive funding and implement programs that benefit our communities, we have to answer many questions. Who is the target audience? What are the program's goals? What are the intended outcomes of the program? How can we measure program effectiveness? Program evaluation is the methodology to developing scientifically sound answers to these questions. This course will teach you how evaluators work with stakeholders and project teams to tailor an intervention to a target audience, and document program activities, outcomes and impact on a community health issue. This course will allow you to have hands-on experience designing and conducting program evaluation.

KINE 5372. INTRODUCTION TO EPIDEMIOLOGY. 3 Hours.

By participating in this course students will learn the critical role that epidemiology plays in preventing and controlling disease. This course provides students with a foundation of the methods and concepts used in epidemiology. Students will learn the measures used in epidemiology and apply principles of causality, study design, disease surveillance, and outbreak investigations. In addition, students will be introduced to sources of data used in epidemiologic studies. The major course project will provide students with hands-on experience using skills sought by employers in public health agencies.

KINE 5373. INTRODUCTION TO ENVIRONMENTAL AND OCCUPATIONAL HEALTH. 3 Hours.

This course provides an overview of the critical environmental health problems in industrialized and developing countries, discusses their causes and solutions, and emphasizes the role of science in environmental policy decisions. Topics include climate change, water and air contaminants, injury risk and prevention in the workplace, food and water-borne disease, toxic metals, and how the body reacts to environmental pollutants.

KINE 5374. RACE, ETHNICITY AND HEALTH. 3 Hours.

Despite advances in medicine and health policies, racial and ethnic health disparities persist. Americans of color have higher mortality rates and an unequal burden of many health concerns compared to their white counterparts. Such health inequities compromise the cultural and economic fabric of our country. This course will discuss the complex relationship between socioeconomic status, race/ethnicity, and health. In addition, this course will examine the economic and societal threats that health disparities pose to our communities and nation, as well as policies and approaches to addressing such disparities.

KINE 5375. COMMUNITY HEALTH. 3 Hours.

This course explores population health, providing students with learning experiences that facilitate an understanding of what public health is and why it is important. Course activities guide students in exploring their role in population health dynamics of their communities. The course will provide students an investigation of theoretical and evidence-based strategies designed to improve community health from population-based approaches. Students will then narrow those areas of foci to contemplate real-world, practice-based learning experiences.

KINE 5376. INTRODUCTION TO BIostatISTICS. 3 Hours.

The course will introduce students to analysis skills applied in the public health sciences. Students will learn how to apply descriptive statistics, t-tests, ANOVA, correlation, multiple regression, and non-parametric statistics to public health problems.

KINE 5377. INTRODUCTION TO HEALTH SYSTEMS AND POLICY. 3 Hours.

What is "population health" and why does it matter? Why are U.S. health care costs so high? How is the U.S. health system financed? What are the basic principles of health insurance? Who are the uninsured? It is critical that public health professionals be able to answer these questions and understand the basic functions that comprise the U.S. health care system. This course will help students answer these questions through an introduction to health systems and policy, including the delivery, quality and costs of health care for individuals and populations. The course will also examine the structure, processes and outcomes of health services, financing, organization, outcomes and accessibility of care.

KINE 5378. FOUNDATIONS OF PUBLIC HEALTH. 3 Hours.

This courses teaches students what public health is and how it works. The mission of public health is to assure conditions in which people can be healthy. This course will present the history, frameworks, values, and goals of public health which support this mission. Students will study the principles and core responsibilities of public health from a multidisciplinary perspective, with emphasis on the public health core functions of assessment, policy development, and assurance. This course will provide the foundation for further studies in public health practice through developing public health problem solving and decision-making skills through case studies and applied coursework.

KINE 5379. FUNDAMENTALS OF POPULATION HEALTH. 3 Hours.

Public health is charged with advancing health while reducing health care costs. This requires us to move away from a reactionary model of health care delivery and towards models of disease prevention and health promotion. Students will consider how collaborations among organizations within and outside the health care system, and the integration of public health into clinical care, impacts population health. The course will use case studies and applied learning to discuss the role of incentives, financing, data, measurement, structure of health care delivery, and policy in advancing population health.

KINE 5380. URBAN COMMUNITY HEALTH ASSESSMENT. 3 Hours.

We must learn the health needs in a community before we can address those needs to improve the health of the community. Assessment skills allow us to learn what health needs exist in a community by using sound scientific methods to collect evidence about gaps in health. In this course, students will apply quantitative and qualitative methods, data analysis, community mobilization, and capacity building to assess community health needs and strategies for health improvement.

KINE 5381. SOCIAL AND BEHAVIORAL EPIDEMIOLOGY. 3 Hours.

Social epidemiology considers how social determinants impact population health. Behavioral epidemiology studies how lifestyle and behaviors affect health conditions. The class will explore how social, political, cultural and economic forces influence our health and health behaviors. The course will focus on social and health inequities, and resulting health behaviors. Theory from social science is integrated with epidemiological methods to learn how social circumstances influence behavior and health, and determine how we can target interventions to reduce health inequities in our community, nation and world. Prerequisite: KINE 5372 Introduction to Epidemiology.

KINE 5382. CHRONIC DISEASE EPIDEMIOLOGY. 3 Hours.

Chronic diseases are the leading causes of death in the United States and globally. Chronic diseases, such as cardiovascular disease, cancer, diabetes, HIV/AIDS, respiratory conditions, and neurologic disorders have devastating consequences for population health. This class will explore and apply epidemiologic methods which help identify strategies to prevent and treat chronic diseases, emphasizing modifiable risk factors. Coursework will aim to increase student understanding of how epidemiologic methods are used to identify determinants of chronic diseases, and how to identify and target interventions to reduce the burden of chronic disease locally, nationally, and across the globe. Prerequisite: KINE 5372.

KINE 5383. COMMUNITY-BASED INTERNSHIP. 3 Hours.

This course is a required 200-hour service learning experience for Master of Public Health (MPH) students which combines specific learning objectives with reflection. The student will apply skills learned in the MPH program in a "real-life" environment. The student will complete a defined project, mutually agreed upon between the MPH Graduate Advisor and the partner organization, which benefit both the student and the partner organization. Students will keep a log of hours, work performed, and competencies addressed throughout the internship experience, and comply with specified reporting periods. Prerequisite: KINE 5372, KINE 5373, KINE 5376, KINE 5305, KINE 5377, KINE 5375, KINE 5371, and KINE 5378.

KINE 5384. PUBLIC HEALTH CAPSTONE EXPERIENCE. 3 Hours.

This course is the culmination of all previous coursework for Master of Public Health (MPH) students, requiring the student to complete a final paper, poster and oral presentation about the project completed as part of the Community-Based Internship. In addition, the student will complete a professional portfolio comprised of work illustrating the competencies learned during the MPH program and applied during the Internship. Prerequisite: KINE 5372, KINE 5373, KINE 5376, KINE 5305, KINE 5377, KINE 5375, KINE 5371, KINE 5378, and KINE 5383, and completion of all MPH coursework required for graduation, or concurrent enrollment in final courses needed for graduation.

KINE 5385. COMMUNICATION AND HEALTH. 3 Hours.

Students will learn how interpersonal, organizational and mass media communications influence health behaviors and health outcomes. Students will study theories and applied techniques of interpersonal communication in health care and health education settings, as well as the theory and practice of media in achieving desired effects from public health messages.

KINE 5386. BIG DATA FOR EPIDEMIOLOGY. 3 Hours.

Big Data have revolutionized science, including the future of public health. This course prepares future public health practitioners to integrate knowledge of epidemiology methods with the data analytics savvy. Students will gain competence in conducting analysis using large, commonly used health-related databases. Learn how to use large datasets to advance your practice of epidemiology by enrolling in this course. Prerequisite: KINE 5376 or KINE 5305. Prior completion or concurrent enrollment in KINE 5372.

KINE 5387. INFECTIOUS DISEASE EPIDEMIOLOGY. 3 Hours.

From Ebola to COVID-19, tuberculosis to hepatitis A--every outbreak has a team of behind-the-scenes disease detectives tracking its source and pathways. Students will learn the methods of infectious disease epidemiology, studying outbreak investigations, disease surveillance, study designs, laboratory diagnosis, and dynamics of transmission. Students must have completed KINE 5372 Introduction to Epidemiology to enroll in this course. Prerequisite: Prior or concurrent enrollment in KINE 5372.

KINE 5388. GLOBAL HEALTH ON-SITE EXPERIENCE ABROAD. 3 Hours.

Students will study the factors impacting health for populations in a selected country outside of the U.S. Then, students will travel to that country at the end of the course for a real life experience learning from people who are impacted by, and/or who help address the health factors in that region. Prerequisite: MPH student or Instructor Permission.

KINE 5389. RESEARCH MANUSCRIPT SUBMISSION. 3 Hours.

The student will collect scientific data in the Physiology of Exercise laboratories or in a work-related environment under the supervision of a faculty member. The student will analyze the data, write a manuscript, and submit a manuscript for publication in a peer-reviewed journal. This course must be taken in the final semester of graduate work and requires approval of the Graduate Advisor.

KINE 5390. SPECIAL TOPICS IN KINESIOLOGY. 3 Hours.

In-depth study of selected topics in physical education and exercise science. May be repeated when topics vary. Prerequisite: consent of instructor.

KINE 5392. SPECIAL TOPICS IN KINESIOLOGY. 3 Hours.**KINE 5393. PHYSIOLOGY OF EXERCISE INTERNSHIP. 3 Hours.**

Individualized academic training in an external professional exercise physiology setting(e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5394. RESEARCH IN KINESIOLOGY. 3 Hours.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5396. RESEARCH IN ATHLETIC TRAINING. 3 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Prerequisite: consent of the instructor.

KINE 5397. INTERNSHIP ATHLETIC TRAINING. 3 Hours.

Individualized clinical experience in an external athletic training or other medical setting (e.g., physician's office, rehabilitation clinic, professional sports teams) under the direct supervision of a health care professional.

KINE 5398. THESIS. 3 Hours.**KINE 5420. CONCEPTS IN ATHLETIC TRAINING. 4 Hours.**

Classroom and laboratory experiences that provide an introduction to the profession of Athletic Training with an emphasis on prevention and acute care of activity related injuries and illnesses. Specific topics will include injury prevention strategies; emergency first aid and acute care; superficial application of therapeutic modalities; nutritional considerations; and environmental considerations.

KINE 5430. ORTHOPEDIC ASSESSMENT I. 4 Hours.

A study of the common orthopedic injuries involving the lower extremities, with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisites: KINE 5120, KINE 5220, and KINE 5420.

KINE 5431. Orthopedic Assessment II. 4 Hours.

A study of the common orthopedic injuries involving the upper extremities, spine, head, and face with a special emphasis on recognition, evaluation, diagnosis, and initial management. Prerequisite: KINE 5430.

KINE 5432. PATHOPHYSIOLOGY AND PHARMACOLOGY. 4 Hours.

A study of acute and chronic illnesses and their response to, and impact on, physical activity. Discussion of pharmacological agents used in the care of general illnesses and musculoskeletal disorders in the physically active. Prerequisite: KINE 5430, KINE 5433, KINE 5130.

KINE 5433. THERAPEUTIC INTERVENTIONS I. 4 Hours.

A study of the scientific theory and basic principles of musculoskeletal rehabilitation and therapeutic modalities. Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of superficial heating and cooling therapeutic modalities and how manual treatments (e.g., traction, muscle energy and massage) can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common lower extremity injuries. Both surgical and non-surgical rehabilitation models for the lower extremity will be discussed with a special emphasis on the use of functional progressions. Prerequisites: KINE 5420, KINE 5220, KINE 5120.

KINE 5434. THERAPEUTIC INTERVENTIONS II. 4 Hours.

A study of the upper extremity and low back rehabilitation protocols and the use of electric therapeutic modalities (e.g., ultrasound, diathermy, laser, and electric stimulation). Emphasis will be placed on understanding the disablement model and learning how to plan, implement, document, and evaluate programs for the rehabilitation and reconditioning of injuries and illnesses of athletes and others involved with physical activity. Operation of electrical therapeutic modalities and how they can be incorporated into a rehabilitation program will be investigated. The underlying principles and application techniques for each modality, therapeutic exercise progressions, patient clinical goals, legal and safe practice guidelines, and evidence based therapeutic modality science will allow for critical thinking and problem solving in relation to common upper extremity and low back injuries. Both surgical and non-surgical rehabilitation models for the upper extremity and low back will be discussed with a special emphasis on the use of functional progressions. Prerequisite: KINE 5433.

KINE 5498. THESIS. 4 Hours.**KINE 5598. THESIS. 5 Hours.****KINE 5647. CLINICAL TEACHING PHYSICAL EDUCATION EC-12. 6 Hours.**

This supervised course is designed as a culminating field experience of pre-service professional preparation giving an opportunity to practically apply theoretical and pedagogical knowledge in school settings with a mentor teacher. Applied experience will be attained in both Elementary and Secondary settings. Additionally, a field-research project will be required to be arranged with course supervisor. Criminal background check required. Prerequisite: KINE 1315, KINE 2301, KINE 2302, KINE 3304, KINE 3388, KINE 4319, KINE 4320, KINE 4321, EDUC 5310, EDUC 5314, and LIST 5345.

KINE 5693. PHYSIOLOGY OF EXERCISE INTERNSHIP. 6 Hours.

Individualized academic training in an external professional exercise physiology setting (e.g., physical medicine, athletic training, external laboratory, health/fitness facility, professional teams or sports management) under the direct supervision of an exercise science professional.

KINE 5694. RESEARCH IN KINESIOLOGY. 6 Hours.

Individually approved research projects selected from the various areas of Kinesiology.

KINE 5698. THESIS. 6 Hours.**KINE 5994. RESEARCH IN KINESIOLOGY. 9 Hours.**

Individually approved research projects selected from the various areas of Kinesiology.

KINE 6100. SEMINAR IN KINESIOLOGY. 1 Hour.

Implements the research process with faculty guidance. Students will attend regularly scheduled lectures from internal and external faculty members. Learning activities based on student and faculty interest.

KINE 6103. PROFESSIONAL DEVELOPMENT. 1 Hour.

The philosophy and methods of conducting a university class for undergraduates are examined. Specific tips and suggestions for managing course materials, lectures, audiovisual aids, grading, etc. will be presented. The role of the university instructor as a researcher as well as a teacher will be elaborated. Specific topics will include the ethics and regulation of research, service as a journal referee, corresponding with peers, participating in a research team, manuscript preparation, presentation at professional conferences, and submitting material for publication.

KINE 6105. LABORATORY TECHNIQUE ROTATIONS IN KINESIOLOGY I. 1 Hour.

A primary objective of this course is to further your understanding of lab work in Kinesiology. A second objective is to enhance your ability for critical thinking in Kinesiology through the scientific process. This includes formation of a research question, hypothesis, designing an experiment, and inferring conclusions from data. Secondary objectives include improving technology skills to assist collecting and analyzing data, and writing and oral communication skills for demonstrating understanding of the kinesiology principles. Prerequisite: Consent of faculty.

KINE 6106. LABORATORY TECHNIQUE ROTATIONS IN KINESIOLOGY II. 1 Hour.

A primary objective of this course is to further your understanding of lab work in Kinesiology. A second objective is to enhance your ability for critical thinking in Kinesiology through the scientific process. This includes formation of a research question, hypothesis, designing an experiment, and inferring conclusions from data. Secondary objectives include improving technology skills to assist collecting and analyzing data, and writing and oral communication skills for demonstrating understanding of the kinesiology principles. This section must occur in a different laboratory than KINE 6105. Prerequisite: KINE 6105 and consent of faculty.

KINE 6126. JOURNAL CLUB IN EX PHYSIOL. 1 Hour.

This course is designed to provide doctoral students an opportunity to learn the art of critically reading and interpreting research articles. There will be emphasis on identifying strengths and weakness of research studies. There will also be an opportunity for the students to present their research study ideas and/or their preliminary findings of their research to the class. This will provide an opportunity for students to interact and receive/provide feedback regarding methodological approaches and interpretation of findings. Lastly, the student will learn how to prepare and deliver presentations to an audience. Prerequisite: Instructor Approval.

KINE 6194. RESEARCH IN KINESIOLOGY. 1 Hour.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of Instructor.

KINE 6293. GRANT WRITING. 2 Hours.

Students will learn strategies associated with grant applications. Students will prepare an individual proposal associated with a research grant application. Although submission for funding (e.g., pre-doctoral fellowship) is not required for the course, students will develop and complete a grant application.

KINE 6294. RESEARCH IN KINESIOLOGY. 2 Hours.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of the instructor.

KINE 6320. ADVANCED PHYSIOLOGY OF EXERCISE. 3 Hours.

Lecture and laboratory sessions are designed to investigate concepts of energy metabolism, lactate production and accumulation, energy expenditure, excess post exercise oxygen consumption, cardiovascular and temperature regulation, neuromuscular control, aerobic and anaerobic adaptations and ergonomics. *Doctoral students will be required to complete an additional research related topic. Prerequisite: Instructor Approval.

KINE 6322. METABOLISM & EXERCISE BIOCHEMISTRY. 3 Hours.

This course will address the regulation of exercise metabolism as well as the distinct biochemical pathways through which energy transduction occurs. This will allow the student to appreciate not only the end result of metabolism, ultimately the production and maintenance of cellular ATP levels, but also the pathways that biological machines use to achieve ATP homeostasis. Calorimetry, respiratory exchange ratio, and substrate utilization during exercise will be assessed as part of the laboratory section of this course. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6323. MOTOR CONTROL AND LEARNING. 3 Hours.

This course advances on fundamental concepts of motor behavior and performance combining theoretical principles to a variety of realistic contexts to provide the basis of skilled behavior. Contemporary research in human motor behavior models is used to identify effective solutions to practical problems and to spark ideas for optimizing development, learning, and control of motor skills. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6326. CARDIOCIRCULATORY PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of the cardiovascular and circulatory system will be studied, as well as, cardiac control, the cardiac cycle, cardiac output, hemodynamics, vascular resistance, arterial-venous oxygen difference and oxygen delivery and consumption. Heat production and thermal control during exercise will also be addressed in lecture and laboratory sessions. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6327. PULMONARY PHYSIOLOGY OF EXERCISE. 3 Hours.

Examines the structure and function of the pulmonary system including mechanics of breathing, lung capacity tests, pulmonary circulation, lung diseases, gas exchange, ventilation, diffusing capacity, acid/base balance, neural and chemical regulation of breathing, and blood flow with respect to rest and exercise values in healthy and diseased populations. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6328. NEUROMUSCULAR PHYSIOLOGY OF EXERCISE. 3 Hours.

The structure and function of muscle, including the motor unit, control and integration, central and peripheral modifiers of neuromuscular control and biochemical characteristics of fibers will be studied. These concepts will also be applied to concepts in strength and power development. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6330. ENVIRONMENTAL PHYSIOLOGY OF EXERCISE. 3 Hours.

This course will address the impact of environmental stress (e.g., thermal, gravitational, microgravity, etc.) on the cardiovascular system. Related focus will be given to cardiac function, blood pressure regulation and thermoregulation. Topics will be addressed in lecture and laboratory sessions. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6338. EXERCISE PRESCRIPTION FOR SPECIAL POPULATIONS. 3 Hours.

This course will discuss the pathophysiology of cardiovascular, metabolic and pulmonary diseases. Methods of exercise prescription and issues of concern will also be presented for these populations, as well as, low back pain, pregnancy, osteoporosis, cancer, children, older adults, fibromyalgia, multiple sclerosis, and cardiac disease. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5338 and KINE 6338. Prerequisite: Instructor Approval.

KINE 6350. APPLIED BIOMECHANICS. 3 Hours.

Application of Newtonian mechanics to human movement analysis. Biomechanical models using three-dimensional video and force plate data will be used to analyze human movement. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6360. FUNDAMENTAL PRINCIPLES OF INTEGRATIVE PHYSIOLOGY. 3 Hours.

This course is designed to provide a fundamental understanding of human physiology. Physiological function is a complex process that involves a complex interaction among the various physiological systems. As such there will be an emphasis on the integration of cellular, cardiovascular, renal, autonomic, respiratory, and endocrine physiology. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6362. PRINCIPLES OF MOVEMENT NEUROSCIENCE. 3 Hours.

This course focuses on principles of movement that have emerged from the computational study of motor control. The principles and application to processes such as motor planning, control, estimation, prediction and learning are explored. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5362 and KINE 6362.

KINE 6363. CONDITIONS OF THE MOTOR SYSTEM IN CHILDHOOD. 3 Hours.

This course explores a prevalent dysfunction of the motor system in childhood, known as Developmental Coordination Disorder (DCD). This class explores potential causes of DCD, common mechanisms and impairments, intervention methods and their effectiveness, and associated co-morbidities. In addition, students will understand the current state of research in the field and understand future avenues for research. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5363 and KINE 6363.

KINE 6364. CURRENT PERSPECTIVES IN MOTOR LEARNING AND CONTROL. 3 Hours.

This course explores five aspects of the new directions in research in the Motor Learning and Control field: Perception-Action mechanisms, Dynamical systems, Motor disorders, Learning and intervention for motor behavior, and neural mechanisms. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5364 and KINE 6364.

KINE 6365. ADVANCED MOTOR DEVELOPMENT. 3 Hours.

This course explores the current field of research in Motor Development applied to typical and special populations. More specifically, it discusses issues related to motor skill learning in childhood, the development of motor control, the relationship between motor competence and general health, and how lack of appropriate motor skills affect several domains of development (Developmental Coordination Disorder). To that, we use current research articles that discuss each one of these topics from different perspectives. *Doctoral students will be required to complete an additional research-related assignment. A student may not receive course credit for both KINE 5365 and KINE 6365.

KINE 6389. RESEARCH MANUSCRIPT SUBMISSION. 3 Hours.

The student will collect scientific data in the Physiology of Exercise laboratories or in a work-related environment under the supervision of a faculty member. The student will analyze the data, write a manuscript, and submit a manuscript for publication in a peer-reviewed journal. This course must be taken in the final semester of graduate work and requires approval of the Graduate Advisor. *Doctoral students will be required to complete an additional research-related assignment. Prerequisite: Instructor Approval.

KINE 6394. RESEARCH IN KINESIOLOGY. 3 Hours.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of the instructor.

KINE 6399. DISSERTATION. 3 Hours.

Preparation and submission of a doctoral dissertation in an area of kinesiology. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Kinesiology.

KINE 6694. RESEARCH IN KINESIOLOGY. 6 Hours.

Individually approved research projects selected from the various areas of Kinesiology. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: Consent of the instructor.

KINE 6699. DISSERTATION. 6 Hours.

Preparation and submission of a doctoral dissertation in an area of kinesiology. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Kinesiology.

KINE 6999. DISSERTATION. 9 Hours.

Preparation and submission of a doctoral dissertation in an area of kinesiology. Graded R/F only. Prerequisite: Admission to candidacy for the Ph.D. in Kinesiology.

KINE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Korean (KORE)

COURSES

KORE 1441. BEGINNING KOREAN I. 4 Hours. (TCCN = KORE 1411)

Multimedia immersion in the culture and language of Korea. Designed to enable students to understand and communicate effectively in Korean at the beginning level.

KORE 1442. BEGINNING KOREAN II. 4 Hours. (TCCN = KORE 1412)

Continuation of Beginning Korean I. Prerequisite: KORE 1441 with a grade of C or better.

KORE 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

KORE 2301. TOPICS IN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. KORE 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

KORE 2310. KOREAN CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Korean-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

KORE 2313. INTERMEDIATE KOREAN I. 3 Hours. (TCCN = KORE 2311)

Continued immersion in the culture and language of Korea. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: KORE 1442 with a grade of C or better.

KORE 2314. INTERMEDIATE KOREAN II. 3 Hours. (TCCN = KORE 2312)

Continuation of Intermediate Korean I. Prerequisite: KORE 2313 with a grade of C or better.

KORE 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

KORE 3301. TOPICS IN KOREAN LITERATURE AND CULTURE IN TRANSLATION. 3 Hours.

Main currents in contemporary Korean literature, art, film, and thought in relation to Korean political and social history. May be repeated for credit as topics or periods vary. May be taken to fulfill the foreign language literature requirement.

KORE 3303. KOREAN CONVERSATION AND CULTURE I. 3 Hours.

Practice in oral expression with an emphasis on vocabulary building, developing conversational skills, and cultural knowledge through the use of readings, film, and other media. Of special interest to students who wish to improve their skills in oral expression, reading comprehension, and writing. Credit will not be granted to native speakers of Korean. However, heritage speakers of Korean may register for the course when they pass the Korean Placement Test administered by the instructor. Prerequisite: KORE 2314 with a grade of C or better.

KORE 3304. KOREAN CONVERSATION AND CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge through the use of readings, film, and other media. Extensive conversation practice allows students to develop advanced-intermediate level oral skills in a broad range of communicative and cultural contexts. Students learn to express more abstract ideas through description, comparison, and narration. Credit will not be granted to native speakers of Korean. Heritage speakers of Korean may register for the course when they pass the Korean Placement Test administered by the instructor. Prerequisite: KORE 2314 with a grade of C or better.

KORE 3305. KOREAN READING AND COMPOSITION. 3 Hours.

An analysis of Korean texts and composition with emphasis on reading comprehension, grammar, writing skills, and compositional techniques. Readings may include newspaper articles, short stories, and essays on various topics of Korean culture. Prerequisite: KORE 2314 with a grade of C or better.

KORE 3310. KOREAN LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Korean language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May not be repeated for credit. Prerequisite: KORE 2314 or the equivalent with a grade of B or better.

KORE 3311. KOREAN LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Korean and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: KORE 3310 with a grade of B or better.

KORE 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Korean. KORE 3310 is strongly recommended before KORE 3345.

KORE 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Korean. Prerequisite: KORE 3310.

KORE 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Korean. Prerequisite: KORE 3310, KORE 4334, KORE 3311 or KORE 4335.

KORE 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

KORE 3393. KOREAN INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

KORE 4321. TOPICS IN KOREAN LINGUISTICS. 3 Hours.

Topics may include fundamentals of the linguistic structure of modern Korean, including phonology, morphology, syntax, and semantics, as well as pragmatics and typology. Focus on linguistic applications to the problems of learning Korean. Taught in English. Students who are working toward a major or minor in Korean will be required to complete some assignments in the target language. May be repeated for credit as topics may change. Prerequisite: KORE 1442 with a grade of C or better.

KORE 4331. TOPICS IN KOREAN CULTURE AND CIVILIZATION. 3 Hours.

Historical survey of the social, political, and economic aspects of Korean culture. Topics may include language, culture, history, literature, art, music, film, and other means of mass communication. No prior knowledge of Korean language or culture is necessary. Taught in English. Students who are working toward a major or minor in Korean will be required to complete some assignments in the target language. May be repeated as the topic changes.

KORE 4332. CONTEMPORARY KOREAN CULTURE. 3 Hours.

Study of the social, political, and economic aspects of Korean culture with focus on current events relevant to Korea. The course also explores language, literature, art, film, food, and music, including K-pop. No prior knowledge of Korean language or culture is necessary. Taught in English. Students who are working toward a major or minor in Korean will be required to complete some assignments in the target language.

KORE 4334. THE CULTURE OF BUSINESS. 3 Hours.

The relationship of culture, language, and meaning to issues affecting business and e-commerce in the Korean-speaking world, with emphasis on intercultural communication in an international business environment. Web-based media segments about international business in Korea and North America are used as an aid in the acquisition of pertinent cultural knowledge, as well as vocabulary. Prerequisite: KORE 2314 with a grade of C or better.

KORE 4335. BUSINESS KOREAN. 3 Hours.

Students learn to function in business environments, with emphasis on the skills needed for conducting e-commerce. Web-based media segments from Korea and North America are used to reinforce vocabulary, as well as cultural, and other linguistic knowledge. Prerequisite: KORE 2314 with a grade of C or better.

KORE 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper or a translation on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

KORE 4393. KOREAN INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Korean, outside readings, and formal presentations. Prerequisite: Two KORE 3000 level courses and permission of the instructor.

Landscape Architecture (LARC)

COURSES

LARC 4191. CONFERENCE COURSE. 1 Hour.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Departmental permission.

LARC 4300. INTRODUCTION TO LANDSCAPE ARCHITECTURE. 3 Hours.

An orientation to this environmental-design profession. Landscape architecture applies a blending of art with knowledge of natural processes and historical, cultural, and social dynamics to design richly supportive and beautiful outdoor places. Open to all students.

LARC 4301. SITE PLANNING AND DEVELOPMENT PROCESSES. 3 Hours.

Presents the processes and practices of site planning and development, including site inventory, analysis, and assessment of potential building sites. Students examine the natural, cultural, and social systems that affect design decisions, as well as the language and literature of landscape architecture. Prerequisite: 3.0 or higher GPA and department consent.

LARC 4325. URBAN SKETCHING. 3 Hours.

This course employs freehand, on-location sketching as a means for exploring and understanding the rich visual language of the urban environment. Lectures will introduce timeless urban design principles and field sketching techniques, which will be further developed through on-location sketching in the city. The course would be of interest to students of art, architecture, landscape architecture, planning, art and related fields. Some background in sketching through art or design coursework is recommended. Prerequisite: 3.0 or higher GPA and department consent.

LARC 4330. PLANT IDENTIFICATION AND ECOLOGY. 3 Hours.

Examines the design characteristics and horticultural requirements of a broad palette of plants adapted to the North Texas region. Field trips are required to learn the plants at both ornamental gardens and local ecological communities. Prerequisite: 3.0 or higher GPA and department consent.

LARC 4351. ADVANCED COMPUTER AIDED DESIGN. 3 Hours.

Focus is on a methodology for designing and illustrating with computer graphics that is very compatible with the design and production workflow of most landscape architecture offices. All work is done in an AutoCAD environment using AutoCAD for modeling and Lumion for rendering still images, interactive panoramas, and both viewpoint and key-frame animations. Photoshop is used for the creation of texture maps, image manipulation and photo-montage. Emphasis is on working intuitively and creatively. Prerequisite: ARCH 3343 or INTD 3343; 3.0 or higher GPA and department consent.

LARC 4391. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 3 Hours.

Independent study guided by an instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor and the Landscape Architecture Program Director.

LARC 4395. SELECTED TOPICS IN LANDSCAPE ARCHITECTURE. 3 Hours.

Studio and lecture courses to explore and present selected topics in landscape architecture and design. May be repeated for credit as topics change. Prerequisite: Permission of the Landscape Architecture Program Director.

LARC 4695. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 6 Hours.

Studio and lecture courses to explore and present selected topics in landscape architecture and design. Not repeatable for credit. Prerequisite: Permission of the Landscape Architecture Program Director.

LARC 5191. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 1 Hour.

Special subjects and issues in landscape architecture that may be studied independently under faculty supervision. May be repeated for credit.

LARC 5294. MASTERS COMPREHENSIVE EXAMINATION. 2 Hours.

Must be taken concurrently with Thesis. Directed study, consultation, and comprehensive examination of coursework, leading to and including the thesis. Oral presentation required. Required of all Master of Landscape Architecture students in the semester in which they plan to graduate. Prerequisite: LARC 5397.

LARC 5300. INTRODUCTION TO LANDSCAPE ARCHITECTURE. 3 Hours.

An orientation to this environmental-design profession. Landscape architecture applies a blending of art with knowledge of natural processes and historical, cultural, and social dynamics to design richly supportive and beautiful outdoor places. Open to all students.

LARC 5301. SITE PLANNING AND DEVELOPMENT PROCESSES. 3 Hours.

Presents the processes and practices of site planning and development, including site inventory, analysis, and assessment of potential building sites. Students examine the natural, cultural, and social systems that affect design decisions, as well as the language and literature of landscape architecture.

LARC 5302. LAND DEVELOPMENT PLANNING. 3 Hours.

The process of land development planning for landscape architects. Detailed expansion of LARC 5301. Uses case studies in land development planning to instruct students in the environmental, economic, legal, and visual issues associated with the land planning process.

LARC 5312. HISTORY AND THEORY OF LANDSCAPE ARCHITECTURE. 3 Hours.

Traces landscape planning and design from pre-history through Egyptian, Greek, Roman, Islamic and Medieval gardens to Italian, French, and English landscape approaches, culminating in the mid-19th century. Relates landscape design to societal, cultural, technological and belief systems of each period. Culminates in the contemporary history of the profession from Andrew Jackson Downing to the present day. The growth and development of the profession, professional education, the environmental movement, large scale regional land planning and significant landscape architectural projects of the past century and a half.

LARC 5320. COMMUNICATIONS FOR LANDSCAPE ARCHITECTS. 3 Hours.

Primary class for the development of graphic and communication skills in landscape architecture. Provides a method for transferring conceptual ideas into legible graphic presentations. Should be taken concurrently with LARC 5661 Design Studio I.

LARC 5321. ADVANCED COMMUNICATIONS. 3 Hours.

Focuses on the symbolic and representational computer graphics as well as communication and presentation techniques typically used in landscape architecture profession. Building on the graphic thinking, production, and communications skills covered in LARC 5320 and further expanding those basics to digital technologies and media. It also introduces students to fundamental concepts and principles of design and graphic composition in the digital environment. Prerequisite: LARC 5320.

LARC 5323. STUDIO TEACHING. 3 Hours.**LARC 5324. LANDSCAPE ARCHITECTURE AND ENVIRONMENTAL ART SEMINAR. 3 Hours.**

Siting and creating works of art; analysis of the creative processes of the two different-yet-related disciplines; case studies of built works. Communication of ideas through environmental media.

LARC 5325. URBAN SKETCHING. 3 Hours.

This course employs freehand, on-location sketching as a means for exploring and understanding the rich visual language of the urban environment. Lectures will introduce timeless urban design principles and field sketching techniques, which will be further developed through on-location sketching in the city. The course would be of interest to students of art, architecture, landscape architecture, planning, art and related fields. Some background in sketching through art or design coursework is recommended.

LARC 5326. DESIGN AND HUMAN BEHAVIOR. 3 Hours.

This course is an introduction to a range of viewpoints, concepts and characteristics of human behavior which should be taken into consideration when designing the urban environment. Cultural, social and psychological factors will be considered. Various theories and methods of environmental assessment and design will be studied that are based on an understanding of mutually supportive relationships between human beings and their physical environment. Field study will be employed to exercise theories and techniques explored.

LARC 5330. PLANT IDENTIFICATION AND ECOLOGY. 3 Hours.

Examines the design characteristics and horticultural requirements of a broad palette of plants adapted to the North Texas region. Field trips are required to learn the plants at both ornamental gardens and local ecological communities.

LARC 5331. PLANTING DESIGN. 3 Hours.

Design applications of plant material. Students apply the design problem-solving approach to the detailed aspects of planting design and complete a progressively-more-difficult series of problems to practice techniques and methods of plant manipulation that encompass both the aesthetic, programmatic, environmental, and ecological objectives of planting design. Prerequisites: LARC 5330; LARC 5661; LARC 5662.

LARC 5340. PROFESSIONAL PRACTICE. 3 Hours.

Ethical, legal, and administrative aspects of the public, private, and academic spectrums of practice in landscape architecture.

LARC 5341. LANDSCAPE TECHNOLOGY I. 3 Hours.

Surveying, site grading, storm water management, vertical and horizontal curves and an overview of the construction documentation process employed by landscape architects.

LARC 5342. LANDSCAPE TECHNOLOGY II. 3 Hours.

Examines hardscape materials and methods typical to the practice of landscape architecture, through readings, examinations, design detail exercises, and the creation of a complete set of construction documents. Construction site tours are required with area industry professionals. Prerequisites: LARC 5341.

LARC 5344. PARK AND RECREATION DESIGN AND PLANNING. 3 Hours.

History, data collection, program formulation, and design principles for public and private park and recreation systems and sites. Includes management objectives, operations and maintenance, and public input as planning components.

LARC 5350. LANDSCAPE ARCHITECTURE COMPUTER APPLICATIONS. 3 Hours.

Examines various computer applications currently used in office practice. Computer applications used for office management, site analysis, design development, construction documentation, and cost estimating. Introduction to computer aided design applications and the underlying theories of application.

LARC 5351. ADVANCED COMPUTER AIDED DESIGN. 3 Hours.

Focus is on a methodology for designing and illustrating with computer graphics that is very compatible with the design and production workflow of most landscape architecture offices. All work is done in an AutoCAD environment using AutoCAD for modeling and Lumion for rendering still images, interactive panoramas, and both viewpoint and key-frame animations. Photoshop is used for the creation of texture maps, image manipulation and photo-montage. Emphasis is on working intuitively and creatively. Prerequisite: LARC 5350.

LARC 5368. DESIGN PRACTICUM. 3 Hours.

An internship program which includes approved work done in a landscape architect's office or one of the related design fields. The purpose of the practicum is to provide students with practical design experience. Students may enroll in LARC 5368 for half-time employment or LARC 5668 for full time employment.

LARC 5380. RESEARCH METHODS IN LANDSCAPE ARCHITECTURE. 3 Hours.

Theories of practical research and methods of applying them as they relate to landscape architecture. Includes research program development, data collection and analysis, thesis proposal writing, and research tools and techniques. Emphasis is on qualitative methods. Prerequisites: LARC 5661, LARC 5662.

LARC 5382. URBAN DESIGN SEMINAR. 3 Hours.

The Seminar establishes a basic critical understanding, and a critique of urban design by reviewing its past, present and the future as an academic field and an area of practice. The seminar introduces urban design as a transdisciplinary specialization and professional endeavor that encompasses landscape architecture, architecture, city planning, and real estate to shape and influence the built environment primarily within urban context. Students actively present and lead informed discussions on topics such as urban form, urban landscapes, land-use patterns, population density, circulation, legibility, public art, environmental behavior and urban/rural interchange. Field trips are required.

LARC 5391. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 3 Hours.

Special subjects and issues in landscape architecture that may be studied independently under faculty supervision. May be repeated for credit.

LARC 5395. SELECTED TOPICS IN LANDSCAPE ARCHITECTURE. 3 Hours.

Selected studio or lecture course offerings in specific areas of expertise or interest. Course allows the program the flexibility to address the ever-changing needs of students and the profession by offering courses beyond the scope of the core curriculum. May be repeated for credit.

LARC 5397. THESIS PREP. 3 Hours.

Preparation for landscape architecture thesis (design or written) on design, technology, history or professional principles. Students work closely with a landscape architecture faculty advisor and thesis committee to complete the proposal for a written or design thesis and begin thesis work. Prerequisite: LARC 5380.

LARC 5398. THESIS. 3 Hours.

Independent research and presentation of findings under the direction of a supervising committee. The findings of the thesis should extend the boundaries of the professional discipline by either presenting new and unique ideas or information, or by interpreting existing knowledge from a different perspective. Prerequisite: LARC 5397.

LARC 5623. STUDIO TEACHING PRACTICUM. 6 Hours.

Students spend one semester as a teaching assistant in the studio sequence under the supervision of the assigned faculty member. They will observe the methods employed in the studio and prepare a comprehensive evaluation of the studio in conjunction with the instructor. The students will oversee one short studio project and evaluate its success or failure based on the criteria learned in LARC 5323 and the goals and objectives of the test project. Prerequisite: LARC 5323.

LARC 5660. ENRICHMENT DESIGN STUDIO. 6 Hours.

Review of the principles and processes of design presented in Design Studios I, II, and III. Provides an opportunity for students with weak design and graphic skills to improve those skills to meet requirements for Design Studio IV. Course can use design competitions as projects, for advanced students who have completed the studio sequence. May be repeated for credit as specific topics vary. Prerequisite: LARC 5661 and LARC 5662.

LARC 5661. DESIGN STUDIO I. 6 Hours.

A design course for students with no background in landscape architecture or design. Outlines the site planning and site design decision-making process. Focuses on providing students with the verbal, intellectual, and graphic tools necessary to successfully tackle a design problem and bring it to a schematic level of completion. It is highly recommended that this course be taken concurrently with LARC 5320.

LARC 5662. DESIGN STUDIO II. 6 Hours.

A continuation of LARC 5661. Basic design principles and their application to three-dimensional spaces. Examines how humans occupy exterior space and combines this information with the principles of design to create garden scale models. Models are used as a medium for design expression. Landscape character, design simulation, landscape media, landscape context, and human spatial experience are included.

LARC 5663. DESIGN STUDIO III: SITE PLANNING. 6 Hours.

Features the process of solving complicated site planning and site design problems. Each phase of the site planning process is examined in detail by undertaking one or more studio problems that involve resolution of issues related to existing site conditions, program development, conceptual design, design development, and design detailing.

LARC 5664. DESIGN STUDIO IV: ENVIRONMENTAL PLANNING. 6 Hours.

Studio IV is designed to provide the fundamental concepts and mechanisms underlying natural processes, and environmental planning and design. It addresses the influence of both natural and human factors on landscape planning and landscape architectural design within the context of sustainability. The course expands the regional planning and design to the environment as a large scale ecological unit, independent of political boundaries, through the use of Geographic Information System (GIS) and Geodesign framework. Prerequisite: LARC 5341, LARC 5661, LARC 5662, and LARC 5663.

LARC 5665. DESIGN STUDIO V: THE URBAN LANDSCAPE. 6 Hours.

The studio uses both real and hypothetical projects as well as competitions as design problems which require in depth understanding of behavioral, social, environmental, and economic conditions in relation to landscape architecture and urban design. Basic design and planning principles acquired in earlier studios are reiterated, and solutions to new problems on complex urban projects are introduced that benefit from interactions with architects, planners, urban designers, and developers. Prerequisite: LARC 5341, LARC 5342, LARC 5661, LARC 5662, LARC 5663, and LARC 5664.

LARC 5668. DESIGN PRACTICUM. 6 Hours.

An internship program which includes approved work done in a landscape architect's office or one of the related design fields. The purpose of the practicum is to provide students with practical design experience. Students may enroll in LARC 5368 for half-time employment or LARC 5668 for full time employment.

LARC 5691. CONFERENCE COURSE IN LANDSCAPE ARCHITECTURE. 6 Hours.

Special subjects and issues in landscape architecture that may be studied independently under faculty supervision. May be repeated for credit.

LARC 5693. MASTERS DESIGN THESIS. 6 Hours.

Independent research and design/planning investigations, under the direction of a supervising committee, that demonstrate rigorous original thinking. Topics can explore material in a new light or engage research and design practices in ways that strengthen and define the final masters design thesis in relationship to the field. Prerequisite: LARC 5397.

LARC 5698. THESIS. 6 Hours.

Independent research and presentation of findings under the direction of a supervising committee. The findings of the thesis should extend the boundaries of the professional discipline by either presenting new and unique ideas or information, or by interpreting existing knowledge from a different perspective. Prerequisite: LARC 5397.

LARC 5998. THESIS. 9 Hours.

Independent research and presentation of findings under the direction of a supervising committee. The findings of the thesis should extend the boundaries of the professional discipline by either presenting new and unique ideas or information, or by interpreting existing knowledge from a different perspective. Prerequisite: LARC 5397.

Latin (LATN)

COURSES

LATN 1441. LATIN LEVEL I. 4 Hours. (TCCN = LATN 1411)

(LATN 1411).

LATN 1442. LATIN LEVEL II. 4 Hours. (TCCN = LATN 1412)

Prerequisite: LATN 1441 or equivalent.

LATN 2313. LATIN LEVEL III. 3 Hours. (TCCN = LATN 2311)

Prerequisite: LATN 1442 or equivalent.

LATN 2314. LATIN LEVEL IV. 3 Hours. (TCCN = LATN 2312)

Prerequisite: LATN 2313 or equivalent.

LATN 4301. INTENSIVE LATIN FOR READING I. 3 Hours.

Covers approximately the same material as LATN 1441/LATN 1442 (Levels I and II). Credit will not be granted for both.

LATN 4302. INTENSIVE LATIN FOR READING II. 3 Hours.

Covers approximately the same material as LATN 2313 and LATN 2314 (Levels III and IV). Credit will not be granted for both.

LATN 4335. TOPICS IN LATIN LITERATURE. 3 Hours.

Close reading of one or more Latin texts, with attention both to grammatical precision and to interpretation. Student should be able to read unaltered Latin. Course may be repeated for credit.

LATN 4391. CONFERENCE COURSE. 3 Hours.

Advanced independent study in Latin literature. May be repeated for credit with departmental permission.

LATN 5301. INTENSIVE LATIN FOR READING I. 3 Hours.

Covers approximately the same material as LATN 1441 and LATN 1442 (Levels I and II).

LATN 5302. INTENSIVE LATIN FOR READING II. 3 Hours.

Covers approximately the same material as LATN 2313 and LATN 2314 (Levels III and IV).

LATN 5391. CONFERENCE COURSE IN LATIN. 3 Hours.

May be taken only with the permission of the instructor and the Graduate Advisor.

Leadership Studies (LSHP)

COURSES

LSHP 1101. INTRODUCTION TO LEADERSHIP. 1 Hour.

A continuation of the Goolsby BNSF Early Leader Freshman Interest Group that will strengthen students' skills that lead to success in business. Faculty and staff will assist in implementing individualized corrective measures. Technical writing will be taught and evaluated. Elective only; does not count as a part of the professional certification requirements. Pass-fail grades will be awarded. For entering freshmen or entering transfer students.

LSHP 2302. LEADERSHIP AND COMMUNICATION IN ORGANIZATIONS. 3 Hours.

This course focuses on the development of leadership and interpersonal business communication skills. The following topics are also addressed: verbal and nonverbal communication, dyadic and organizational communications, communication roles and relationships, small-group work, networking, and the diagnosis and improvement of organizational communications. Credit will not be granted for both MANA 2302 and LSHP 2302. Prerequisite: Admission to the BNSF Early Leaders Program of the Goolsby Leadership Academy.

LSHP 4191. STUDIES IN LEADERSHIP. 1 Hour.

Advanced studies, on an individual basis, in the various fields of leadership and management. Prerequisite: MANA 4322; LSHP 4313.

LSHP 4311. LEADER AS COMMUNICATOR. 3 Hours.

Helps students excel in written and oral communication skills. Assignments include writing short papers, making oral presentations, and learning to critique one another. This course provides a perspective on leadership in formal organizations with emphasis on communication, exercising influence, decision-making, and conflict management. Prerequisite: Admission to the Goolsby Leadership Academy.

LSHP 4312. LEADER ETHICS. 3 Hours.

Addresses rule-based, consequential, and virtue ethics by examining intentions, actions, and consequences of individual behavior. The course emphasizes the development of character and personal integrity. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

LSHP 4313. SENIOR EXECUTIVE LEADERSHIP. 3 Hours.

Course consists of a series of lectures by executives who provide insight into their own unique leadership skills and development. Prerequisite: Admission to the Goolsby Leadership Academy.

LSHP 4314. GLOBAL MARKET PLACE. 3 Hours.

Designed to assist Goolsby Fellows to be competent in an intercultural world. The heart of the course is aimed at appreciating human diversity and variance. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

LSHP 4315. EXECUTIVE INTERNSHIP. 3 Hours.

This internship experience places Goolsby Fellows in field settings with executives from the college's Advisory Council and other executive leaders in specialized areas for students. Prerequisite: Admission to the Goolsby Leadership Academy or permission of the Goolsby Leadership Academy Director.

Learning Analytics (LAPS)

COURSES

LAPS 5310. LEARNING ANALYTICS FUNDAMENTALS. 3 Hours.

Introduction to foundational elements in the emerging field of learning analytics, including theory, philosophy, ethics, cognitive processes, and tools, as well as its contribution to the psychology of learning research and relationship with other academic fields.

LAPS 5320. EXPERIMENTAL DESIGN & METHODOLOGY. 3 Hours.

Methodologies in learning analytics research, including the philosophy of science, measurement, and complex experimental and quasi-experimental designs.

LAPS 5330. PSYCHOLOGY OF LEARNING & LEARNING SCIENCES. 3 Hours.

Exploration of knowledge processes such as learning, sensemaking, decision-making, and self-regulation with focus on psychological processes and the science of learning.

LAPS 5340. BIG DATA METHODS. 3 Hours.

The collection, analysis, and reporting of large-scale educational and social interaction datasets, including the survey of different types of data, data infrastructure, methods for managing and interacting datasets, governing policies, and data stewardship.

LAPS 5350. PRIVACY & ETHICS IN LEARNING ANALYTICS. 3 Hours.

Ethical considerations for the collection and use of learning data, including social and trust practices with learners, access, ownership, storage, security, privacy, policy, transparency, and algorithms.

LAPS 5360. INTRODUCTION TO DATA ANALYSIS AND R. 3 Hours.

Fundamental elements of conducting data analysis in the R programming language, including basic operations, data structures, dataset cleaning and manipulation, and visualization.

LAPS 5370. INTRODUCTION TO STATISTICAL ANALYSIS. 3 Hours.

This course will provide students who receive probationary admission due to an inadequate mathematical background with the core principles of statistical analysis necessary to be successful in the program. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5375. PROBABILITY AND STATISTICAL INFERENCE. 3 Hours.

Examination of probability, distributions, estimation, and hypothesis testing in learning contexts. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5376. APPLIED REGRESSION ANALYSIS. 3 Hours.

A comprehensive review of different regression models that emphasizes modeling, inference, diagnostics, and application to educational datasets. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5377. LINEAR MODELS AND EXPERIMENTAL DESIGN. 3 Hours.

In-depth exploration of univariate and multivariate linear models to derive inferential procedures depending on appropriate learning contexts. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5378. MULTIDIMENSIONAL SCALING AND CLUSTERING. 3 Hours.

In-depth study of the investigation of observed similarities and dissimilarities between different objects and then grouping the objects based on those similarities. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5380. CAUSAL INFERENCE FOR PROGRAM EVALUATION. 3 Hours.

Using learning analytics to determine the impact of intervention outcomes and critically evaluate quantitative research pertaining to cause and effect in a learning context. This will include potential pitfalls and key factors, as well as application of both practitioner and research lenses. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5388. ADVANCED METHODS IN EDUCATIONAL DATA MANAGEMENT/LEARNING ANALYTICS. 3 Hours.

Sophisticated and emerging techniques for analyzing learning data, including advanced graphing and visualization techniques, multimodal data (such as psychophysiological data), modeling, process mining, measurement of psychological attributes involved in knowledge creation, and learner profile development. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5390. LEARNING DESIGN AND ANALYTICS. 3 Hours.

Survey of foundational learning design theories related to human behavior in formal and informal learning settings. Focus on models and strategies to design and evaluate technology that supports and helps improve learning. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5391. INDEPENDENT STUDY. 3 Hours.

Student and instructor agree upon topic of study and requirements for deadlines and products. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5392. COGNITION, COMPUTERS, AND METACOGNITION. 3 Hours.

The role of learning, sensemaking, human development, and cognition theories in relation to the use of digital technology in knowledge processes. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5393. NATURAL LANGUAGE PROCESSING FOR EDUCATIONAL RESEARCH. 3 Hours.

Application of methods in natural language processing (NLP) and natural language understanding (NLU) to text and language data in the educational setting. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5394. SOCIAL NETWORK ANALYSIS. 3 Hours.

Introduction to social network analysis in educational settings. The course focuses on how to analyze and interpret relationships between people, artifacts, and text in digital learning settings. The students will learn to prepare data, map and analyze these relationships. Foundational graph analysis concepts and their application in learning analytics will be discussed. Students will be trained to use R programming for analysis, but the use of other software is possible. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5395. HUMAN AND ARTIFICIAL COGNITION. 3 Hours.

Artificial intelligence (AI) is exerting growing influence in all aspects of modern life. This course surveys AI trends and details prominent models for how human and machine agents intersect in knowledge work, using discrete cognitive processes as the basic unit for determining agent roles. A specific focus is on optimal relationship determination and the data types that provide indicators of cognitive states. Prerequisite: Completion of LAPS 5310, LAPS 5320, LAPS 5330, and LAPS 5340 or LAPS 5360.

LAPS 5610. CAPSTONE. 6 Hours.

Application of program knowledge and skills learned in prior coursework to complete a small-scale, integrative project involving analysis of a real world, educational data set. Students will have the opportunity to apply for competitive internships that will provide small scholarships. All students will to work in diverse groups of 5 to 6 students along with a faculty mentor analyzing specific industry data to solve real-world problems. The small groups will be designed to combine students with diverse skill sets and emphasize community and collaboration. Prerequisite: Completion of coursework and approval of department.

Linguistics (LING)

COURSES

LING 2301. INTRODUCTION TO THE STUDY OF HUMAN LANGUAGE. 3 Hours.

An introduction to the scientific study of human language, using English as an example. Topics in the course include how sounds are produced, how words and sentences are structured, how and why language changes, how language is acquired by children and adults, how the brain processes language, and how language and society intersect.

LING 2321. CONSTRUCTED LANGUAGES. 3 Hours.

This course is an introduction to constructed languages. Presentation, examination, and analysis of constructed languages, such as Esperanto, Klingon, Dothraki, and many others.

LING 2351. E-LANGUAGES. 3 Hours.

Human languages can be spoken or written, but today much of our language use is also transmitted through electronic devices. This course looks at aspects of language as reflected in the use of the technologies of modern life. Topics may include the language used in texting, chat, gaming, machine tools for recognizing print and speech, and computer translators.

LING 2371. LANGUAGE IN A MULTICULTURAL USA. 3 Hours.

The relationship between language in the U.S. and social power. This course explores how negative attitudes toward some language varieties and languages spoken in the U.S. arise from social factors, rather than features of the languages themselves. In addition to studying language varieties, the course shows how American institutions such as the educational system and the media reinforce these negative attitudes and contribute to discrimination. Offered as AAST 2371 and LING 2371; credit will be granted in only one department.

LING 2391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in Linguistics and TESOL. Consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

LING 3301. TOPICS IN LINGUISTICS. 3 Hours.

Covers issues related to language and linguistics. Topics may include language and film/literature/pop culture, endangered languages, speech synthesis, applied linguistics, or other topics determined by instructor. May be repeated for credit when content changes. No prerequisites.

LING 3309. LINGUISTICS FOR LANGUAGE TEACHERS. 3 Hours.

An examination and analysis of the linguistic structures of languages of the world, with a focus on how this knowledge can inform language teaching. Prerequisite: LING 2371, or may be taken concurrently.

LING 3311. PRINCIPLES OF LINGUISTIC ANALYSIS. 3 Hours.

This course prepares students for the systematic study of human language. Drawing on data from a range of languages, it will examine the sound patterns of language (phonetics and phonology), words and word formation (morphology), sentence structure (syntax), meaning (semantics), and language in context (pragmatics). Emphasis will be placed on methods of linguistic analysis to solve problems in phonology, morphology, syntax, and semantics. Additional topics may include language acquisition; linguistic variation; and/or historical/comparative linguistics.

LING 3330. PHONETICS AND PHONOLOGY. 3 Hours.

Human speech sounds from both physiological and cognitive perspectives; the range of speech sounds in language and the patterning of such sounds within particular language systems. Prerequisite: LING 3311 with a grade of C or better.

LING 3340. SYNTAX I. 3 Hours.

An examination of syntactic investigation, developed primarily through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science. Prerequisite: LING 3311 with a grade of C or better.

LING 3345. CRITICAL REASONING IN LINGUISTICS. 3 Hours.

A survey of formal logical approaches used to describe and explain natural language phenomena. Topics include the fundamentals of logical representation and argumentation, the effective use of inductive and deductive reasoning, and the construction of more complex linguistic arguments. Prerequisites: LING 3311 and either PHIL 1301 or PHIL 3321.

LING 3350. LEXICAL SEMANTICS. 3 Hours.

Examines meaning at the lexical level. Topics may include ways of describing meaning (sense and reference, componential analysis and prototype theory), organizing meaning (the mental lexicon, connotation and euphemism, linguistic relativity), and applying these concepts to analyzing word classes. Prerequisite: LING 3311 with a grade of C or better.

LING 3360. LANGUAGE ACQUISITION. 3 Hours.

An examination of the principles and patterns that underlie the acquisition of language, with a focus on child language acquisition. Prerequisite: LING 3311 or LING 3309, with a grade of C or better.

LING 3366. TOPICS IN RACE/ETHNICITY AND LANGUAGE IN THE U.S.. 3 Hours.

Either an intensive focus within one racial/ethnic group or a comparison between two or more groups. Focus may include language in the U.S. as it pertains to one (or more) of these communities: African Americans, Mexican Americans and Latinos/as, Native Americans, and/or Asian Americans. May be repeated for credit as course content changes.

LING 3370. PSYCHOLOGY OF LANGUAGE. 3 Hours.

An examination of psycholinguistics, or the cognitive processes involved in the acquisition, comprehension, and production of language. The class will focus mainly on language perception and production by native speakers, but will also address issues related to bilingual/second language processing. Prerequisite: LING 3311 with a grade of C or better, or instructor approval.

LING 3391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in Linguistics and TESOL. Consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

LING 4301. PHONOLOGICAL THEORY I. 3 Hours.

An investigation into the principles governing sound systems in human languages. Prerequisite: LING 3330 with a grade of C or better.

LING 4303. SYNTAX II. 3 Hours.

Continuation of LING 3340, which explores further aspects of English syntax; universal and language-particular constraints on syntactic structure and rules. Further development and extensions of the generative approach to syntactic investigation. Prerequisite: LING 3340 with a grade of C or better.

LING 4317. SOCIOLINGUISTICS. 3 Hours.

Language in its social context, including linguistic variation, address and reference, speech levels, bilingualism, code switching, speech acts, conversation analysis, and language and gender. Prerequisite: LING 3311.

LING 4318. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, women's and men's language in other cultures, the acquisition of gendered ways of speaking, and sexism in language. Offered as LING 4318 and WOMS 4318; formerly offered as LING 4392/WOMS 4392; credit will be granted only once. Prerequisite: LING 3311.

LING 4320. HISTORICAL AND COMPARATIVE LINGUISTICS. 3 Hours.

(Also taught as LING 5314). Language development and change; the comparative method and its use in linguistic reconstruction; laws of language change. Prerequisite: LING 3311.

LING 4325. SLA THEORIES AND THE TEACHING OF LANGUAGE. 3 Hours.

An examination of a variety of theories in Second Language Acquisition, with a focus on how this knowledge informs classroom practice for teachers of ESL and other languages. Prerequisite: LING 3309 or LING 3311.

LING 4326. BILINGUALISM. 3 Hours.

An examination of issues related to bilinguals and bilingualism. The areas that will be covered include different types of bilinguals/bilingualism, bilingual education, the cognitive benefits or disadvantages of being a bilingual, and language processing in bilinguals. Prerequisite: LING 3311 with a grade of C or better.

LING 4327. SECOND LANGUAGE ACQUISITION. 3 Hours.

This course focuses on second language acquisition. Topics include the similarities and differences between first and second language acquisition, perception and production in native and non-native languages, and the implications of second language acquisition and processing research for theoretical linguistics and language teaching. Prerequisite: LING 2301, LING 2371, LING 3309, or LING 3311.

LING 4328. PSYCHOLINGUISTICS. 3 Hours.

This course will focus on the cognitive processes involved in the comprehension and production of language. The class will involve opportunities for hands-on experience using psycholinguistics research methods. Prerequisite: LING 3370 or LING 3311 with a grade of C or better, or instructor approval.

LING 4330. CORPUS LINGUISTICS. 3 Hours.

Applications of ways in which computer science and linguistics inform each other. Corpus linguistics focuses on how computers can be used to both obtain the data that we examine and to provide the tools we use for analysis. Includes readings, practical experience with several different software programs, and using sources of online corpora. Prerequisite: LING 3311.

LING 4334. MORPHOLOGY. 3 Hours.

A theoretical and typological investigation into the nature of word-structure and word-formation processes in human languages. Prerequisite: LING 4301 or LING 4303.

LING 4335. LANGUAGE UNIVERSALS & LINGUISTIC TYPOLOGY. 3 Hours.

Consideration of universals in human language, their explanation and description, and language types. Prerequisite: LING 4301.

LING 4345. FORMAL SEMANTICS. 3 Hours.

Examination of empirical facts, fundamental goals, and current techniques of formal semantic theory with a goal toward independent research. Topics include basic tools of current semantic theory and various core topics concerning meaning in English and other languages. Prerequisite: LING 3311 with a grade of C or higher.

LING 4347. PRAGMATICS. 3 Hours.

Analysis of how context and form interact with meaning. Topics may include deixis, reference, speech acts, presupposition, implicature, information structure and intonation. Prerequisite: LING 3311.

LING 4353. TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on teaching techniques of aural comprehension; speaking, reading, and writing skills; testing, language laboratory, and linguistic-cultural differences.

LING 4354. METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Systematic study of how to teach English to second/foreign language learners. Topics covered include the teaching of grammar, vocabulary, reading, writing, pronunciation, speaking, and listening. Prerequisite: LING 2301 or LING 2371; LING 4353.

LING 4360. NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Study of a selected non-Western language, language family or language area based on descriptive linguistic analysis. May be repeated once for credit as the topic varies. Prerequisite: LING 3330 and LING 3340.

LING 4362. LANGUAGE DOCUMENTATION. 3 Hours.

The course discusses fundamental issues that are part of language documenting and description. These include project design, research ethics and intellectual property, researcher and community rights and responsibilities, world language ecology, technology and software, archiving issues, grant-writing fundamentals, and related issues that form best practices for language documentation projects. (Also offered as LING 5362. Credit will be granted only once for LING 4362 or LING 5362.) Prerequisite: LING 3311.

LING 4363. LANGUAGE ENDANGERMENT AND REVITALIZATION. 3 Hours.

This course examines language endangerment and what it means for a language to become endangered, and studies language revitalization. Case studies are presented where communities seek to maintain the number of speakers or revive the language. (Also offered as LING 5363. Credit will be granted only once for LING 4363 or LING 5363.) Prerequisite: LING 3311.

LING 4370. HISTORY OF LINGUISTICS. 3 Hours.

Surveys the recent history of the field of linguistics and familiarizes students with the key figures and theories in recent linguistic history, with special attention to the development and emergence of generative theories of syntax, semantics, and phonology. Prerequisite: LING 3330 and LING 3340 and either LING 4301 or LING 4303.

LING 4389. TOPICS IN LINGUISTICS. 3 Hours.

Current topics in linguistics research. May be repeated if topic changes. Prerequisite: Either LING 3330, LING 3340, or LING 4317, and permission of undergraduate advisor.

LING 4391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Either LING 3311, LING 3330, or LING 3340, and permission of undergraduate advisor.

LING 4393. INTERNSHIP IN LINGUISTICS. 3 Hours.

Internship (paid or unpaid) in Linguistics, supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of Linguistics. Students are required to perform and report on designated career-related duties in a professional environment and submit assignments related to the work performed. May be repeated with the approval of the Undergraduate Advisor. May be repeated for credit once, as internship experience changes. Prerequisite: LING 3311 and permission of the instructor.

LING 4394. LING 4394 HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department. Approval of instructor required.

LING 4395. INTERNSHIP IN TESOL. 3 Hours.

Internship (paid or unpaid) in TESOL, supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of TESOL and/or the application of this knowledge. Students are required to perform significant teaching-related duties in an ESL/EFL environment and submit assignments related to the work performed. May be repeated with the approval of the Undergraduate Advisor, as internship experience changes. Prerequisite: LING 4353 and LING 4354 (may be concurrently enrolled in 4354).

LING 5100. THESIS WRITING SEMINAR. 1 Hour.

Techniques for researching and writing a thesis/dissertation in linguistics. Required of all students who have elected the Thesis or Thesis Substitute degree option in Linguistics. Prerequisite: completion of at least 9 hours of LING courses.

LING 5110. TESOL PRACTICUM. 1 Hour.

In this class, students will apply the principles presented in the TESOL Certificate coursework through observing and teaching ESOL classes. Prerequisite: Permission of adviser.

LING 5190. CONFERENCE COURSE IN LINGUISTICS. 1 Hour.

Graded P/F. Prerequisite: Permission of instructor.

LING 5300. LINGUISTIC ANALYSIS. 3 Hours.

This course introduces students to the field of linguistics, the systematic study of human language. Drawing on data from a range of languages, it will examine the sound patterns of language (phonetics and phonology), words and word formation (morphology), sentence structure (syntax), meaning (semantics), and language in context (pragmatics). Emphasis will be placed on methods of linguistic analysis to solve problems in phonology, morphology, syntax, and semantics. May be repeated for credit as the focus of the course or instructor changes. May not be used to fulfill Ph.D. degree requirements in linguistics.

LING 5301. INTRO TO COMMUNICATIVE LANGUAGE TEACHING. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on techniques of teaching aural comprehension; speaking, reading, and writing skills; attention to testing, language laboratory, and linguistic-cultural differences. Course includes a practical teaching requirement.

LING 5302. METHODS IN TEACHING READING AND WRITING. 3 Hours.

This course is an in-depth study of how to design ESL/EFL reading and writing classes and how to create instruction and assessment materials for these classes based on sound pedagogical principles.

LING 5303. ERROR ANALYSIS IN THE TEACHING OF ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

A study of error analysis as a means to diagnose particular patterns in language production of ESL/EFL students. Emphasis on current research and application to specific problems and contexts. Prerequisite: LING 5300 or LING 5309.

LING 5304. PEDAGOGICAL GRAMMAR OF ENGLISH. 3 Hours.

This course is a study of English sentence structure. Topics include article use, phrase structure, verb tense, agreement, pronouns, question forms, and embedded clauses. The course will focus on the second-language acquisition and processing of these structures as well as on ways that they can be addressed during ES/FL grammar instruction. Prerequisite: LING 5300 or LING 5309; LING 5301 or LING 5302.

LING 5305. SECOND LANGUAGE ACQUISITION. 3 Hours.

This course is the study of the processes of first and second language acquisition, their similarities and differences, language disorders, language perception and production, and implications of language acquisition research for linguistic theory and language teaching. May be repeated for credit as topic changes. Prerequisite: LING 5300 or permission of instructor.

LING 5306. TESOL CURRICULUM DESIGN. 3 Hours.

Systematic presentation of elements in development, management and evaluation of TESOL programs. Attention to needs analysis, syllabus design, materials selection and adaptation, teaching and evaluation in language curriculum design. Prerequisite: LING 5301.

LING 5307. PEDAGOGICAL PHONOLOGY OF ENGLISH. 3 Hours.

A study of the sound system of English. Topics include segmental phonemes, stress, length, intonation and variation at the lexical and utterance levels. Application to teaching English as a second or foreign language. Problems of description; means of application; adaptation to current pedagogical methods. Prerequisite: LING 5300; LING 5301 or LING 5302.

LING 5308. LANGUAGE ASSESSMENT. 3 Hours.

This is an introductory testing course. Topics will include different types of language assessment, issues related to language testing, measurement and evaluation of achievement and proficiency in a second language, and developing language tests of various language skills. Prerequisite: LING 5301, LING 5302, or permission of the instructor.

LING 5309. LINGUISTICS FOR LANGUAGE PROFESSIONALS. 3 Hours.

This course is an introduction to Applied Linguistics. It includes examination and analysis of the linguistic structures of languages of the world, with a focus on how this knowledge can inform language teaching.

LING 5310. SOCIOLINGUISTICS. 3 Hours.

The study of language and social context (made up of society and individuals). Content includes language as a social phenomenon, theoretical perspectives on relationship between language, society and individuals, basic concepts in sociolinguistics; and may include topics in macro- and micro-sociolinguistics such as multilingualism, language planning and standardization, linguistic variation, code switching, conversational analysis, and language and gender. May be repeated for credit as the topic changes.

LING 5311. SOCIOLINGUISTICS OF SOCIETY. 3 Hours.

The study of macro-sociolinguistics, including topics such as multilingualism, language standardization and planning, literacy, language dominance, maintenance and death, language and identity, diglossia, and pidgins and creoles. May be repeated for credit as the topic changes. Prerequisite: LING 5310.

LING 5312. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, men's and women's languages in other cultures, the acquisition of gendered ways of speaking, and sexism in language. May be repeated for credit as the topic changes. Prerequisite: LING 5310.

LING 5313. TOPICS IN SOCIOLINGUISTICS. 3 Hours.

Selected topics relating the scientific methodologies of linguistics to larger concerns of society and culture including cognition, motivation, description and analysis. May be repeated for credit when topic changes. Prerequisite: LING 5310.

LING 5314. HISTORICAL AND COMPARATIVE LINGUISTICS. 3 Hours.

The study of language development and change; comparative method and its use in linguistic reconstruction; laws of language change. May be repeated for credit as the topic changes. Prerequisite: LING 3330 or permission of instructor.

LING 5315. READINGS AND RESEARCH IN PEDAGOGY AND PRACTICE. 3 Hours.

This course focuses on selected readings for classroom practitioners, with a focus on work that connects current theory with classroom practice. Prerequisite: LING 5301 or LING 5302.

LING 5319. PHONETICS AND PHONOLOGY. 3 Hours.

Human speech sounds from both physiological and cognitive perspectives; the range of speech sounds in language and the patterning of such sounds within particular language systems. This course does not fulfill core PHD requirements for phonology.

LING 5320. PHONOLOGICAL THEORY. 3 Hours.

Ling 5320 is a foundations course for the study of the principles that govern sound systems in human languages. Students will work with sound patterns from a variety of languages in order to understand the fundamental aspects of phonological phenomena, and course assignments will require application of the descriptive and theoretical tools in working with sound pattern data. Lectures will further develop this description, analysis, and argumentation for phonological data. May be repeated for credit as the topic changes. Prerequisite: Permission of Advisor.

LING 5321. ADVANCED PHONOLOGICAL THEORY. 3 Hours.

A continuation of LING 5320. Topics include autosegmental analysis, lexical phonology, metrical phonology and phonological feature geometry. May be repeated for credit when topic changes. Prerequisite: LING 5320.

LING 5322. LABORATORY PHONOLOGY. 3 Hours.

An investigation into the physical properties of human speech. Students will gain hands-on experience with computer-assisted speech analysis. No prior computer experience is assumed. Prerequisite: LING 5320.

LING 5325. SLA AND CLASSROOM PRACTICE. 3 Hours.

An examination of a variety of theories in Second Language Acquisition, with a focus on how this knowledge informs classroom practice for teachers of ESL and other languages.

LING 5326. BILINGUALISM. 3 Hours.

This course introduces students to issues related to bilinguals and bilingualism. The areas that will be covered include different types of bilinguals/bilingualism, bilingual education, the cognitive benefits (or disadvantages) of being a bilingual, and language processing in bilinguals. May be repeated for credit as the topic changes. Prerequisite: LING 5300.

LING 5328. PSYCHOLINGUISTICS: SENTENCE PROCESSING. 3 Hours.

This course examines the cognitive processes involved in sentence comprehension. Students will learn current theories and research methods related to this area of psycholinguistics through in-depth discussion of the primary literature and by developing research projects based on this literature. May be repeated for credit as the specific topics dealt with in the course change. Prerequisite: LING 5300.

LING 5329. SYNTAX. 3 Hours.

An examination of syntactic investigation, developed primarily through the study of central aspects of English syntax. A major purpose is to introduce students to the study of language as an empirical science. This course does not fulfill core PHD requirements for syntax.

LING 5330. FORMAL SYNTAX. 3 Hours.

Introduction to syntactic theory. Major topics include phrase structure, subcategorization, lexical entries, and passive and infinitival constructions. May be repeated for credit as the topic changes. Prerequisite: Permission of advisor.

LING 5331. ADVANCED FORMAL SYNTAX. 3 Hours.

Continuation of Ling 5330. Topics may include the syntax of unbounded dependencies, constraints on extraction, unbounded versus successive cyclic movement, and the licensing of gaps. May be repeated for credit as the topics change. Prerequisite: LING 5330.

LING 5334. MORPHOLOGY. 3 Hours.

A theoretical and typological investigation into the nature of word-structure and word-formation processes in human languages. May be repeated for credit as the topics of focus change. Prerequisite: LING 5320 or LING 5330.

LING 5335. LANGUAGE UNIVERSALS AND LINGUISTIC TYPOLOGY. 3 Hours.

Consideration of universals in human language, their explanation and description, and language types. May be repeated for credit as the topics of focus change. Prerequisite: LING 5330.

LING 5338. PSYCHOLINGUISTICS: VISUAL WORD RECOGNITION. 3 Hours.

This course examines the cognitive processes involved in visual word recognition. Students will learn current theories and research methods related to this area of psycholinguistics through in-depth discussion of the primary literature and by developing research projects based on this literature. May be repeated for credit as the specific topics dealt with in the course change. Prerequisite: LING 5300.

LING 5345. SEMANTICS. 3 Hours.

Graduate-level introduction to formal semantics, designed to prepare students for research with basic tools in Model-theoretic semantics and compositionality, including core topics such as negation, quantification, mood and modality, noun phrases, indefinites, definiteness, tense, aspect, and events, from a semantic and cross-linguistic perspective. May be repeated for credit as the topics of focus change. Prerequisite: LING 3340 or permission of instructor.

LING 5346. TOPICS IN APPLIED LINGUISTICS. 3 Hours.

This is a special topics course in Applied Linguistics. Topics may change semester-by-semester, based on instructor and other factors; may be repeated for credit as the topics of focus change.

LING 5347. PRAGMATICS. 3 Hours.

Analysis of how context and form interact with meaning. Topics may include deixis, reference, speech acts, presupposition, implicature, information structure and intonation. May be repeated for credit as the topics of focus change.

LING 5350. TEXT ANALYSIS. 3 Hours.

Methods of charting and analyzing texts to reveal the systematic contributions of pragmatic choices to their organization and meaning. May be repeated for credit as the topics of focus change. Prerequisite: LING 3340.

LING 5353. TEACHING ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Presentation and critique of methodologies of teaching English to speakers of other languages, with emphasis on techniques related to Communicative Language Teaching.

LING 5354. METHODS AND MATERIALS TO TEACH ENGLISH AS A SECOND OR FOREIGN LANGUAGE. 3 Hours.

Systematic study of how to teach English to second/foreign language learners. Topics covered include the teaching of grammar, vocabulary, reading, writing, pronunciation, speaking, and listening.

LING 5360. NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Study of a selected non-Western language, language family or language area based on descriptive linguistic analysis. May be repeated for credit as the topic varies. Prerequisite: LING 3330 and LING 3340.

LING 5361. READINGS IN NON-WESTERN LINGUISTIC STRUCTURES. 3 Hours.

Readings in the linguistic structures of non-Western languages. Enrollment in the course is not sufficient to fulfill the non-Western language requirement. May be repeated for credit as the readings and topics of focus change.

LING 5362. LANGUAGE DOCUMENTATION. 3 Hours.

The course discusses fundamental issues that are part of language documenting and description. These include project design, research ethics and intellectual property, researcher and community rights and responsibilities, world language ecology, technology and software, archiving issues, grant-writing fundamentals, and related issues that form best practices for language documentation projects. May be repeated for credit as the topics of focus change. Prerequisite: LING 5300.

LING 5363. LANGUAGE ENDANGERMENT AND REVITALIZATION. 3 Hours.

This course examines language endangerment and what it means for a language to become endangered, and studies language revitalization. Case studies are presented where communities seek to maintain the number of speakers or revive the language. May be repeated for credit as the topics of focus change. Prerequisite: LING 5300.

LING 5370. HISTORY OF LINGUISTICS. 3 Hours.

Surveys the recent history of the field of linguistics and familiarizes students with the key figures and theories in recent linguistic history, with special attention to the development and emergence of key generative theories such as those of syntax, semantics, and phonology. May be repeated for credit as the topics of focus change. Prerequisite: LING 5320 or LING 5330.

LING 5371. SURVEY OF THEORIES IN APPLIED LINGUISTICS. 3 Hours.

A comparison and contrast of various linguistic theories, with consideration of their implications for application to real-world problems involving language. May be repeated for credit as the topics of focus change. Prerequisite: LING 5305.

LING 5372. READINGS IN LINGUISTICS. 3 Hours.

Readings in linguistics, tailored to student's areas of interest and instructor's expertise. May be repeated for credit when topic changes. Prerequisite: LING 5330.

LING 5380. FIELD METHODS. 3 Hours.

The principles, techniques and practical aspects of linguistic field research. The course includes extensive practice in eliciting data (phonological, morpho-syntactic, textual and lexical) directly from a native speaker, as well as in managing, analyzing and describing the data obtained. Course may be repeated for credit when topic changes. Prerequisite: LING 5300. Permission of the Graduate Advisor.

LING 5381. CORPUS LINGUISTICS. 3 Hours.

Applications of ways in which computer science and linguistics inform each other. Corpus linguistics focuses on how computers can be used to both obtain the data that we examine and to provide the tools we use for analysis. Includes readings, practical experience with several different software programs, and using sources of online corpora. May be repeated for credit as the topics of focus change.

LING 5391. CONFERENCE COURSE IN LINGUISTICS. 3 Hours.**LING 5392. THESIS SUBSTITUTE. 3 Hours.****LING 5393. TESOL TEACHING AND OBSERVATION. 3 Hours.**

In this course, students will work regularly and consistently with an organization where English is taught. Students will observe, teach, guide, and participate in activities in order to demonstrate ability to apply the principles of Communicative Language Teaching in an English Language Learning environment. Prerequisite: LING 5302; LING 5305.

LING 5395. GRADUATE INTERNSHIP. 3 Hours.

Employment (paid or unpaid) supervised by a faculty internship coordinator, with the student performing duties related to the academic curriculum of linguistics and/or TESOL. Students are required to submit an approved academic project related to the work performed. May be repeated with approval of Graduate Advisor.

LING 5398. THESIS. 3 Hours.**LING 5691. CONFERENCE COURSE IN LINGUISTICS. 6 Hours.**

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

LING 5698. THESIS. 6 Hours.

LING 5998. THESIS. 9 Hours.

LING 6100. LINGUISTICS GRADUATE PROGRAM SUCCESS. 1 Hour.

This course introduces PhD students in Linguistics to the expectations of graduate school, including being a good TA, recognizing the importance of research and revision, and general academic success skills to aid the transition into a graduate program.

LING 6191. RESEARCH IN LINGUISTICS. 1 Hour.

Prerequisite: permission of instructor.

LING 6199. DISSERTATION. 1 Hour.

LING 6291. RESEARCH IN LINGUISTICS. 2 Hours.

Prerequisite: permission of instructor.

LING 6300. PROFESSIONAL WRITING SEMINAR. 3 Hours.

Workshop in producing the writing genres expected of professional academic linguists. May be repeated for credit as the topics of focus change.

Prerequisite: Completion of at least 9 hours of graduate LING courses.

LING 6360. DISCOURSE THEORY SEMINAR. 3 Hours.

Seminar on the theory of discourse in linguistics. May be repeated for credit as the instructor and topics of focus change. Prerequisite: permission of instructor.

LING 6380. FIELD METHODS SEMINAR. 3 Hours.

Second part of field methods sequence. May be repeated for credit as the student's topic of focus changes. Prerequisite: LING 5380.

LING 6381. STATISTICS FOR LINGUISTS. 3 Hours.

In this course, students learn the fundamentals of quantitative research in linguistics and language-related fields. Students learn how to develop viable research hypotheses, how to collect and manage the data necessary to evaluate these hypotheses, and how to analyze data using standard statistical tests. May be repeated for credit as the topics of focus change.

LING 6390. LINGUISTICS SEMINAR. 3 Hours.

Seminar in linguistics. Course may be repeated for credit when topic or instructor changes. Prerequisite: permission of instructor.

LING 6391. RESEARCH IN LINGUISTICS. 3 Hours.

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6392. SEMINAR IN PHONETICS AND PHONOLOGY. 3 Hours.

In-depth investigation of research into a specialized area of phonetics and/or phonology. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5321 or permission of the instructor.

LING 6393. SEMINAR IN SYNTAX. 3 Hours.

In-depth investigation of research into a specialized area of syntax. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5331 or permission of instructor.

LING 6394. SEMINAR IN SEMANTICS AND PRAGMATICS. 3 Hours.

In-depth investigation of research into a specialized area of meaning: semantics and/or pragmatics. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5345 or LING 5347 or permission of instructor.

LING 6395. SEMINAR IN SECOND LANGUAGE ACQUISITION. 3 Hours.

In-depth investigation of research into a specialized area of second language acquisition. Course registrants will develop original research focusing on topic at-hand, with results exchanged through discussion, presentations/reports, and/or papers. Prerequisites: LING 5305 or permission of the instructor.

LING 6399. DISSERTATION. 3 Hours.

LING 6491. RESEARCH IN LINGUISTICS. 4 Hours.

Prerequisite: permission of instructor.

LING 6591. RESEARCH IN LINGUISTICS. 5 Hours.

LING 6691. RESEARCH IN LINGUISTICS. 6 Hours.

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6699. DISSERTATION. 6 Hours.

LING 6991. RESEARCH IN LINGUISTICS. 9 Hours.

Designed for doctoral students pursuing dissertation proposal research under the direction of a faculty supervisor. Prerequisite: Permission of instructor.

LING 6999. DISSERTATION. 9 Hours.**LING 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Literacy Studies (LIST)

COURSES

LIST 4326. SECONDARY READING. 3 Hours.

This course focuses on the scope of reading instruction in the secondary schools and the processes and skills for reading. Students explore programs, trends, and issues related to secondary reading instruction along with comprehension and word study instruction, the integration of reading with writing and oral communication, selection of print materials competency, and an examination of visual literacy and the media.

LIST 4343. CONTENT AREA READING AND WRITING. 3 Hours.

Explores methods of teaching reading, writing, and study skills across the curriculum. Emphasis on text structure and the differences between narrative and expository text, graphic organizers, and the reading/writing process as applied to informational text. Classroom adaptations for culturally and linguistically diverse populations in the content areas are also addressed.

LIST 4373. LITERACY LEARNING FOR EC-6 STUDENTS: READING AND WRITING. 3 Hours.

Comprehensive literacy approach to teaching with an emphasis on guided reading and writing. Theoretical models, principles of teaching reading and writing using a variety of instructional strategies, the role of foundational literacy learning, effective program organization, assessment, and classroom management.

LIST 4374. LITERACY LEARNING FOR EC-6 STUDENTS: LITERATURE AND LANGUAGE. 3 Hours.

Comprehensive approach to literacy instruction. Emphasis on using genres of children's literature to promote language and literacy development. Instructional models and techniques for using children's literature across the curriculum. Use of appropriate media and non-print materials, selection and evaluation of literature, and strategies for stimulating and expanding children's response to literature.

LIST 4376. ASSESSMENT IN LITERACY LEARNING. 3 Hours.

Examines a variety of formal and informal literacy assessment tools and techniques. Also focuses on diagnostic procedures for identifying literacy learning strengths and needs. Students will apply reading and writing assessment and instructional strategies with children.

LIST 4378. TEACHING READING, WRITING, AND LITERATURE IN THE MIDDLE LEVEL GRADES. 3 Hours.

Theory and practice in the teaching of literacy for the middle level grades, including various instructional approaches to reading, writing, listening, and speaking; motivating student readers and writers, vocabulary and comprehension, strategies for various writing modes, purposes, and audiences; and the basic components of assessment. Integration of literature suitable for the middle level; selection and evaluation of appropriate fiction, nonfiction, and poetry for instruction, as well as literature-based instructional methods. This course includes an embedded field experience component, which requires students to work with middle grades learners during normal school hours.

LIST 4390. SELECTED TOPICS IN LITERACY. 3 Hours.

An examination of different topics related to literacy. This seminar may be repeated for credit as the topic changes.

LIST 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a project in a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Consent of instructor.

LIST 5315. LITERACY THEORY TO PRACTICE. 3 Hours.

Designed as an introduction to comprehensive literacy education. Provides students the opportunity to explore theory, research, and knowledge in the field of literacy, including teaching diverse learners and students for whom English is an additional language.

LIST 5316. LITERACY THEORY TO PRACTICE - PRACTICUM I. 3 Hours.

Designed as an introduction to comprehensive literacy education. Provides students the opportunity to explore the theory, research, and knowledge in the field of literacy, including teaching diverse learners and students for whom English is an additional language, with application through field experiences in schools and classrooms. This course should be taken in the first full semester in the MEd in Curriculum and Instruction with Literacy Studies Emphasis student's program. It must be completed before enrolling in LIST 5361 and LIST 5317.

LIST 5317. LITERACY LEADERSHIP AND COACHING: PRACTICUM III. 3 Hours.

This practicum is the capstone experience for students in the M.Ed. with Literacy Studies Emphasis. The course provides an opportunity to synthesize the theory and research related to literacy that has been presented in the program, to explore literacy program development and the implementation of technology in literacy programs, and to participate in professional leadership. Prerequisite: LIST 5316, LIST 5361, and at least 4 additional program courses.

LIST 5325. UNDERSTANDING LITERACY RESEARCH. 3 Hours.

Designed as an introduction and exploration of literacy research. Provides the opportunity to read broadly in the area of literacy research to become aware of current trends and methodologies. Emphasizes the tools for critically consuming literacy research and utilizing existing research in personal examinations of literacy topics and questions.

LIST 5326. PRE-ADOLESCENT & ADOLESCENT LITERACY. 3 Hours.

Focuses on literacy theory, research, and practice as it relates to pre-adolescents and adolescents. Addresses sociocultural, cognitive, linguistic, psychological, and developmental influences on literacy. Explores the development of curricular designs for teaching reading/language arts in middle and secondary schools including reading, writing, oral communication, literature, and digital literacy.

LIST 5345. CONTENT AREA READING AND WRITING. 3 Hours.

Explores methods of teaching reading, writing, and study skills across the curriculum. Emphasis on text structure and the difference between narrative and expository text, graphic organizers, and the reading/writing process as applied to informational text. Classroom adaptations for culturally and linguistically diverse populations in the content areas also will be addressed.

LIST 5346. TEACHING THE WRITING PROCESS. 3 Hours.

Current research and theory on the writing process, how children develop as writers, the teacher's role, the learning environment, and motivation, assessment, and evaluation in writing. Current approaches to digital writing and multimodal writing will be explored.

LIST 5350. LITERACY ASSESSMENT. 3 Hours.

Formal and informal assessment of student literacy learning, and diagnosis of student literacy learning strengths and needs.

LIST 5353. LITERATURE FOR CHILDREN AND YOUNG ADULTS. 3 Hours.

Selection, evaluation, and use of current literature published for children and young adults.

LIST 5354. MULTICULTURAL LITERATURE FOR CHILDREN AND YOUNG ADULTS. 3 Hours.

Study of literature for children and young adults which reflects the experiences representing cultural, ethnic, geographic, linguistic, gender, ability, and other dimensions of diversity. Consideration of selection guidelines, evaluation of literary quality as well as cultural authenticity and teaching applications, including adaptations for culturally and linguistically diverse populations.

LIST 5361. LANGUAGE LEARNING: EDUCATIONAL PERSPECTIVES PRACTICUM II. 3 Hours.

This practicum-based course bridges theory to practice, stressing how the relationship between first and additional language acquisition and development can inform teaching ESL/bilingual students. Provides opportunities to apply effective instructional practices in teaching ESL students to foster development in speaking, listening, reading, and writing within a framework of cultural understanding. Prerequisite: LIST 5316.

LIST 5362. LITERACY INSTRUCTION IN ESL/BILINGUAL SETTINGS. 3 Hours.

This course bridges theory to practice, stressing how the relationship between first and additional language acquisition and development can inform teaching ESL/bilingual students. Provides opportunities to apply effective instructional practices in teaching students to foster development in speaking, listening, reading, and writing within a framework of cultural understanding.

LIST 5373. FOUNDATIONS OF LITERACY LEARNING IN EC-6 CLASSROOMS. 3 Hours.

Comprehensive approach to literacy instruction in EC-6 classrooms with an emphasis on reading and writing including the critical areas of phonics, phonemic awareness, word study, vocabulary, fluency, comprehension, and writing. In addition, the course examines various theoretical models of literacy along with the principles of teaching reading and writing using a variety of instructional strategies, effective program organization, assessment, and classroom management.

LIST 5381. NATIONAL WRITING PROJECT PART I. 3 Hours.

An intensive institute in which teachers learn ways to improve student writing abilities by improving their own teaching and learning of writing. Students participate in an intensive literature review related to the area of writing instruction. Prerequisite: Students must apply and be invited to participate in this course. Concurrent enrollment in LIST 5382.

LIST 5382. NATIONAL WRITING PROJECT PART II. 3 Hours.

An intensive institute in which teachers learn ways to improve student writing abilities by improving their own teaching and learning of writing. For this part of the workshop, students build on their literature review by writing a research proposal and developing research-based writing instruction. In addition, professional development training for classroom teachers is provided. Prerequisite: Students must apply and be invited to participate in this course. Concurrent enrollment in LIST 5381.

LIST 5383. WRITING FOR PROFESSIONAL PUBLICATION. 3 Hours.

This course focuses instructor and peer interaction as students conduct literacy-related research, analyze data, write up the results, and disseminate their completed study to a professional journal. A comprehensive study of professional journals and their requirements for submission is included in this course. Prerequisite: LIST 5385 or program advisor approval.

LIST 5384. ADVANCED PEDAGOGY OF WRITING. 3 Hours.

This course focuses on strategies for teaching prewriting, drafting, revising, editing, and publishing through writing workshop, literature focus units, and thematic units as well as through the content areas. Both writing assessment with rubrics and evaluation with portfolios are studied. Students compose both expository and expressive pieces as well as design and micro teach mini lessons and a web-based integrated writing unit. Prerequisite: LIST 5346, or LIST 5381, and LIST 5382, or program advisor approval.

LIST 5385. DESIGNING LITERACY RESEARCH. 3 Hours.

This course is designed to build on the LIST 5325, Understanding Literacy Research, by providing an exploration of the process for quantitative, mixed methods or qualitative research design. Includes an examination of various research designs related to language and literacy development including models such as case studies, ethnography, observations and interviews. Students are lead through the research process including forming a theoretical epistemology, formulating research questions, reviewing literature, selecting methods of data collection, interpretation and analysis of data and writing a research proposal. Students will be expected to complete this research focus in the program capstone experience, LIST 5317. Prerequisite: LIST 5325.

LIST 5390. SELECTED TOPICS IN READING. 3 Hours.

An examination of different topics each semester, with a focus on subjects related to reading, writing, oral language, and literacy.

LIST 5391. INDEPENDENT RESEARCH IN READING. 3 Hours.

Individual or small group research project on a literacy-related topic agreed upon between student(s) and instructor. May be repeated for credit with permission.

Literacy Studies (LISTIR)

COURSES

LISTIR 5391. INDEPENDENT RESEARCH IN READING. 3 Hours.

Individual or small group research project on a literacy-related topic agreed upon between student(s) and instructor. May be repeated for credit with permission.

Management (MANA)

COURSES

MANA 1301. BUSINESS IN A GLOBAL ENVIRONMENT. 3 Hours.

This course provides a survey of economic systems, forms of business ownership, and considerations for running a business. Students will learn various aspects of business, management of organizations, leadership, and decision-making. Financial topics are introduced including accounting, money and banking, and securities markets. Also included are discussion of business challenges in the legal and regulatory environment business ethics, social responsibility and international business. Emphasis is the dynamic role of business in everyday life.

MANA 2302. COMMUNICATIONS IN ORGANIZATIONS. 3 Hours.

This course focuses on the development of interpersonal business communication skills in the following areas: group communication, written communication (collaborative writing and business letters, memorandums and reports), oral communication (business presentation, meetings and interviews), and listening. The following topics are also addressed: verbal and nonverbal communication, dyadic and organizational communications, communication roles and relationships, small-group communication, communication networks, and the diagnosis and improvement of organizational communications. MANA 2302 will satisfy the cultural and social studies requirement in the College of Business Administration.

MANA 3318. MANAGING ORGANIZATIONAL BEHAVIOR. 3 Hours.

This course is an introduction to the factors that influence individual and group behavior in organizations. Emphasizing findings from the field of organizational behavior, topics covered include: individual differences and diversity, social information processing, work attitudes, stress, work motivation, power and influence, negotiation, teams, leadership, and organizational research. Prerequisite: 30 credit hours.

MANA 3319. CONTEMPORARY MANAGERIAL CHALLENGES. 3 Hours.

This course will provide students the opportunity to evaluate and provide solutions for some of the most challenging managerial issues facing organizations today. Students will engage in discussion, analyze cases, conduct verbal and written presentations, and participate in other experiential activities to explore topics that help organizations effectively manage people to meet these challenges. Emphasis on developing applied skills required in contemporary organizations. Prerequisite: 60 credit hours.

MANA 3320. HUMAN RESOURCE MANAGEMENT. 3 Hours.

This course is a survey of the human resource management function in organizations. Topics include HR planning, job design, recruitment, selection, training, compensation, performance appraisal, and employee relations. The course focuses on how these practices can be crafted to help support business strategy and develop competitive advantage. Prerequisite: 60 credit hours.

MANA 3321. NONPROFIT AND VOLUNTEER MANAGEMENT. 3 Hours.

This course focuses on leadership and management of nonprofit staff and volunteers. Nonprofit and philanthropic organizations have unique challenges in strategic staffing and stakeholder management. This course addresses topics related to selection, motivation, and retention of volunteers and staff including development officers. Prerequisite: 30 credit hours.

MANA 3325. ENTREPRENEURSHIP: THE NEW VENTURE CREATION PROCESS. 3 Hours.

This course provides an introduction to the principles of entrepreneurship. Topics include the role of the entrepreneur, self-analysis of entrepreneurship readiness, opportunity recognition, market research and product development activities, legal issues, sources of capital, budgeting, and cash flow. Upon completion, students should have an understanding of the entrepreneurial process and issues faced by entrepreneurs. Prerequisite: 60 credit hours.

MANA 4191. STUDIES IN MANAGEMENT. 1 Hour.

Advanced studies, on an individual basis, in the various fields of management. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

MANA 4291. STUDIES IN MANAGEMENT. 2 Hours.

Advanced studies, on an individual basis, in the various fields of management. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

MANA 4320. EMPLOYMENT LAW. 3 Hours.

An introduction to employment law and labor relations for managers and human resource professionals. Topics include: the nature of the employment relationship, fair labor standards, workplace health and safety, collective bargaining, equal employment opportunity and unlawful discrimination, sexual harassment, and workplace privacy. Prerequisite: 60 credit hours.

MANA 4321. INTERNATIONAL MANAGEMENT. 3 Hours.

With greater globalization of economies and industries, managers are being increasingly challenged to manage organizations within a global context. This course seeks to provide students with the skills, knowledge and sensitivity required to be successful managers in organizations and organizational units within a multinational environment. Topics covered include the analysis of environmental forces, the characteristics of international strategies and the importance of organizational design and strategic control in the management of multinational enterprises. Prerequisite: 60 credit hours.

MANA 4322. STRATEGIC MANAGEMENT. 3 Hours.

An integrative learning experience that focuses on the role of top management in integrating an organization's internal functional activities and external environmental forces. Emphasis is placed on defining economic, technological, ethical, political, and social factors affecting an organization and their consideration in setting goal, strategies, and operating policies. This course serves as the capstone offering for the business major. Prerequisite: ACCT 2301 and ACCT 2302, BUSA/STAT/BSTAT 3321, ECON 2305 and ECON 2306, FINA 3313, MANA 3318, and MARK 3321. One of the following junior level courses may be taken concurrently: BSTAT 3321, FINA 3313, MANA 3318 or MARK 3321.

MANA 4325. LEADERSHIP IN ORGANIZATIONS. 3 Hours.

This course provides a managerial perspective on leadership in formal organizations. Emphasis is placed on team-building, exercising influence, decision-making, and conflict management. Prerequisite: MANA 3318.

MANA 4326. DIVERSITY IN ORGANIZATIONS. 3 Hours.

This course examines the implications of employee diversity in organizations, an issue of increasing importance. It includes study of the changing demographics of workers, including multiple demographic groups and areas of difference important to organizational treatment and outcomes. This course examines research on treatment, access, and customer discrimination. Legislation related to diversity is also reviewed. This course also provides suggestions for individuals and organizations to increase opportunities and outcomes for workers of all backgrounds. Offered as MANA 4326, AAST 4326 and WOMS 4326; credit will be granted in only one department. Prerequisite: Junior standing.

MANA 4328. HUMAN RESOURCE STAFFING AND PERFORMANCE MANAGEMENT. 3 Hours.

Covers the areas of employee selection and performance management systems. Topics include: recruitment strategies, methods of selection, development and validation of selection and employee appraisal instruments, and implementation of performance management processes. Prerequisite: MANA 3318 and MANA 3320.

MANA 4329. DISABILITY & WORK. 3 Hours.

Explores the complex relationship between disability and work within the United States from a current and historical perspective. Topics include study of the Americans with Disabilities Act; research on the diversity, population, and changes in proportions of people with disabilities; employment rates and experiences of people with disabilities; attitudes and perspectives surrounding and affecting the employment opportunities and experiences of people with disabilities; and ways to provide inclusive, non-discriminatory workplaces. Offered as MANA 4329 and DS 4329; credit will only be granted once. Prerequisite: 60 hours or MANA 4326 or Disability Studies permission.

MANA 4330. TEAM MANAGEMENT. 3 Hours.

This course examines the critical input, process and outcomes variables in the design of and maintenance of highly effective work teams. Topics include: team composition, team norms, team decision-making strategies, intra-team and inter-team conflict, team building, management of effective work teams, and team-based organizational structures. Prerequisite: MANA 3318.

MANA 4331. SEMINAR IN MANAGEMENT. 3 Hours.

Readings and discussion of special topics in management. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

MANA 4333. MANAGEMENT OF TECHNOLOGICAL INNOVATION. 3 Hours.

Waves of innovations are disrupting nearly every sphere of modern life. This course helps you understand and experience just how creative entrepreneurs in either start-up or corporate environments do it. Working with others, using cutting-edge case studies, experiential exercises, and field research, you will consider how innovations across a broad range of emerging technologies meet the market, financial, and environmental demands of a diverse set of current and future stakeholders. Prerequisite: 60 credit hours.

MANA 4338. DIRECTED STUDIES IN ENTREPRENEURSHIP. 3 Hours.

The subject matter of this course will vary from semester to semester, but will not duplicate existing entrepreneurship courses. Prerequisite: MANA 3325 or with permission of the instructor.

MANA 4339. PITCHING THE ENTREPRENEURIAL IDEA. 3 Hours.

The course is designed to assist students in developing high quality business ideas, plans and pitches. The course also seeks to provide students with the resources, not only to develop comprehensive, complete and concise business strategies, but to assist students in actually launching their new businesses. Students are expected to participate in the Maverick Entrepreneurship Program and Award (MavPitch) and to compete for a share of cash prizes when offered. Prerequisite: MANA 3325 or with permission of the instructor.

MANA 4340. BUSINESS AND SOCIETY. 3 Hours.

Explores the roles of business organizations and their relationships with individuals, governments, and other businesses from the perspectives of ethics, ideology, and corporate responsibility. Prerequisite: 60 credit hours.

MANA 4341. NEGOTIATIONS AND CONFLICT RESOLUTION. 3 Hours.

This course is designed to better understand the nature of conflict and its resolution through persuasion, collaboration, and negotiation. Students will learn theories of interpersonal and organizational conflict and its resolution as applied to personal, corporate, historical, and political contexts. Students will assess their own styles, skills, and values, and develop techniques to better resolve disputes, achieve objectives, and exert influence. Prerequisite: MANA 3318.

MANA 4342. COMPENSATION AND BENEFITS MANAGEMENT. 3 Hours.

This course is an introduction to compensation and benefits administration. Attention will be given to the means by which compensation equity is achieved in organizations. Topics covered include job analysis and design, job evaluation, development, the use of wage and salary surveys, and benefit policies and practices. The benefits part of the course will include a discussion of public and private benefit programs and pension plans. Prerequisite: MANA 3318 and MANA 3320.

MANA 4343. TRAINING AND DEVELOPMENT. 3 Hours.

This course provides students with a practical approach to training and development in contemporary business environments. Components of training design, including needs assessment, objectives, and evaluation and control of the training and development functions. Prerequisite: MANA 3318 or MANA 3319.

MANA 4345. SOCIAL ENTREPRENEURSHIP. 3 Hours.

Social entrepreneurship has its roots in the broader field of entrepreneurship, but differs in the fact that social entrepreneurs have a primary goal of creating social impact rather than personal or shareholder wealth. This course is intended for students from any discipline who have an interest in making a difference in communities locally and throughout the world. The course will introduce entrepreneurial concepts including social enterprise, impact investing/SROI, social marketing/movements, behavioral economics, strategic CSR practices and legal formation. This course includes a self-directed project to address a societal problem using the disciplines taught in class. Prerequisite: 60 credit hours.

MANA 4391. STUDIES IN MANAGEMENT. 3 Hours.

Advanced studies, on an individual basis, in the various fields of management. Prerequisite: Senior standing and permission of instructor. May be repeated for credit with consent of department chair.

MANA 4393. MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in management. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing, declared major in the College of Business, 2.5 GPA, and permission of undergraduate business advisor.

MANA 5182. INDEPENDENT STUDIES IN MANAGEMENT. 1 Hour.

Extensive analysis of a management topic.

MANA 5199. GRADUATE MANAGEMENT INTERNSHIP. 1 Hour.

Practical training in management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Admission to a College of Business graduate degree program, 9 graduate credit hours, and 3.0 GPA.

MANA 5299. GRADUATE MANAGEMENT INTERNSHIP. 2 Hours.

Practical training in management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Admission to a College of Business graduate degree program, 9 graduate credit hours, and 3.0 GPA.

MANA 5312. MANAGING THE ENTERPRISE. 3 Hours.

Basic exploration of organizations in their environments. The elementary tools of management, which include: organizational objectives, social responsibility and ethics, policies, plans, and decision making; the design of organizations and jobs; the production and technology aspects of organization; the elements of leadership, behavior, and communication; and the elements of control and performance evaluation.

MANA 5320. ORGANIZATIONAL BEHAVIOR. 3 Hours.

Systematic study of behavioral problems in the complex organization. Analyzes the interaction of environmental and internal factors and their effects upon organizational behavior. The course is placed within the context of the organization process.

MANA 5321. COMPLEX ORGANIZATIONS. 3 Hours.

Provides the foundation for an in-depth knowledge of several important theories of management and organization. Attention to study of organizations, organizational effectiveness, comparative analysis of organizations, and the organization and its environment. Relates empirical findings and theoretical hypotheses with applied management concepts. Prerequisite: MANA 5312.

MANA 5322. COMPENSATION & REWARD SYSTEMS. 3 Hours.

Management of compensation systems in business and other organizations; concepts models and practices related to wage and salary levels and structures; perceived equitable pay; individual performance appraisal, rewards and satisfaction; benefits and employee services.

MANA 5323. TRAINING AND DEVELOPMENT. 3 Hours.

Examines the components of training systems. Topics include assessing training needs and establishing objectives, developing training programs, selecting appropriate training techniques, and evaluating training outcomes.

MANA 5324. TEAM AND GROUP BEHAVIOR. 3 Hours.

A study in team and group dynamics, critical processes and practices. Topics include team composition and development, problem solving strategies and performance, conflict management, leadership process and work team strategies.

MANA 5325. LABOR AND EMPLOYEE RELATIONS. 3 Hours.

Examines union-management relations and considers the structure and functioning of the economic and social forces of importance at the policy level within both the firm and the union. Also considers non-union employee relationships.

MANA 5326. ORGANIZATION DEVELOPMENT AND CHANGE. 3 Hours.

Theories and applications associated with organization development and change with specific focus on improving organizational effectiveness. Topics include changing organizational culture with an understanding of ethical and value considerations, role of the organization development practitioner; processes associated with organization change, employee empowerment, developing high performance teams and high performing systems, and learning organizations.

MANA 5327. HUMAN RESOURCE LAW. 3 Hours.

Coverage of statutory and case law in the employment setting. Emphasis placed on employment discrimination, compensation and benefits law; government agencies which administer and enforce employment laws are also reviewed.

MANA 5329. HR METRICS AND ANALYTICS. 3 Hours.

Research design, data collection, and hypothesis testing applied to human resource management. The class focuses on basic statistics, quantitative decision-making, and data presentation skills using Human Resource metrics and analytics examples.

MANA 5330. NEGOTIATIONS & CONFLICT MANAGEMENT. 3 Hours.

This course focuses on developing students negotiating skills in a variety of contexts. Throughout the course students will diagnose negotiation situations, strategize and plan for negotiations, and learn how to engage in more effective negotiations. The course also focuses on developing interpersonal conflict resolution skills and strategies.

MANA 5331. MANAGEMENT OF MULTINATIONAL ENTERPRISES. 3 Hours.

Focuses on the international dimensions of strategy and organization and provides a framework for formulating strategies in an increasingly complex global economy. The course seeks to provide students with an understanding of the cultural, political, competitive, technological, legal, and demographic environments in which multinational firms operate. It then examines the nature of global competition by exploring the characteristics of global industries and strategies that have been successful in an international context. Also covered are issues related to organizational design and strategic control in the management of multinational enterprises.

MANA 5332. MANAGING DIVERSITY IN ORGANIZATIONS. 3 Hours.

Examines implications of employee diversity in organizations, including human resource and organizational behavior issues related to aspects of diversity. Includes study of the changing demographics of workers, effects of diversity on organizational performance, and ways of effectively managing in organizations having applicants, employees, and customers from diverse backgrounds. Research on diversity issues is examined, as are process of stereotyping and myths and misperceptions about diversity issues. Legislation related to diversity is also reviewed.

MANA 5333. MANAGEMENT OF TECHNOLOGICAL INNOVATION. 3 Hours.

Waves of innovations are disrupting nearly every sphere of modern life. This course helps you understand and experience just how creative entrepreneurs in either start-up or corporate environments do it. Working with others, using cutting-edge case studies, experiential exercises, and field research, you will consider how innovations across a broad range of emerging technologies meet the market, financial, and environmental demands of a diverse set of current and future stakeholders. You will have an opportunity to put learning into practice.

MANA 5334. ORGANIZATION CONSULTING & RESEARCH. 3 Hours.

Explores internal and external consulting to business organizations. Emphasis on the management of the change process through the stages of data gathering, diagnosis, analysis, and recommendation. Prerequisite: 3 graduate credits in MANA or department permission.

MANA 5336. STRATEGIC MANAGEMENT. 3 Hours.

Strategic management uses a general management perspective in addressing issues related to the formulation and implementation of corporate and business level strategy. The course involves developing the ability to identify issues, evaluate strategic options and understand the organizational process by which strategies get formed and executed. It builds on the knowledge gained in functional area courses and uses case studies and projects to improve students' analytical and decision-making skills. Prerequisite: Must be taken in last semester or with permission of the Graduate Advisor.

MANA 5337. ETHICS AND THE BUSINESS ENVIRONMENT. 3 Hours.

Uses a strategic perspective to examine ethics, government and the world economy, and how they may affect relationships between business organizations and other institutions of our society. Particular attention is paid to issues such as leadership, technology, and internationalization concordant with the breadth requirements of the UTA MBA plus public policy concerns involving the natural environment, gender and minority issues. Course activities will include class discussion and analysis of societal dilemmas, contemporary cases and current news stories.

MANA 5338. CAREERS & MANAGING IN A CHANGING ENVIRONMENT. 3 Hours.

Presents practical and theoretical perspectives on careers and managing in a changing work environment. Includes self assessment, career plan development, informational interviews, readings and exercises designed to lead to a better understanding of managing self and others.

MANA 5339. ENTREPRENEURSHIP. 3 Hours.

New venture opportunity assessment, formation, and development in startup and corporate environments. Students will understand the role of entrepreneurship in the economy and the attributes of entrepreneurial behavior. Students will learn how to assess the market and financial feasibility of a new venture as well as understand how to use equity and debt financing, how to select between starting up, franchising, or buying a business, how to lead the growing company, and how to address family business dilemmas. The cornerstone of the course will be a feasibility assessment project that leads to a business plan for a new venture of the student's choice. For the project, students can explore either an original new venture idea, an already existing venture concept (for example, a franchise), or a new business opportunity in need of assessment for an existing firm or their current employer.

MANA 5340. STRATEGIC HUMAN RESOURCE MANAGEMENT. 3 Hours.

Emphasizes strategic perspective of modern human resource management theory and practice. Topics include human resource planning, staffing, training and development, compensation, performance appraisal, and labor and employee relations.

MANA 5341. STAFFING AND PERFORMANCE MANAGEMENT. 3 Hours.

This course covers employee recruitment, selection and performance appraisal. Topics include: recruitment strategies and methods, methods of employee selection, performance planning, development and validation of appraisal instruments, implementation and conduct of performance appraisal, and performance feedback and counseling.

MANA 5342. PREVENTIVE STRESS MANAGEMENT. 3 Hours.

Examines the organizational demands that cause stress. Identifies the psychophysiology of the stress response and the individual/organizational costs of distress. Emphasis is placed on the principles and methods of preventive stress management, such as social support, exercise, and the relaxation response.

MANA 5344. EVIDENCE-BASED MANAGEMENT. 3 Hours.

Evidence-based management is the process of translating principles and findings based on best evidence into organizational practice. This class covers the organizational and interpersonal sides of data and information. You will develop the skills and knowledge necessary to use data and analytics to inform management practice and make better decisions. Through case examples and classroom discussion you will learn skills in internal consulting, issue selling, data interpretation and presentation. While the focus is on the practical application of business intelligence, the skills learned in this course will allow all managers to make evidence based decisions through data collection, analysis and presentation.

MANA 5345. SOCIAL ENTREPRENEURSHIP. 3 Hours.

Social entrepreneurship has its roots in the broader field of entrepreneurship, but differs in the fact that social entrepreneurs have a primary goal of creating social impact rather than personal or shareholder wealth. This course is intended for students from any discipline who have an interest in making a difference in communities locally and throughout the world. The course will introduce entrepreneurial concepts including social enterprise, impact investing/SROI, social marketing/movements, behavioral economics, strategic CSR practices and legal formation. This course includes a self-directed project to address a societal problem using the disciplines taught in class.

MANA 5348. HUMAN RESOURCE BUSINESS STRATEGY. 3 Hours.

Designed with the human resource professional in mind, this course analyzes the role of human resource management in developing and executing business strategy. Central to this course is an examination of how contemporary organizations use human resource management to enhance organizational capabilities and achieve strategic objectives.

MANA 5350. EFFECTIVE LEADERSHIP. 3 Hours.

This graduate course uses self-assessment testing with feedback, case studies, selected readings, and guest lectures from successful leaders and top executive coaches to create a learning laboratory for mature and motivated graduate students of leadership.

MANA 5360. LEADERSHIP AND TEAMS. 3 Hours.

One of the most difficult challenges that organizations face is acquiring developing, and retaining high talent human capital. This course is concerned with effective leadership, team-based work systems, and talent management for building high performance organizations.

MANA 5382. INDEPENDENT STUDIES IN MANAGEMENT. 3 Hours.

Extensive analysis of a management topic.

MANA 5392. SELECTED TOPICS IN MANAGEMENT. 3 Hours.

In-depth study of selected topics in management. May be repeated when topics vary.

MANA 5398. THESIS. 3 Hours.

Thesis MANA 5398 graded "R" (Research) or "P" (Pass) or "F" (Fail) only. Prerequisite: Permission of Graduate Advisor required.

MANA 5399. GRADUATE MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Admission to a College of Business graduate degree program, 9 graduate credit hours, and 3.0 GPA.

MANA 5698. THESIS. 6 Hours.

Thesis MANA 5698 graded "R" (Research) or "P" (Pass) or "F" (Fail) only. Prerequisite: Permission of Graduate Advisor required.

MANA 6182. INDEPENDENT STUDIES IN MANAGEMENT. 1 Hour.

Extensive analysis of a management topic.

MANA 6282. INDEPENDENT STUDIES IN MANAGEMENT. 2 Hours.

Extensive analysis of a management topic.

MANA 6318. SEMINAR IN ORGANIZATIONAL THEORY. 3 Hours.

Advanced study in the theory and research of organizations.

MANA 6328. SEMINAR IN BUSINESS POLICY. 3 Hours.

Advanced study in the theory and research bases of business policy and strategic management.

MANA 6329. ADVANCED RESEARCH METHODS. 3 Hours.

In-depth coverage of selected topics in the design of research and analysis of data; topics include philosophy of science, theory of measurement, complex experimental and quasi-experimental designs.

MANA 6338. SEMINAR IN ORGANIZATIONAL BEHAVIOR. 3 Hours.

Advanced study in the theory and research of organizational behavior.

MANA 6348. SEMINAR IN HUMAN RESOURCE MANAGEMENT. 3 Hours.

Advanced study in employee selection, performance appraisal, compensation, training and development, human resource policy and strategy, and other areas of human resource management.

MANA 6382. INDEPENDENT STUDIES IN MANAGEMENT. 3 Hours.

Extensive analysis of a management topic.

MANA 6390. ADVANCED TOPICS IN MANAGEMENT. 3 Hours.

In-depth study of selected topics in management. May be repeated when topics vary.

MANA 6392. RESEARCH IN ADMINISTRATION. 3 Hours.
Independent research under supervision of a faculty member.

Management Sciences (MASI)

COURSES

MASI 5182. INDEPENDENT STUDIES IN MANAGEMENT SCIENCES. 1 Hour.

Extensive analysis of a management sciences topic.

MASI 5199. GRADUATE MANAGEMENT SCIENCES INTERNSHIP. 1 Hour.

Practical training in management science. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

MASI 5282. INDEPENDENT STUDIES IN MANAGEMENT SCIENCES. 2 Hours.

Extensive analysis of a management sciences topic.

MASI 5299. GRADUATE MANAGEMENT SCIENCES INTERNSHIP. 2 Hours.

Practical training in management science. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

MASI 5332. ADVANCED DATA COLLECTION. 3 Hours.

Surveys, audits, samples and experimental designs contrasted and compared as a basis for statistical inference. Emphasis is on the integration of techniques common to differing areas of business research. Prerequisite: BSTAT 5325.

MASI 5382. INDEPENDENT STUDIES IN MANAGEMENT SCIENCES. 3 Hours.

Extensive analysis of a management sciences topic.

MASI 5399. GRADUATE MANAGEMENT SCIENCES INTERNSHIP. 3 Hours.

Practical training in management science. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

MASI 6309. MULTIVARIATE STATISTICAL METHODS. 3 Hours.

Focuses on methods of analyzing mean and covariance structures. Topics include commonly applied multivariate methods such as multiple analysis of variance, repeated measures, discriminant analysis, profile analysis, canonical correlations, and factor analytic methods. The use of matrix algebra and available computer packages will be stressed. Prerequisite: Doctoral standing and BSTAT 5325.

Marketing (MARK)

COURSES

MARK 3321. PRINCIPLES OF MARKETING. 3 Hours.

Principles of marketing explores the theory and application of marketing concepts. The marketing variables of products, channels, prices, and promotion and how they relate to marketing decisions about assessing the marketing environment, segmentation, targeting, and positioning, new product introduction, managing brands, and social media marketing among others are discussed. Students learn these concepts through a mix of discussions, lectures, and assignments. Prerequisite: 30 credit hours.

MARK 3322. PROFESSIONAL SELLING. 3 Hours.

Presents sales principles and skills required by today's professional salesperson, with emphasis on the business-to-business selling environment. Students will enhance development of a variety of skills that will serve for a lifetime. These lifetime skills include the following: communication skills, critical thinking, building relationships with customers, and ethical decision making. Prerequisites: MARK 3321 with a grade of C or better.

MARK 3323. INTEGRATED MARKETING COMMUNICATION / ADVERTISING. 3 Hours.

A managerial approach to coordinating all promotional activities including advertising, direct marketing, sales promotion, personal selling, public relations/publicity, and internet marketing/social media, to produce a unified, market-focused message. Message development and media analysis/ placement are examined within the context of the role each promotional tool plays in marketing strategy development. Prerequisite: MARK 3321 with grade of C or better.

MARK 3324. CONSUMER BEHAVIOR. 3 Hours.

Examine how consumers decide and engage in the acquisition, consumption, and disposition of goods and services. In doing so, develop a better understanding of how a firm's marketing efforts can be optimally deployed to create value for consumers. Understand the role of consumer behavior in your life, business strategy, policy making, and society. Students will learn several internal and external influences of consumer behavior motivation, cognition, and learning. Prerequisite: MARK 3321 with a grade of C or better.

MARK 3332. PHILANTHROPY, FUNDRAISING, AND PROFESSIONAL SELLING. 3 Hours.

Presents known and effective selling techniques required by today's development officers in their efforts to cultivate relationships with donors. Students will enhance skills that will serve for a lifetime, including communications skills, critical thinking, building donor relationships, and ethics-based decision making. Students will learn how to address the key differences between for-profit and non-profit organizations' view of their mission and bottom line focus. Prerequisite: MARK 3321 with a grade of C or better and junior standing.

MARK 3342. MARKETING AND PHILANTHROPIC STRATEGY. 3 Hours.

This course applies the principles of marketing to the promotion of philanthropic initiatives. Consumer behavior theories are used to explain why individuals and corporations give and help others. Precepts from strategic marketing are also applied as students learn how to design and implement a strategic giving program. Prerequisite: MARK 3321 with a grade of C or better and junior standing.

MARK 3370. SOCIAL MEDIA MARKETING. 3 Hours.

Go behind the scenes and discover the marketing side of social media. Learn how to manage your personal and professional brand online. Understand how organizations are utilizing social media platforms to engage in social listening, social media advertising, influencer marketing, social media marketing campaigns, and more. A conceptual foundation and practical approach for developing a social media plan and tracking social media metrics will be presented. Students will gain hands-on experience using social media strategically to achieve desired marketing goals through an immersive-learning simulation project. Students will also earn relevant online certifications to build their resume. Prerequisite: MARK 3321 grade of C or better.

MARK 4191. STUDIES IN MARKETING. 1 Hour.

Advanced studies, on an individual basis, in the various fields of marketing. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

MARK 4291. STUDIES IN MARKETING. 2 Hours.

Advanced studies, on an individual basis, in the various fields of marketing. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

MARK 4303. RETAIL MARKETING. 3 Hours.

Students are introduced to the world of retailing through the consumer's perspective and from a managerial viewpoint. Topics studied include types of retailers, consumer buying behavior, retail site locations, merchandising, store layout and design and customer service. Students gain practical knowledge through projects, retail site visits, and relevant case studies. Special attention is paid to the retail mix, multichannel retailing, and retail marketing strategies. Prerequisite: MARK 3321 with grade of C or better.

MARK 4308. MANAGEMENT AND LEADERSHIP OF THE SALES FORCE. 3 Hours.

This course covers topics ranging from strategic solutions to tactical sales. It focuses on sales management and leadership targeted toward implementation of complex sales solutions. The course concerns sales managers' roles of planning and executing go-to-market strategy. Hiring, motivation, decision-making, conflict/negotiation strategies, coaching, ethical decision making, and retaining a high-performance team are examined in an interpersonal context with a focus on expanding and retaining long-term profitable customer relations as vital to the impact on firm performance. Prerequisites: MARK 3321 and MARK 3322 with grades of C or better.

MARK 4310. DIGITAL MARKETING. 3 Hours.

Students will examine how organizations are adapting to new interactive digital strategies for online research, development of digital strategy, and implementation of marketing online. Topics include search engine optimization, online advertising, web analytics, social media, email marketing, web development, mobile marketing, and reputation management. Upon completion, students will be able to understand 1) how consumers utilize digital technology, 2) the impact of digital marketing on the decision-making process, and 3) how to integrate digital marketing and technology with existing marketing practices. Prerequisite: MARK 3321 with grade of C or better.

MARK 4311. MARKETING RESEARCH. 3 Hours.

Designed to make students intelligent users of marketing research data. Students will explore the interrelationship between marketing research and marketing management for both the client and supplier. Upon completion of this course, students will understand methods for designing research projects, utilizing secondary data, generating primary data, sampling of human populations, questionnaire design, and data analysis. Prerequisite: MARK 3321 with a grade of C or better and BSTAT 3321.

MARK 4320. PRODUCT AND BRAND STRATEGY. 3 Hours.

This course is about understanding product and brand strategy adopted by firms, existing and new. We will begin the journey by understanding new product design and innovation with examples [including prototyping] and culminate in how new products become established brands through the product life cycle by way of strategic components such as price, distribution, packaging, promotion and brand extensions. Prerequisite: MARK 3321 with a grade of C or better.

MARK 4322. ADVANCED MARKETING MANAGEMENT AND STRATEGY. 3 Hours.

Advanced marketing management and strategy helps students look at marketing strategy in light of the strategy of the firm. It is helpful for students pursuing careers in marketing and management. Students will learn how to 1) develop marketing strategies for creating customers, 2) evaluate an organization's opportunities for creating customer value, 3) create a defensible position for the organization, and 4) evaluate competitive advantage in terms of financial value. Prerequisite: MARK 3321, MARK 3324 and MARK 4311 with grades of C or better, and 90 credit hours.

MARK 4325. INTERNATIONAL MARKETING. 3 Hours.

This class examines the impact of sociocultural, economic, technological, governmental, and demographic factors on the international marketing mix. Students will develop a culturally intelligent perspective of environmental factors that must be taken into consideration when formulating marketing strategies of businesses operating in the global marketplace. Prerequisite: MARK 3321 with a grade of C or better.

MARK 4331. SEMINAR IN MARKETING. 3 Hours.

Readings and discussion of special topics in marketing. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

MARK 4335. MULTICULTURAL MARKETING. 3 Hours.

This course involves readings and discussion of topics related to multicultural marketing. The primary focus will be on how to apply the principles of marketing to identify and reach the growing ethnic subcultures in the U.S. population. Careful consideration will be given to the historical context and ethical implications of these marketing activities. Practical aspects of business development will also be emphasized. Prerequisite: MARK 3321 with a grade of C or better.

MARK 4391. STUDIES IN MARKETING. 3 Hours.

Advanced studies, on an individual basis, in the various fields of marketing. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

MARK 4393. MARKETING INTERNSHIP. 3 Hours.

Practical training in marketing. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

MARK 5142. ADVANCED TOPICS IN MARKETING RESEARCH. 1 Hour.

Presentation and analysis of cutting edge topics in marketing research.

MARK 5182. INDEPENDENT STUDIES IN MARKETING. 1 Hour.

Extensive analysis of a marketing topic.

MARK 5199. GRADUATE MARKETING INTERNSHIP. 1 Hour.

Practical training in marketing. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

MARK 5282. INDEPENDENT STUDIES IN MARKETING. 2 Hours.

Extensive analysis of a marketing topic.

MARK 5299. GRADUATE MARKETING INTERNSHIP. 2 Hours.

Practical training in marketing. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

MARK 5311. MARKETING. 3 Hours.

Survey of activities involved in marketing. Emphasis is on developing a managerial point of view in planning and evaluating marketing decisions of the firm. Analyzes decisions with respect to products, price, channel, and promotional variables and considers questions relating to cost efficiency, demand, social responsibility and regulations.

MARK 5320. BUYER BEHAVIOR. 3 Hours.

Marketing begins and ends with the customer. This course introduces students to the study of consumer behavior. It is taught from the perspective of a marketing consultant who requires knowledge of consumer behavior in order to create, implement, and evaluate effective marketing strategies for clients. The course examines many concepts and theories from the behavioral sciences and analyzes their value in crafting marketing strategies. The course combines lecture and discussion of research based literature, both of which are aimed at providing an in-depth understanding of customer marketplace behavior with a focus on application to consumption and marketing decision making situations.

MARK 5326. INTEGRATED MARKETING COMMUNICATION. 3 Hours.

A managerial approach to coordinating all promotional activities, including direct marketing, advertising, sales promotion, personal selling, public relations, publicity and packaging to produce a unified market-focused message. Message development, placement and timing are examined within the context of the role each type of promotion plays in marketing strategy development. Additional topics examined include media definition and analysis, the communication process, legal and ethical considerations, and budgeting. Prerequisite: MARK 5311.

MARK 5327. RESEARCH FOR MARKETING DECISIONS. 3 Hours.

Overview of information needs of the marketing decision-maker. Emphasis on methods and techniques that may be employed for the collection and analysis of primary data. Major topics include design of research projects, generating primary data, questionnaire design, samplings for survey research, experimental design, controlling data collection, and data analysis.

MARK 5328. PRODUCT MANAGEMENT. 3 Hours.

Management of the firm's product or service offerings. Topics include new product development, new product screening, evaluation of existing products, product line and mix analysis, product abandonment decisions, the brand manager's role, the new product planning department, and others. Emphasis on the development of meaningful criteria for decision-making in the product area and on the development of information systems to suggest, screen, and monitor products. Prerequisite: MARK 5327.

MARK 5329. SALES AND SALES MANAGEMENT. 3 Hours.

Examines the skills required for successful personal selling and sales management in today's world, with emphasis on industrial markets. Discusses the links between business trends and the resulting need for new approaches to the sales management challenges of planning, implementing, and evaluating a sales program. Special topics include the strategic importance of the sales force, customer/supplier partnering, multi-function collaboration, technology's role in altering traditional customer-access channels, the organization of the sales function for profitability vs. revenue, and the development of effective major account strategies.

MARK 5330. SERVICES MARKETING MANAGEMENT. 3 Hours.

Examines conceptual frameworks and management practices particularly relevant to organizations in service industries, including health care, education, financial services, retailing, non-profit organizations, and others in which the core product is a service instead of a good. The course examines many concepts and theories from the service marketing industry and analyzes their value in crafting marketing strategies. Emphasis is on problem solving unique to these types of organizations. Prerequisite: MARK 5311.

MARK 5331. INTERNATIONAL MARKETING. 3 Hours.

Management of marketing in international business. Includes marketing research, pricing, promotion, and distribution in the international environment. Examines marketing problems arising from various degrees of foreign involvement (exports, licensing, foreign subsidiaries). Prerequisite: MARK 5311.

MARK 5332. BUSINESS-TO-BUSINESS MARKETING. 3 Hours.

Marketing strategies for businesses targeting other businesses. Included are frameworks for analysis of marketing opportunities. Business-to-business e-commerce is examined. Prerequisite: MARK 5311.

MARK 5334. STRATEGIC INTERNET MARKETING. 3 Hours.

Through theoretical investigation, brainstorming, and case analysis, students develop the skills and strategies that are necessary for effective marketing via electronic media. With particular emphasis on Internet-based media, topics include developing an online corporate identity, online market research, interactive and database Web site strategies, creating and maintaining Web site content, proactive marketing tactics, analysis of Web site statistics, measuring online marketing results, and development of a strategic Internet marketing plan. Prerequisite: MARK 5311.

MARK 5335. RETAILING, FRANCHISING, AND ENTREPRENEURSHIP. 3 Hours.

Course offers exposure to elements of retail management, franchising, and entrepreneurship, including planning, promotion, pricing, and merchandising. Prerequisite: MARK 5311.

MARK 5337. MARKETING ANALYTICS AND INFORMATION MANAGEMENT. 3 Hours.

Course focuses on the fundamental concepts of customer relationship management and application of analytics approaches to solve real world problems. The course covers topics including marketing data bases and computer-based research systems designed for the collection, storage, usage, and reporting of disaggregated data. Students will be instructed on how to increase customer profitability based on insights gained from customer data. Case studies and data analysis projects are utilized. Prerequisite: MARK 5311 or equivalent.

MARK 5338. CUSTOMER EXPERIENCE AND QUALITATIVE RESEARCH. 3 Hours.

Examines the nature and cycle of the customer experience, employing qualitative and quantitative research techniques to develop a full understanding of the functional and emotional components in the relationship. Students will conduct some combination of observational research, intercept interviews, depth interviews, focus groups, feedback (text) analysis, and social media analysis. Discussions will cover the relative strength and value of research techniques, their role in understanding the customer experience, and utilization of multi-dimensional data in development of business strategy. Prerequisite: MARK 5327.

MARK 5340. MARKETING STRATEGY. 3 Hours.

A case course designed to give the student an opportunity to utilize the managerial and analytical tools that he or she has acquired. Uses case studies which require a realistic diagnosis of company problems, development of alternative courses of action, and the formulation of specific recommendations. Prerequisite: MARK 5311 and two additional MARK graduate courses.

MARK 5341. ADVANCED TOPICS IN MARKETING RESEARCH I. 3 Hours.

As the marketing research industry evolves the scale requirements for industry participants change. This course offers the student introduction to a variety of qualitative topics and includes hands-on experience with appropriate software. The pedagogy includes lectures and presentations from experts in each of the topics. Typical topics include: -text mining -neuro-marketing -focus groups -depth interviews -projective techniques. Prerequisite: Consent of Program Director.

MARK 5342. ADVANCED TOPICS IN MARKETING RESEARCH II. 3 Hours.

This companion course to MARK 5341 focuses on quantitative topics in marketing research. Typical topics include geographical information systems, non-parametric statistics, data mining, measurement issues and questionnaire design and neuro-marketing. Prerequisite: consent of Program Director.

MARK 5343. ADVANCED RESEARCH ANALYSIS I. 3 Hours.

Focuses on problems of data analysis in marketing research. Introduces the concept of multivariate data and emphasizes application of core statistical techniques including factor analysis, multiple regression, discriminant analysis and logistic regression. Also covered are cluster analysis and ratings based conjoint analysis. Application of statistical software is stressed including interpretation of statistical output. Prerequisite: MARK 5327 or permission of the MSMR Program Director.

MARK 5344. ADVANCED RESEARCH ANALYSIS II. 3 Hours.

Advanced Research Analysis II - Continues from MARK 5343 on problems of data analysis in marketing research. Advanced multivariate applications include MANOVA (Multivariate analysis of variance), multidimensional scaling and correspondence analysis, choice based conjoint studies, confirmatory factor analysis, and structural equations modeling. Application of appropriate statistical software is emphasized including the interpretation of statistical outputs. Prerequisite: MARK 5343.

MARK 5350. MULTICULTURAL RESEARCH METHODS. 3 Hours.

This course extends the student's knowledge beyond traditional survey research concepts to include specific knowledge about the common sources of bias associated with studies of U.S. multicultural populations, such as Blacks, Hispanics and Asians. The topical coverage is multi-disciplinary and focuses on cultural and linguistic biases related to sampling, translations, questionnaire design, data collection methods, weighting, and statistical analysis. Attention is also devoted to issues related to focus group research and GIS analysis. Assignments will include readings, exercises, analysis of survey data files and Census data, and reporting of results. Prerequisite: BSTAT 5301 or equivalent.

MARK 5370. SOCIAL MEDIA MARKETING. 3 Hours.

The course studies social media as a tool for listening to engaging with customers and other significant audiences and for delivering marketing communications. Through interactive class projects students will learn best practices for managing social media channels and platforms. The course discusses examines the fundamentals for developing crafting a social media marketing plan and examines including metrics for monitoring and evaluating the effectiveness of social media campaigns. Ethical and legal issues related to privacy, security, content and crowdsourcing are also presented.

MARK 5382. INDEPENDENT STUDIES IN MARKETING. 3 Hours.

Extensive analysis of a marketing topic.

MARK 5396. MARKETING RESEARCH INTERNSHIP I. 3 Hours.

The internship involves part-time or full-time training and work experience in a company approved by the MSMR program advisor.

MARK 5397. MARKETING RESEARCH INTERNSHIP II. 3 Hours.

This is a continuation of Internship I and involves part-time or full-time work experience in a company approved by the MSMR program advisor. The student will be assigned primary responsibility for at least one marketing research project during Internship I or II. At the completion of the course, the student will present a research paper to the MSMR faculty.

MARK 5398. THESIS. 3 Hours.

Prerequisite: STAT 5325 and approval of Graduate Advisor.

MARK 5399. GRADUATE MARKETING INTERNSHIP. 3 Hours.

Practical training in marketing. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

MARK 5698. THESIS. 6 Hours.

Prerequisite: STAT 5325 and approval of Graduate Advisor.

MARK 6302. CONSUMER BEHAVIOR I. 3 Hours.

Study of current thought and research underlying individual and group marketplace behavior. Theories from the behavioral sciences are applied to consumer behavior from descriptive, predictive and normative perspectives. Topics include consumer knowledge, attitude theory, persuasion, affect, and social influence. The course draws from the literature in marketing, psychology, and behavioral economics. The course will enable students to conceptualize, operationalize, and develop research ideas.

MARK 6303. CONSUMER BEHAVIOR II. 3 Hours.

This course complements the Consumer Behavior I doctoral seminar. Building on a portion of that seminar, the course focuses on a few topics (e.g. automaticity in consumer behavior, consumer choice processes) that have the following characteristics: 1) the topics are the subjects of emerging research in consumer behavior, 2) students can gain an in-depth understanding of the theoretical underpinnings of these topics, and 3) the materials are such that students can develop innovative research projects on marketing and consumer behavior related to the topics covered in the class. Prerequisite: MARK 6302.

MARK 6305. MARKETING MODELS I. 3 Hours.

Study of basic models of market and consumer behavior with particular attention to the use of classical statistical methods such as ordinary and generalized least squares, factor analysis, discriminant analysis and correspondence analysis, cluster analysis, and canonical correlation. Applications include perceptual mapping, multiattribute modeling, conjoint analysis, and product planning models. Prerequisite: STAT 5325.

MARK 6310. MARKETING STRATEGY AND MANAGEMENT. 3 Hours.

Examination of the latest research and thought in marketing and business strategy. Topics include marketing programming; product, price, promotion, and distribution decisions, marketing audits, and the design, implementation and evaluation of marketing strategies and tactics. An objective of the course is the development of innovative research ideas on marketing strategy related to the topics covered in the class.

MARK 6311. MARKETING STRATEGY AND MANAGEMENT II. 3 Hours.

In increasingly global and competitive markets, sustainable competitive advantage takes on increasing importance. Further, in many industries, product differentiation no longer provides a decisive edge over competition. This course complements the Marketing Strategy and Management I doctoral seminar. Building on a portion of that seminar, the course focuses on a few topics (e.g. transformation of a product-centric organization to a customer centric organization, organizational change, organizational agility, and technology-enabled relationship management) that will allow students to examine areas of emerging research in marketing strategy, gain an in-depth understanding of the theoretical underpinnings of the selected topics, and develop innovative research projects on marketing strategy related to the topics covered in the class. Prerequisite: MARK 6310.

MARK 6327. ADVANCED MARKETING RESEARCH METHODS. 3 Hours.

Major topics include design of research projects, generating primary data, questionnaire design, sampling for survey research, experimental design, controlling data collection, and data analysis. Coverage of scientific techniques for collecting and analyzing data; includes research paradigms, measurement, and design. Emphasis on theory and application of survey research including classical test theory, item response theory, sampling, questionnaire construction, validity and reliability assessment and data reduction.

MARK 6331. ADVANCED GLOBAL MARKETING THEORY. 3 Hours.

Examines the antecedents and consequences of global marketing. Includes the politics of global marketing, emerging global strategies, the latest concepts of market entry and development, and global marketing performance and evaluation.

MARK 6390. TOPICS IN MARKETING. 3 Hours.

Advanced doctoral level work in special topics in marketing. May be repeated when topics vary.

MARK 6392. INDEPENDENT STUDY IN MARKETING. 3 Hours.

Doctoral level analysis of marketing topic.

Materials Science and Engineering (MSE)

COURSES

MSE 3300. INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Introduction to the atomic bonding, crystal structure, defects in materials, diffusion processes, phase diagram and phase transformation, and their relation to the mechanical, electrical, optical and thermal properties of metals, semiconductors, ceramics, polymers and composites. Prerequisites: CHEM 1442 or CHEM 1465; PHYS 1444.

MSE 4191. ADVANCED PROBLEMS IN MATERIALS SCIENCE & ENGINEERING. 1 Hour.

The investigation of special individual problems in materials science and engineering under the direction of a faculty member. Prerequisite: consent of the head of the department.

MSE 4291. ADVANCED PROBLEMS IN MATERIALS SCIENCE & ENGINEERING. 2 Hours.

The investigation of special individual problems in materials science and engineering under the direction of a faculty member. Prerequisite: consent of the head of the department.

MSE 4304. ANALYSIS OF MATERIALS. 3 Hours.

Theoretical understandings and practical applications of various characterization techniques to materials analysis, ranging from x-rays and electron diffraction, x-ray spectroscopy, and surface topography, are discussed. Practice of these techniques in lab class typically includes SEM spectroscopy, powder diffraction, Laue diffraction, and the double crystal x-ray diffraction. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4310. POLYMER MATERIALS SCIENCE. 3 Hours.

Intermolecular forces of attraction in high polymers, polymer synthesis, morphology and order in crystalline polymers, mechanics of amorphous polymers, time-dependent mechanical behavior, transitional phenomena, mechanical behavior of semicrystalline polymers. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4312. MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Concept of stress and strain, theory of plasticity; elementary dislocation theory. Deformation of single crystals; strengthening mechanisms like solid solution strengthening, and precipitation hardening. Fracture mechanics; microscopic aspects of fracture, fatigue, and creep of materials; design and processing of materials for improved mechanical properties. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4315. INTRODUCTION TO COMPOSITES. 3 Hours.

Composite classification, laminate coding, fabrication, processing and properties of composite laminates, point stress analysis and failure prediction of composite laminates, material allowable, issues in composite structural design. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4316. TRIBOLOGY AND LUBRICATION. 3 Hours.

The course provides a comprehensive understanding of the Tribology and Lubrication process in materials. This course will employ theoretical and practical examples. Mechanism of coating deposition for tribological, oxidation and corrosion protection are also examined. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4320. NANOSCALE MATERIALS. 3 Hours.

Introduction to the synthesis and characterization of nano-materials. Fundamental concepts of surface physics and chemistry. Survey of electronic, biological and biomedical applications. The materials presented include semiconductor and metal thin films, nanoparticles and nanowires, carbon fullerenes and nanotubes, and organic nanoparticles. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4330. CORROSION SCIENCE AND ENGINEERING. 3 Hours.

Corrosion principles and quantitative application of electrochemical principles to corrosion reactions. Effects of material factors and environmental conditions on aqueous corrosion and high temperature oxidation along with principal methods used in corrosion prevention. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4333. MAGNETIC PROPERTIES OF MATERIALS. 3 Hours.

Classical and quantum mechanical understandings of magnetic properties of materials. Specific applications of these properties to various devices are discussed. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4334. OPTICAL PROCESSES IN SOLID MATERIALS. 3 Hours.

Basic understanding of optical response of materials based on classical and quantum models. Particular focus on all phenomena involving light in semiconductors and their optoelectronic applications. Optical properties of solid materials with reduced dimensionality such as thin films and quantum wells and dots. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4335. ELECTRICAL PROPERTIES OF MATERIALS. 3 Hours.

Advanced discussion of electronic structure, transport mechanisms in metals, semiconductors and superconductors, with applications to materials used in various electronic devices. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4337. FATIGUE OF ENGINEERING MATERIALS. 3 Hours.

Cyclic deformation, fatigue crack initiation and growth in ductile solids. Application of fracture mechanics to fatigue. Mechanisms of crack closure. Variable and multiaxial fatigue and corrosion fatigue. Fatigue of brittle solids. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4339. FRACTURE MECHANICS. 3 Hours.

Theory and applications of fracture mechanics. Stress analysis of cracks, crack-tip plasticity, fatigue crack growth, and stress corrosion cracking. Applicability to materials selection, structural design, failure analysis, and structural reliability. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4343. NANOBIO TECHNOLOGY. 3 Hours.

The objective of this course is to provide students with the fundamental principles of physical and biological sciences at the nanoscale and the basic concepts of applying such interdisciplinary principles to develop new technologies for improving human life and health. The first part of this course introduces the fundamental principles of physics, chemistry, and biology at the nanoscale and the basic techniques to generate, manipulate, and characterize man-made and nature's nanomaterials and systems. The second part of this course covers the state-of-the-art applications of nanobiotechnology, with emphasis on biomedical applications. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4345. CERAMIC MATERIALS. 3 Hours.

Crystal structure of ceramic materials. Phase equilibria in ceramic materials. The processing of ceramics and ceramic matrix composites. Strengthening mechanisms and mechanical properties of ceramics and ceramic matrix composites including flexure, tensile, fracture toughness, fatigue, and creep. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4351. CURRENT TOPICS IN NANOTECHNOLOGY. 3 Hours.

Review and discussion of the latest advancements in the field of nanoscale science and technology. Topics include nanoscale electronic materials/devices, energy materials and devices, biological and chemical sensors, cancer diagnosis and cure, self assembly of materials, nanoscale composite materials, techniques for observing and manipulating atoms and molecules, and synthesis of nanoscale materials such as nanoparticles, nanowires, and graphenes. The course will comprise of several sections (several subareas of nanoscale science and technology) and will be taught by several professors who have expertise in each field. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4353. FUNDAMENTALS OF SUSTAINABLE ENERGY. 3 Hours.

Basic concepts and applications of energy generation and storage. Topics cover a broad spectrum of sustainable energy technologies, including thermal, tide, solar, biomass, wind and electrochemical devices, with emphasis on fundamentals in materials and engineering. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4354. ELECTRONIC MATERIALS AND DEVICES. 3 Hours.

Fundamentals and applications of modern electronic devices and materials. Topics include electrical properties of semiconductors, electrons and holes, energy bands, effective electron masses and effective hole masses, p-n junctions, drift current and diffusion current, metal-oxide-semiconductor (MOS) structure, capacitance-voltage (C-V) plots, field-effect transistors, bipolar junction transistors, and integrated circuits. Prerequisites: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4355. MATERIALS FOR ENERGY. 3 Hours.

The course aims to introduce concepts and design of advanced materials for sustainable energy generation and storage systems. It will cover polymer electrolyte materials, metallic nanoparticles, semiconductors, and nano-fabrication in clean energy conversion, energy storage, fuel cells, photovoltaic cells, and other emerging energy harvesting and storage. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4358. ORTHOPEDIC IMPLANTS - MATERIAL SELECTION AND CHARACTERIZATION. 3 Hours.

Materials science basics, material selection and material characterization for orthopedic implants. Survey of metallic materials, ceramic materials, polymers and composite materials applied in orthopedic implants. Introduction to surface modification, biostability, and tribology of orthopedic implants. Several laboratory practices are included. Prerequisite: Must be in a college of engineering professional program or college of science professional program or department consent.

MSE 4359. FAILURE ANALYSIS AND RELIABILITY ENGINEERING. 3 Hours.

The basic scope of this course is to understand 1) various types of failure modes in engineering materials, 2) contributing factors to those failures and 3) analysis and detection methods employed in the relevant industries. The failure of engineering materials under discussion includes those by mechanical, electrical and chemical load. Specific cases of discussion include materials for structural as well as microelectronics applications. Also discussed will be the method of statistical analysis and its modeling. Prerequisite: Department consent and must be in a college of engineering professional program or college of science professional program.

MSE 4390. SPECIAL TOPICS IN MATERIALS SCIENCE & ENGINEERING. 3 Hours.

Special topics pertinent to the field of materials science and engineering, such as electrical, optical, and magnetic properties of materials, will vary from semester to semester depending on the availability of faculty. May be repeated, provided that topics are different. Prerequisite: prior approval by the MSE undergraduate advisor.

MSE 4391. ADVANCED PROBLEMS IN MATERIALS SCIENCE & ENGINEERING. 3 Hours.

The investigation of special individual problems in materials science and engineering under the direction of a faculty member. Prerequisite: consent of the head of the department.

MSE 5141. TRANSMISSION ELECTRON MICROSCOPY LAB. 1 Hour.

Specimen preparation. Operation of the transmission electron microscope. Beam alignment and rotation calibration. Bright field and dark field imaging. Weak beam imaging. Examination of defects.

MSE 5190. SPECIAL TOPICS IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

May be repeated for credit when topic changes.

MSE 5192. MASTER'S COMPREHENSIVE EXAMINATION. 1 Hour.

Directed study, consultation, and comprehensive examination over coursework leading to the Master of Engineering degree in Materials Science and Engineering. Required of all Master of Engineering students in the semester they plan to graduate.

MSE 5193. SEMINAR IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

Selected topics in materials science and engineering presented by faculty, students, and invited lecturers.

MSE 5290. SPECIAL TOPICS IN MATERIALS SCIENCE AND ENGINEERING. 2 Hours.

May be repeated for credit when topic changes.

MSE 5300. INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Introduction to the atomic bonding, crystal structure, defects in materials, diffusion processes, phase diagram and phase transformation, and their relation to the mechanical, electrical, optical and thermal properties of metals, semiconductors, ceramics, polymers and composites.

MSE 5304. ANALYSIS OF MATERIALS. 3 Hours.

Theoretical understandings and practical applications of various characterization techniques to materials analysis, ranging from x-rays and electron diffraction, x-ray spectroscopy, and surface topography, are discussed. Practice of these techniques in lab class typically includes SEM spectroscopy, powder diffraction, Laue diffraction, and the double crystal x-ray diffraction.

MSE 5305. SOLID STATE PHYSICS AND THERMODYNAMICS OF MATERIALS. 3 Hours.

This course comprises of three sections, a) solid state physics, b) classical thermodynamics, and c) statistical thermodynamics. The solid state physics covers the physics of crystalline solids. This includes 1) classical theory of electrons in metals, 2) Sommerfeld theory of electrons in solids, 3) reciprocal lattice, 4) Bloch's theorem, 5) energy bands of solids, and 6) electrons in weak periodic potentials. The classical thermodynamics covers macroscopic aspects of thermodynamics. It covers 1) entropy, 2) temperature, 3) first, second, and third laws of thermodynamics, 4) internal energy and free energy, 5) Helmholtz free energy, Gibbs free energy, and 6) Maxwell relations. The statistical thermodynamics covers microscopic aspects of thermodynamic laws. It includes 1) entropy and temperature, 2) second law of thermodynamics, 3) partition function and Boltzmann factor, 4) free energies, and 5) canonical and grand canonical formalisms.

MSE 5312. MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Concepts of stress and strain, theory of plasticity. Elementary dislocation theory. Deformation of single crystals. Strengthening mechanisms like solid solution strengthening, precipitation hardening, etc. Elementary concepts in fracture mechanics. Microscopic aspects of fracture, fatigue, and creep of materials.

MSE 5314. FRACTURE MECHANICS. 3 Hours.

Theory and applications of linear elastic fracture mechanics. Topics include stress analysis of cracks, crack-tip plasticity, fatigue and stress corrosion. Applicability to materials selection, failure analysis and structural reliability reviewed.

MSE 5315. FATIGUE OF ENGINEERING MATERIALS. 3 Hours.

Cyclic deformation, fatigue crack initiation and growth in ductile solids. Application of fracture mechanics to fatigue. Mechanisms of crack closure. Variable and multiaxial fatigue and corrosion fatigue. Fatigue of brittle solids.

MSE 5316. TRIBOLOGY AND LUBRICATION. 3 Hours.

The course provides a comprehensive understanding of the Tribology and Lubrication process in materials. This course will employ theoretical and practical examples. Mechanism of coating deposition for tribological, oxidation and corrosion protection are also examined.

MSE 5320. NANOSCALE MATERIALS. 3 Hours.

Use Experiment-Oriented Just-in-Time Teaching to introduce the synthesis, properties and applications of inorganic thin films and nanoparticles. Before each lab session several lectures will be given that are specifically arranged for this particular experiment, including reviews of all necessary basic knowledge and introductions to new concepts, especially nanoscale size effects. Through such know-how/know-why approach students are expected to learn how all basic knowledge bonds together to apply to nanotechnology.

MSE 5321. PHASE TRANSFORMATIONS OF MATERIALS. 3 Hours.

The theory of homogeneous and heterogeneous transformations, nucleation and growth, martensitic transformations, heat treatment and control of microstructure.

MSE 5330. CORROSION SCIENCE AND ENGINEERING. 3 Hours.

Corrosion principles and quantitative application of electrochemical principles to corrosion reactions. Effects of material factors and environmental conditions on aqueous corrosion and high temperature oxidation along with principal methods used in corrosion prevention.

MSE 5333. MAGNETIC PROPERTIES OF MATERIALS. 3 Hours.

Classical and quantum mechanical understandings of magnetic properties of materials. Specific applications of these properties to various devices are discussed.

MSE 5334. OPTICAL PROCESSES IN SOLID MATERIALS. 3 Hours.

Basic understanding of optical response of materials based on classical and quantum models. Particular focus on all phenomena involving light in semiconductors and their optoelectronic applications. Optical properties of solid materials with reduced dimensionality such as thin films and quantum wells and dots.

MSE 5335. ELECTRICAL PROPERTIES OF MATERIALS. 3 Hours.

Advanced discussion of electronic structure, transport mechanisms in metals, semiconductors and superconductors, with applications to materials used in various electronic devices.

MSE 5339. Failure Analysis and Reliability Engineering. 3 Hours.

The basic scope of this course is to understand 1) various types of failure modes in engineering materials, 2) contributing factors to those failures and 3) analysis and detection methods employed in the relevant industries. The failure of engineering materials under discussion includes those by mechanical, electrical and chemical load. Specific cases of discussion include materials for structural as well as microelectronics applications. Also discussed will be the method of statistical analysis and its modeling.

MSE 5341. TRANSMISSION ELECTRON MICROSCOPY IN MATERIALS SCIENCE. 3 Hours.

This course provides theoretical and experimental knowledge on a basic TEM optics, sample requirements, electron diffraction, the imaging modes, high-resolution TEM, and related theories of image formation. This course is intended for graduate students who are potential new users of TEM for study of materials.

MSE 5343. NANOBIO TECHNOLOGY. 3 Hours.

The objective of this course is to provide students with the fundamental principles of physical and biological sciences at the nanoscale and the basic concepts of applying such interdisciplinary principles to develop new technologies for improving human life and health. The first part of this course introduces the fundamental principles of physics, chemistry, and biology at the nanoscale and the basic techniques to generate, manipulate, and characterize man-made and nature's nanomaterials and systems. The second part of this course covers the state-of-the-art applications of nanobiotechnology, with emphasis on biomedical applications.

MSE 5345. CERAMIC MATERIALS. 3 Hours.

Crystal structure of ceramic materials. Phase equilibria in ceramic materials. The processing of ceramics and ceramic matrix composites. Strengthening mechanisms and mechanical properties of ceramics and ceramic matrix composites including flexure, tensile, fracture toughness, fatigue, and creep.

MSE 5347. POLYMER MATERIALS SCIENCE. 3 Hours.

Intermolecular forces of attraction in high polymers, polymer synthesis, morphology and order in crystalline polymers, mechanics of amorphous polymers, time-dependent mechanical behavior, transitional phenomena, mechanical behavior of semicrystalline polymers.

MSE 5348. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Composite structural analysis; structural properties, damage characterization and failure mechanisms; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints.

MSE 5350. INTRODUCTION TO COMPUTATIONAL MATERIALS SCIENCE. 3 Hours.

Atomic to mesoscale computational modeling in Materials Science and Engineering, including the random-walk model, molecular dynamics, first-principle methods, density functional theory and phase-field modeling, by using various computational software and codes, such as Matlab, XMD, LAMMPS, Quantum Espresso and Multiphysics COMSOL Modeling.

MSE 5351. CURRENT TOPICS IN NANOTECHNOLOGY. 3 Hours.

Review and discussion of the latest advancements in the field of nanoscale science and technology. Topics include nanoscale electronic materials/devices, energy materials and devices, biological and chemical sensors, cancer diagnosis and cure, self assembly of materials, nanoscale composite materials, techniques for observing and manipulating atoms and molecules, and synthesis of nanoscale materials such as nanoparticles, nanowires, and graphenes. The course will comprise of several sections (several subareas of nanoscale science and technology) and will be taught by several professors who have expertise in each field.

MSE 5352. SOLAR ENERGY MATERIALS AND DEVICES. 3 Hours.

Fundamental principles of photovoltaic devices and solar energy materials used for the devices. Topics include thermodynamics of solar energy conversion, carrier generation and recombination, the solid-state device physics of p-n junction under illumination, various state-of-the-art photovoltaic materials, simulation of photovoltaic devices, and solar module technologies.

MSE 5353. FUNDAMENTALS OF SUSTAINABLE ENERGY. 3 Hours.

Basic concepts and applications of energy generation and storage. Topics cover a broad spectrum of sustainable energy technologies, including thermal, tide, solar, biomass, wind and electrochemical devices, with emphasis on fundamentals in materials & engineering.

MSE 5354. ELECTRONIC MATERIALS AND DEVICES. 3 Hours.

Fundamentals and applications of modern electronic devices and materials. Topics include electrical properties of semiconductors, electrons and holes, energy bands, effective electron masses and effective hole masses, p-n junctions, drift current and diffusion current, metal-oxide-semiconductor (MOS) structure, capacitance-voltage (C-V) plots, field-effect transistors, bipolar junction transistors, and integrated circuits.

MSE 5355. MATERIALS FOR ENERGY. 3 Hours.

The course aims to introduce concepts and design of advanced materials for sustainable energy generation and storage systems. It will cover polymer electrolyte materials, metallic nanoparticles, semiconductors, and nano-fabrication in clean energy conversion, energy storage, fuel cells, photovoltaic cells, and other emerging energy harvesting and storage.

MSE 5356. INSTRUMENTATION FOR MATERIALS CHARACTERIZATION. 3 Hours.

This course is composed of two components: lecture and laboratory for several materials characterization techniques. The lecture part includes the instruction of basic principles and theories behind AFM, Raman, FT-IR, XRD, SEM, TEM and spectroscopic techniques. Students in the class are divided into small groups for the laboratory part (4-5 people per group) so that students can gain hand-on experiences on various characterization techniques by operating associated equipment.

MSE 5358. ORTHOPEDIC IMPLANTS - MATERIAL SELECTION AND CHARACTERIZATION. 3 Hours.

Materials science basics, material selection and material characterization for orthopedic implants. Survey of metallic materials, ceramic materials, polymers and composite materials applied in orthopedic implants. Introduction to surface modification, biostability, and tribology of orthopedic implants. Several laboratory practices are included. Prerequisite: Graduate standing in science or engineering, or department consent.

MSE 5390. SPECIAL TOPICS IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

May be repeated for credit when topic changes.

MSE 5391. ADVANCED STUDIES IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Topics selected from various areas of materials science and engineering. Work performed as a thesis substitute normally will be accomplished under MSE 5391, with prior approval of the Committee on Graduate Studies.

MSE 5392. Research Project in Materials Science and Engineering I. 3 Hours.

Research course with credit granted according to work performed. The student will have to put together a research plan for the semester with approval of his/her dissertation advisor. End of semester requirement is a written report of research performed with results and discussion. A presentation at the end of the semester on research progress may be required.

MSE 5394. MASTER'S RESEARCH PROJECT IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

The student will carry out a hands-on project under a guidance of his/her supervising professor. The student will need to provide a written project report. At the end of semester, the student will present his/her project results to MSE faculty members and students. The MSE faculty members will decide the grade.

MSE 5398. THESIS. 3 Hours.**MSE 5405. PHYS THERMO MAT. 4 Hours.****MSE 5698. THESIS. 6 Hours.****MSE 5998. THESIS. 9 Hours.****MSE 6196. MSE INTERNSHIP. 1 Hour.**

For students participating in internship programs. May be repeated for credit.

MSE 6197. ADVANCED STUDIES IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

May be repeated for credit.

MSE 6198. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 1 Hour.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6298. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 2 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6396. MSE INTERNSHIP. 3 Hours.

For students participating in internship programs. May be repeated for credit.

MSE 6397. ADVANCED STUDIES IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

May be repeated for credit.

MSE 6398. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 3 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6399. DISSERTATION. 3 Hours.**MSE 6696. MSE INTERNSHIP. 6 Hours.**

For students participating in internship programs. May be repeated for credit.

MSE 6698. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 6 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6699. DISSERTATION. 6 Hours.**MSE 6996. MSE INTERNSHIP. 9 Hours.**

For students participating in internship programs. May be repeated for credit.

MSE 6998. RESEARCH IN MATERIALS SCIENCE AND ENGINEERING. 9 Hours.

Individually approved research projects in materials science and engineering. May be repeated for credit.

MSE 6999. DISSERTATION. 9 Hours.

MSE 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Mathematical Sciences (MSCI)

COURSES

MSCI 6399. DISSERTATION. 3 Hours.

MSCI 6699. DISSERTATION. 6 Hours.

MSCI 6999. DISSERTATION. 9 Hours.

MSCI 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Mathematics (MATH)

COURSES

MATH 0302. FUNDAMENTALS OF ALGEBRA. 3 Hours.

This course is designed for students whose placement scores or life experience indicate that they may need additional preparation in order to take a college credit bearing mathematics course. Topics may include basic algebraic operations and expressions, linear equations and inequalities, polynomials, rational expressions, factoring, exponents and radicals, graphing, quadratic equations, and mathematical reasoning. Students will use mathematical software to master targeted areas and progress through a self-paced environment in order to achieve college readiness. Immediately following the successful completion of this foundational course, students should register for a credit bearing mathematics course accordingly to their degree plan. Credit in this course does not fulfill any degree requirement.

MATH 0311. FOUNDATIONS FOR CONTEMPORARY MATHEMATICS. 3 Hours.

This course is designed for students whose placement scores or life experience indicate that they may need additional preparation in order to take a college credit-bearing mathematics course. This course provides foundational preparation for MATH 1301. Topics include basic numeric and algebraic operations, expressions, linear and quadratic equations, solving techniques, graphing, mathematical logic and reasoning, as well as a brief introduction to probability and statistics. Students will use mathematical software to master targeted areas and progress through a modified self-paced environment in order to achieve college readiness. Immediately following the successful completion of this foundational course, students should register for a credit-bearing mathematics course according to their degree plan, specifically MATH 1301. Credit in this course does not fulfill any degree requirements.

MATH 0312. FOUNDATIONS FOR ALGEBRA. 3 Hours.

This course is designed for students whose placement scores or life experience indicate that they may need additional preparation in order to take a college credit-bearing mathematics course. This course provides foundational preparation for MATH 1302 or MATH 1315. Topics include basic numeric and algebraic operations and expressions, linear equations and inequalities, polynomials, rational expressions, factoring, exponents and radicals, graphing, and quadratic equations. Students will use mathematical software to master targeted areas and progress through a modified self-paced environment in order to achieve college readiness. Immediately following the successful completion of this foundational course, students should register for a credit bearing mathematics course according to their degree plan, specifically MATH 1302 or MATH 1315. Credit in this course does not fulfill any degree requirements.

MATH 1301. CONTEMPORARY MATHEMATICS. 3 Hours. (TCCN = MATH 1332)

This course covers material in a traditional algebra course together with real-world applications of mathematics. It develops problem-solving and critical thinking skills. Topics include the mathematics of dimensional analysis, mathematical logic, population growth, optimization, voting theory, number theory, graph theory, relations, functions, probability, statistics, and finance. The use of mathematical software and calculators is required. See course syllabus for details. Credit may be received for only one of MATH 1301, MATH 1302, or MATH 1315.

MATH 1302. COLLEGE ALGEBRA. 3 Hours. (TCCN = MATH 1314)

This course is designed as preparation for higher level mathematics courses. Topics include the study of linear, quadratic, polynomial, rational, radical absolute value, logarithmic, and exponential functions, relations and inequalities; graphs, basic characteristics, and operations on functions; real and complex zeros of functions; graphing techniques; systems of equations and matrices. The use of mathematical software and calculators is required. See course syllabus for more details. Non-STEM (Science-Technology-Engineering-Mathematics) majors should enroll in MATH 1301, and Business majors should enroll in MATH 1315. Credit may be received for only one of MATH 1301, MATH 1302, or MATH 1315.

MATH 1303. TRIGONOMETRY. 3 Hours. (TCCN = MATH 1316)

Trigonometric functions, radian measure, solution of triangles, graphs of trigonometric functions, trigonometric identities and equations, and complex numbers. This course is not intended for Science majors. The Math Placement Test (MPT) is required to register for this course. See <http://www.uta.edu/math/pages/main/mpt.htm> for test details. Prerequisite: C or better in MATH 1301, MATH 1302, MATH 1308, MATH 1315, or a qualifying score on Math Placement Test.

MATH 1308. ELEMENTARY STATISTICAL ANALYSIS. 3 Hours. (TCCN = MATH 1342)

Topics may include collection, analysis, presentation, and interpretation of data. Analysis includes descriptive statistics, probability, relationships between variables and graphs, elementary statistical models, hypothesis testing, inference, estimation, correlation, regression and confidence intervals. The use of mathematical software and calculators is required. See course syllabus for details.

MATH 1313. LIBERAL ARTS HONORS MATHEMATICS. 3 Hours.

Topics include the development of the real number system, different orders of infinity, the idea of convergence and how this led to the development of calculus, the concept of a mathematical proof, the conceptual foundations of topology, networks, and knot theory, and modern applications of mathematics to the sciences.

MATH 1315. COLLEGE ALGEBRA FOR ECONOMICS & BUSINESS ANALYSIS. 3 Hours. (TCCN = MATH 1324)

This course covers material in a traditional algebra course with emphasis on business and financial application. The application of common algebraic functions including polynomial, exponential, logarithmic, and rational, to problems in business, economics, and the social sciences are addressed. Additional topics include systems of linear equations and inequalities, linear programming, mathematics of finance, elements of matrix algebra, logic and probability including expected value. Credit may be received for only one of MATH 1301, MATH 1302, or MATH 1315.

MATH 1316. MATHEMATICS FOR ECONOMICS AND BUSINESS ANALYSIS. 3 Hours. (TCCN = MATH 1325)

This course is the basic study of limits and continuity, differentiation, optimization and graphing, and integration of elementary functions, with emphasis on mathematical tools and applications in business, economics, and social sciences. This course is not a substitute for MATH 1426 Calculus I. Prerequisite: C or better in MATH 1315 or MATH 1302, or a qualifying score on Math Placement Test, or student group.

MATH 1324. ALGEBRA AND TRIGONOMETRY. 3 Hours. (TCCN = MATH 2412)

A fast-paced summary study of the topics of MATH 1302 and MATH 1303. This course is not intended for calculus track students; those students should take MATH 1421. Credit cannot be received for MATH 1324 and MATH 1302 or MATH 1303.

MATH 1325. ANALYTIC GEOMETRY. 3 Hours. (TCCN = MATH 1348)

Vectors, lines in two dimensions, circles, conics, transformation of coordinates, polar coordinates, parametric equations, and the solid analytic geometry of vectors, lines, planes, cylinders, spherical and cylindrical coordinates. Prerequisite: C or better in MATH 1301 or MATH 1302 or MATH 1315 or MATH 1324, or a qualifying score on Math Placement Test.

MATH 1327. ARCHITECTURAL CALCULUS WITH ANALYTIC GEOMETRY. 3 Hours.

Topics from Analytic Geometry and Calculus including conics, polar coordinates, parametric equations; concepts of limit, continuity, differentiation and integration; applications of these concepts. This course will not substitute for MATH 1426. Prerequisite: Major or intended major in Architecture or Interior Design and C or better in MATH 1303 or MATH 1421, or a qualifying score on Math Placement Test, or student group.

MATH 1330. ARITHMETICAL PROBLEM SOLVING. 3 Hours.

This is a course in small and large group problem solving, with emphasis on reasoning and writing. Topics include problem solving, sets, operations and relations, arithmetic, place value and bases, propositional logic, fractions, number theory, number systems and estimation. Prerequisite: C or better in MATH 1302 or a qualifying score on the Math Placement Test, and enrollment as an education major.

MATH 1331. GEOMETRICAL INFERENCE AND REASONING. 3 Hours.

A discovery-oriented exploration of two- and three-dimensional geometry, with emphasis on reasoning and writing. Topics include constructions, polygons, tessellations, polyhedra, symmetry, rigid motions in the plane, measurement, and discovering theorems. Prerequisite: C or better in MATH 1330 and enrollment as an education major.

MATH 1332. FUNCTIONS, DATA, AND APPLICATIONS. 3 Hours.

An exploration of interpreting data, using cooperative groups, spreadsheets and mathematical models. Topics include graphs, applications to economics and natural sciences, function concepts, counting principles, and basic probability and statistics. Prerequisite: C or better in MATH 1330 and enrollment as an education major.

MATH 1402. COLLEGE ALGEBRA. 4 Hours.

This course is designed as preparation for higher level mathematics courses. Integrated review materials will be used to master targeted areas as students proceed through the course. Topics include foundational numeric and algebraic operations in addition to the study of linear, quadratic, polynomial, rational, radical absolute value, logarithmic, and exponential functions, relations and inequalities; graphs, basic characteristics, and operations on functions; real and complex zeros of functions; graphing techniques; systems of equations and matrices. The use of mathematical software and calculators is required. See course syllabus for more details. Non-STEM (Science-Technology-Engineering-Mathematics) majors should enroll in MATH 1301, and Business majors should enroll in MATH 1315. Credit may be received for only one of MATH 1301, MATH 1302, MATH 1402, or MATH 1315. Students may not co-enroll in MATH 1302 and MATH 1402.

MATH 1421. PREPARATION FOR CALCULUS. 4 Hours.

This course integrates and builds upon concepts and skills from college algebra and trigonometry that are essential to success in calculus. Problem solving activities form the basis for the establishment of these mathematical connections. Prerequisite: C or better in MATH 1301 or MATH 1302 or MATH 1315, or a qualifying score on Math Placement Test, or student group.

MATH 1426. CALCULUS I. 4 Hours. (TCCN = MATH 2413)

Concepts of limit, continuity, differentiation and integration; applications of these concepts. Prerequisite: A qualifying score on the Math Placement Test (MPT) is required to register for this course, or student group.

MATH 2326. CALCULUS III. 3 Hours. (TCCN = MATH 2315)

Vectors, dot product, cross product, planes, quadric surfaces, partial differentiation, multiple integrals (with applications), line integrals, Green's Theorem, surface integrals, Stokes' Theorem, divergence theorem. Prerequisite: C or better in MATH 2425 or HONR-SC 2425, or student group.

MATH 2330. FUNCTIONS AND MODELING. 3 Hours.

Students engage in explorations and lab activities designed to strengthen and expand their knowledge of the topics found in secondary mathematics. Students collect data and explore a variety of situations that can be modeled using linear, exponential, polynomial, and trigonometric functions. Activities are designed to have them take a second, deeper look at topics they should have been exposed to previously; illuminate the connections between secondary and college mathematics; illustrate good, as opposed to typically poor, sometimes counterproductive, uses of technology in teaching; illuminate the connections between various areas of mathematics; and engage them in serious (i.e., non-routine) problem solving, problem-based learning, and applications of mathematics. While there is some discussion of how the content relates to secondary mathematics instruction, the course primarily emphasizes mathematics content knowledge and content connections, as well as applications of the mathematics topics covered. This course is part of the UTeach program. Prerequisite: C or better in MATH 2425; C or better in SCIE 1201 or SCIE 1334 or concurrent enrollment.

MATH 2425. CALCULUS II. 4 Hours. (TCCN = MATH 2414)

Applications of integration, techniques of integration, parametric equations, polar coordinates, sequences, and series. Prerequisite: C or better in MATH 1426 or HONR-SC 1426, or student group.

MATH 3300. INTRODUCTION TO PROOFS. 3 Hours.

Techniques for constructing proofs for various propositions. The propositions chosen exhibit properties of functions, relations, sets, cardinality, and other ideas in mathematics. An axiomatic approach to some areas in mathematics. Oral presentations of proofs are required. Prerequisite: Math major or math intended major. C or better in MATH 2425 or HONR-SC 2425, or student group.

MATH 3301. FOUNDATIONS OF GEOMETRY. 3 Hours.

A development of the foundations of geometry. Prerequisite: C or better in MATH 2425 or HONR-SC 2425, or student group.

MATH 3302. MULTIVARIATE STATISTICAL METHODS. 3 Hours.

Topics in multivariate data analysis with applications in various areas of interest, including multiple regression, analysis of experimental designs, covariate adjustment, non-linear regression and the use of standard multivariate statistical packages. Offered as MATH 3302 and STATS 3302; credit will be granted in only one department. Prerequisite: C or better in MATH 3313 or STATS 3313 or MATH 3316 or STATS 3316 or MATH 3351 or BIOL 3351 or consent of the instructor.

MATH 3303. MATHEMATICAL GAME THEORY. 3 Hours.

Two-person zero-sum games, solving matrix games by linear programming, two-person non-zero sum games, noncooperative n-person games, Nash equilibrium points and refinements, cooperative n-person games, core, Shapley value, and other concepts of solution. Applications to cost allocation, fair division, and voting power. Prerequisite: C or better in MATH 3330 or MATH 3319, or consent of the instructor.

MATH 3304. LINEAR OPTIMIZATION APPLICATIONS. 3 Hours.

An introduction to basic methods of optimization with applications to optimal resource application, minimal cost allocation and interpersonal decision making in noncooperative and cooperative environments. Includes simplex method, duality, zero sum games, transportation and assignment. Prerequisite: C or better in MATH 3330 or MATH 3319.

MATH 3307. ELEMENTARY NUMBER THEORY. 3 Hours.

Various topics in elementary number theory. Divisibility, congruences, quadratic reciprocity, and multiplicative functions. Prerequisite: 2.0 or better in nine hours of college mathematics, or student group.

MATH 3313. INTRODUCTION TO PROBABILITY. 3 Hours.

Basic concepts in probability, random variables, probability distributions, functions of random variables, moment generating functions, central limit theorem and its role in statistics, joint probability functions and joint probability density functions, joint cumulative distribution functions, conditional and marginal probability distributions, covariance and correlation coefficients, transformation and order statistics. Offered as MATH 3313 and STATS 3313; credit will be granted in only one department. Prerequisite: C or better in MATH 2326, or student group.

MATH 3314. DISCRETE MATHEMATICS. 3 Hours.

An introduction into discrete structures. Propositional calculus, sets and operations, functions, induction, counting, relations and matrices, equivalences and partial orders, graphs and shortest path algorithms, trees and minimal spanning trees, tree traversal, elements of boolean algebra. Prerequisite: C or better in MATH 1426 or HONR-SC 1426, or student group.

MATH 3315. MATHEMATICAL MODELS. 3 Hours.

Methods for solving, by means of mathematics, problems which occur in other disciplines such as physics, engineering, biology, and economics. Basic mathematical tools are chosen from areas such as optimization, probability, differential equations, and computer-oriented mathematics. Problems arising in other disciplines or industrial applications are emphasized. Subject matter will depend on the instructor. Prerequisite: C or better in MATH 2326, or permission of instructor, or student group.

MATH 3316. STATISTICAL INFERENCE. 3 Hours.

A comprehensive study of basic data analysis, focused on reasoning process of statistical investigations from asking question and collecting data to analyzing data and drawing inferences. Topics include exploratory data analysis, sampling, sampling distribution, estimation, hypothesis tests, regression, and ANOVA, with an emphasis on applications of these techniques using statistical software. Offered as MATH 3316 and STATS 3316; credit will be granted in only one department. Prerequisite: C or better in 6 hours from the following: MATH 1302, MATH 1308, MATH 1322, MATH 1323, MATH 1330, MATH 1331, MATH 1332, MATH 1421, MATH 1426, MATH 2425, MATH 2326, MATH 3300, MATH 3307, MATH 3314, MATH 3319, or MATH 3330; HONR-SC 1426, HONR-SC 2425, or student group.

MATH 3318. DIFFERENTIAL EQUATIONS. 3 Hours.

Ordinary differential equations with emphasis on the solutions and analysis of first and higher order differential equations drawn from fields of physics, chemistry, geometry, and engineering. Prerequisite: C or better in MATH 2326 or concurrent registration, or student group.

MATH 3319. DIFFERENTIAL EQUATIONS & LINEAR ALGEBRA. 3 Hours.

Introductory course with emphasis on solution techniques. Ordinary differential equations, vector spaces, linear transformations, matrix/vector algebra, eigenvectors, Laplace Transform, and systems of equations. Math majors will not receive credit for this course. Prerequisite: C or better in MATH 2326 or concurrent enrollment, or student group.

MATH 3321. ABSTRACT ALGEBRA I. 3 Hours.

Groups including Lagrange's Theorem, Cauchy's Theorem, the homomorphism theorems, and symmetric groups. Prerequisite: C or better in MATH 3300 and MATH 3330, or student group.

MATH 3330. INTRODUCTION TO LINEAR ALGEBRA AND VECTOR SPACES. 3 Hours.

Solving systems of linear equations by (reduced) row-echelon form and matrix inversion, matrix operations, linear transformations, projections, characterizing invertibility, determinants, bases, change of basis, real n -dimensional space and its geometric structure, subspaces, kernel and image of a linear transformation, application to abstract vector spaces of arbitrary dimension, dot product, orthogonality, Gram-Schmidt process, eigenvalues and eigenvectors, characteristic polynomial, diagonalization, symmetric matrices, and principal-axis theorem. Prerequisite: C or better in MATH 2425, or student group.

MATH 3335. ANALYSIS I. 3 Hours.

Real numbers, sequences, series, limits of functions, continuity. Prerequisite: Grade of C or better in both MATH 2326 and MATH 3300, or student group.

MATH 3345. NUMERICAL ANALYSIS AND COMPUTER APPLICATIONS. 3 Hours.

Numerical solutions of nonlinear equations, numerical integration and differentiation, polynomial interpolation, solutions of linear systems, and an introduction to spline functions. Prerequisite: C or better in MATH 2326, and C or better in one of MATH 3330 or MATH 3319, or student group.

MATH 3351. PROBABILITY AND RANDOM PROCESSES IN BIOLOGY. 3 Hours.

Introduction to random processes arising in biological modeling. Topics include introduction to probability, Poisson processes, birth-death processes, Markov chains, and Markov processes. Course taught as BIOL 3351 and MATH 3351; credit will be granted only once. Prerequisite: C or better in BIOL 3350 or MATH 3350 or consent of the instructor.

MATH 4093. Undergraduate Research. 0 Hours.

Undergraduate research experiences under supervision of faculty. Students are expected to disseminate research findings by poster or oral presentations in meetings or conferences. Students are also expected to participate in other activities as directed by the grant-funded Research Program Director.

MATH 4150. SEMINAR IN MATHEMATICAL BIOLOGY. 1 Hour.

Formulation and definition of interdisciplinary research problems in Mathematical Biology, the formulation and execution of strategies of solution, and the presentation of results. Research under faculty supervision and mentorship involving collaboration within a small group. Prerequisite: Consent of the instructor.

MATH 4180. ORAL COMMUNICATION OF MATHEMATICS. 1 Hour.

This course trains students in giving effective oral presentations of mathematics and topics involving mathematics. Students will give presentations to the class and evaluate the presentations of their classmates. Topics may be chosen from mathematics and science journals at a level suitable for undergraduates, from books and articles on the history and development of mathematics, or from previous course material.

MATH 4191. SPECIAL TOPICS IN MATHEMATICS. 1 Hour.

Special topics in mathematics are assigned to individuals or small groups. Faculty members closely supervise the projects and assign library reference material. Small groups will hold seminars at suitable intervals. May be repeated for credit. Prerequisite: senior standing and written permission of the instructor and department chair.

MATH 4291. SPECIAL TOPICS IN MATHEMATICS. 2 Hours.

Special topics in mathematics are assigned to individuals or small groups. Faculty members closely supervise the projects and assign library reference material. Small groups will hold seminars at suitable intervals. May be repeated for credit. Prerequisite: senior standing and written permission of the instructor & department chair.

MATH 4303. INTRODUCTION TO TOPOLOGY. 3 Hours.

A first course in topology from the axiomatic point of view. Prerequisite: C or better in MATH 3335.

MATH 4311. STOCHASTIC MODELS AND SIMULATION. 3 Hours.

A study of processes, whose outcomes are governed by chance, through a combination of lectures and computer lab sessions. Experiments include random number generation, coin tossing and other games of chance, random walks, Markov Chains, Poisson processes, birth-death processes, branching processes, and Brownian Motion. A foundation for modeling random phenomena in sciences, engineering and business. Prerequisite: C or better in MATH 2326 and knowledge of basic probability (MATH 3313/STATS 3313 or MATH 3351/BIOL 3351 or equivalent), or consent of instructor, or student group.

MATH 4312. ACTUARIAL RISK ANALYSIS. 3 Hours.

Fundamentals of actuarial science concerning risk theory based on probability. Topics include: utility theory, principles of premium calculations, collective and individual risk models, ruin theory, classical Lundberg's Model. Prerequisite: C or better in MATH 3313/STATS 3313.

MATH 4313. MATHEMATICAL STATISTICS. 3 Hours.

A continuation of MATH 3313. Random sampling and sampling distributions, estimation of unknown parameters and main properties of estimators, confidence intervals for unknown parameters, testing of hypotheses. Prerequisite: C or better in MATH 3313 or STATS 3313.

MATH 4314. ADVANCED DISCRETE MATHEMATICS. 3 Hours.

Finite automata, Turing machines, formal languages, graph theory, combinatorial optimization, complexity of algorithms, P versus NP, and decidable versus undecidable problems. Prerequisite: C or better in MATH 3314.

MATH 4320. ADVANCED DIFFERENTIAL EQUATIONS. 3 Hours.

The existence and properties of solution of differential equations. Prerequisite: C or better in MATH 3318 or MATH 3319.

MATH 4321. ABSTRACT ALGEBRA II. 3 Hours.

Rings and field theory, including polynomial rings and field extensions. Prerequisite: C or better in MATH 3321.

MATH 4322. INTRODUCTION TO COMPLEX VARIABLES. 3 Hours.

An introduction to the theory of functions of a complex variable and also an introduction to applications including uses of the residue theory, contour integration and conformal mapping. Prerequisite: C or better in MATH 2326, or student group.

MATH 4324. INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS. 3 Hours.

Methods of solutions of selected elliptic, parabolic, and hyperbolic partial differential equations with reference to physical applications. Prerequisite: C or better in MATH 3318 or MATH 3319.

MATH 4330. ADVANCED LINEAR ALGEBRA. 3 Hours.

Eigenvalues, eigenvectors, generalized eigenvectors, minimal/characteristic polynomial, Jordan normal/canonical form, companion matrix and rational canonical form, inner products, adjoint of a linear map, positive-definite operators and isometries, polar decomposition and singular-value decomposition, exponential of a matrix and applications to differential equations, least squares and curve fitting, bilinear and quadratic forms, dual spaces and transpose of a matrix, quotient spaces, multilinear maps, tensor products. Prerequisite: Math 3330 or consent of instructor.

MATH 4334. ADVANCED MULTIVARIABLE CALCULUS. 3 Hours.

Topics include properties of limits of mappings, continuity of mappings, derivatives of mappings, and integrals of mappings from n-dimensional Euclidean space to m-dimensional Euclidean space. Prerequisite: C or better in MATH 3335, and MATH 3330.

MATH 4335. ANALYSIS II. 3 Hours.

Differentiation, integration, and selected topics in sequences and series of functions and metric spaces. Prerequisite: C or better in MATH 3335.

MATH 4345. NUMERICAL ANALYSIS & COMPUTER APPLICATIONS II. 3 Hours.

Numerical solutions for ordinary differential equations, boundary value problems, minimizations of multivariate functions, and methods of least squares. Prerequisite: C or better in MATH 3345.

MATH 4350. PRECALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS. 3 Hours.

This course serves to bridge the gap between algebra and calculus for middle level teachers. It will develop a firm understanding of the concept of function, how to graphically represent various functions, analyze their behavior and create new functions from old. Functions will be used to model real-life situations. The course will focus on the essential elements of precalculus, as given by the TEKS. It will develop the foundations for functions and explore functions as a unifying theme. This includes transformations, inverses, and solving equations. These foundational ideas will be explored and applied to specific functions, including exponential, logarithmic, power, polynomial, rational, and trigonometric functions. There will be an emphasis on multiple representations of mathematical ideas: verbal, concrete, pictorial, tabular, symbolic and graphical. Throughout, the mathematical connections between precalculus and school mathematics will be highlighted. Prerequisite: C or better in MATH 1302, MATH 1308, MATH 1330, MATH 1331 and MATH 1332. This course does not count toward a degree in mathematics.

MATH 4351. CALCULUS FOR MID-LEVEL MATHEMATICS TEACHERS. 3 Hours.

This course serves to introduce the basic concepts of calculus to middle level teachers. The primary goal is to help teachers develop a fundamental understanding of the key mathematical ideas in calculus in order to broaden their mathematical perspective and gain insight into the topics in the middle level curriculum which are related and foundational to its development. Participants will develop conceptual knowledge of the processes of differentiation and integration, and understanding of their applications and an understanding of the relationship between the two processes. Prerequisite: C or better in MATH 4350. This course does not count toward a degree in mathematics.

MATH 4381. MATHEMATICS RESEARCH. 3 Hours.

Formulation and definition of research problems, the formulation and execution of strategies of solution, and the presentation of results. Prerequisite: consent of instructor. Recommendation by other faculty encouraged.

MATH 4391. SPECIAL TOPICS IN MATHEMATICS. 3 Hours.

Special topics in mathematics are assigned to individuals or small groups. Faculty members closely supervise the projects and assign library reference material. Small groups will hold seminars at suitable intervals. May be repeated for credit. Prerequisite: senior standing and written permission of the instructor & department chair.

MATH 4392. ADVANCED TOPICS IN MATHEMATICS. 3 Hours.

Varies from semester to semester. New developments in mathematics, in-depth study of a topic not covered in other courses, or a special faculty expertise made available to undergraduates. May be repeated for credit as topic varies. Prerequisite: permission of instructor.

MATH 4393. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year the student must complete a thesis or a project under the direction of a faculty member in the math department. Prerequisite: enrollment in the University Honors College and written permission of the instructor and chair.

MATH 4394. UNDERGRADUATE RESEARCH EXPERIENCES. 3 Hours.

Research under faculty supervision and mentorship involving collaboration within a small group. The topic varies from semester to semester, is determined by the faculty teaching the course, and is announced in advance. The course promotes active learning based on inquiry, development of higher-order thinking skills, and meaningful scientific research. Prerequisite: consent of instructor.

MATH 5190. INTERNSHIP FOR MATHEMATICAL SCIENCES. 1 Hour.

Practical experiences in the mathematical sciences. May be repeated for credit when the content changes. Prerequisite: Successful completion of 18 graduate credit hours in the program of study and in good academic standing (i.e. graduate GPA 3.0/4.0 or higher).

MATH 5191. SEMINAR FOR TEACHING ASSISTANTS. 1 Hour.

This course is mandatory for all mathematics graduate teaching assistants. Students will be instructed on classroom procedures and effective teaching strategies and will be required to deliver teaching demonstrations under the supervision of mathematics faculty. The purpose is to enhance students' capacity to facilitate mathematics learning in a variety of settings. Admittance to this course is restricted to Math TAs.

MATH 5300. INTRODUCTION TO SCIENTIFIC COMPUTING. 3 Hours.

Introduction to scientific computing utilizing algorithmic languages and operating environment such as Fortran, MATLAB, C, and C++ and UNIX (LINUX) operating system. Prerequisite: consent of the instructor.

MATH 5302. FUNDAMENTALS OF MATHEMATICAL SCIENCES I. 3 Hours.

Matrices and operators, linear spaces, multivariable calculus, dynamical systems, applications. Prerequisites: MATH 3318 and MATH 3330 or consent of the instructor.

MATH 5303. FUNDAMENTALS OF MATHEMATICAL SCIENCES II. 3 Hours.

Wave propagation, potential theory, complex variables, transform techniques, perturbation techniques, diffusion, applications. Prerequisite: MATH 5302 or consent of the instructor.

MATH 5304. GENERAL TOPOLOGY. 3 Hours.

Introduction to fundamentals of general topology. Topics include product spaces, the Tychonoff theorem, Tietzes Extension theorem, and metrization theorems. Prerequisite: MATH 4304 or MATH 4335.

MATH 5305. STATISTICAL METHODS. 3 Hours.

Topics include descriptive statistics, numeracy, and report writing; basic principles of experimental design and analysis; regression analysis; data analysis using the SAS package. Prerequisite: consent of the instructor.

MATH 5307. MATHEMATICAL ANALYSIS I. 3 Hours.

Elements of topology and the real number system, sequences in metric spaces, limits and continuity of functions, differentiation, the Riemann integral, infinite series, and sequences and series of functions. Prerequisite: MATH 4335 or consent of Graduate Advisor.

MATH 5308. MATHEMATICAL ANALYSIS II. 3 Hours.

Analysis in R^n , limits, continuity, Jacobian, extremum problems, multiple integrals, sequences and series of functions, Lebesgue integral. Prerequisite: MATH 5307 or consent of Graduate Advisor.

MATH 5310. MATHEMATICAL GAME THEORY. 3 Hours.

Two person null sum games. Bimatrix games and Nash equilibrium points. Noncooperative games, existence theorem. Cooperative games, core, Shapley value, the nucleolus. Cost allocation. Market games. Simple games and voting. Prerequisite: MATH 3330.

MATH 5311. APPLIED PROBABILITY AND STOCHASTIC PROCESSES. 3 Hours.

Topics include conditional expectations, law of large numbers and central limit theorem, stochastic processes, including Poisson, renewal, birth-death, and Brownian motion. Prerequisite: MATH 3313 or equivalent.

MATH 5312. MATHEMATICAL STATISTICS I. 3 Hours.

Random variables and their expectations, some special distributions, moment generating functions, transformations of bivariate random variables, sampling distribution of statistics, Central Limit Theorem, confidence intervals, maximum likelihood estimation, introduction to hypothesis testing, maximum likelihood tests. Prerequisite: MATH 3335 or consent of instructor.

MATH 5313. MATHEMATICAL STATISTICS II. 3 Hours.

Multivariate distributions, consistency and limiting distributions, Rao-Cramer lower bound and efficiency, sufficiency and completeness, most powerful tests, uniformly most powerful tests, likelihood ratio test, the sequential probability ratio test, minimax and classification procedures. Prerequisite: MATH 5312/STATS 5312.

MATH 5314. EXPERIMENTAL DESIGN. 3 Hours.

This course covers the classical theory and methods of experimental design, including randomization, blocking, one-way and factorial treatment structures, confounding, statistical models, analysis of variance tables and multiple comparisons procedures. Prerequisite: MATH 5305/STATS 5305 or MATH 5355/STATS 5355 or permission of instructor.

MATH 5315. GRAPH THEORY. 3 Hours.

Algorithms for problems on graphs. Trees, spanning trees, connectedness, fundamental circuits. Eulerian graphs and Hamiltonian graphs. Graphs and vector spaces, matrices of a graph. Covering and coloring. Flows. Prerequisite: MATH 3314.

MATH 5316. COMBINATORIAL OPTIMIZATION. 3 Hours.

Shortest paths. Minimum weight spanning trees and matroids. Matchings and optimal assignment. Connectivity. Flows in networks, applications. Prerequisite: MATH 3314.

MATH 5317. REAL ANALYSIS. 3 Hours.

Sigma-fields, measures, measurable functions, convergence in measure and almost everywhere, integration, Fatou's Lemma, Lebesgue-dominated convergence, signed measures, Radon-Nikodym Theorem, product measures, Fubini's Theorem. Prerequisite: Math 5307 or consent of the Graduate Advisor.

MATH 5318. FUNDAMENTALS OF STOCHASTIC ANALYSIS. 3 Hours.

General properties of stochastic processes, processes with independent increments, martingales, limit theorems including invariance principle, Markov processes, stochastic integral, stochastic differential. Prerequisite: Math 5317 or consent of the instructor.

MATH 5319. PROBABILITY THEORY. 3 Hours.

Probability spaces, random variables, filtrations, conditional expectations, martingales, strong law of large numbers, ergodic theorem, central limit theorem, Brownian motion and its properties. Prerequisite: Math 5317.

MATH 5320. ORDINARY DIFFERENTIAL EQUATIONS. 3 Hours.

Fundamentals of the theory of systems of ordinary differential equations: existence, uniqueness, and continuous dependence of solutions on data; linear equations, stability theory and its applications, periodic and oscillatory solutions. Prerequisite: MATH 5307 and MATH 5333.

MATH 5321. APPLIED PARTIAL DIFFERENTIAL EQUATIONS. 3 Hours.

General first order equations. Basic linear theory for elliptic, hyperbolic, and parabolic second order equations, including existence and uniqueness for initial and boundary value problems. Prerequisites: MATH 5307 and MATH 5333.

MATH 5322. COMPLEX VARIABLES I. 3 Hours.

Fundamental theory of analytic functions, residues, conformal mapping and applications. Prerequisite: MATH 5307.

MATH 5325. ALGEBRAIC NUMBER THEORY. 3 Hours.

Field extensions, number fields and number rings, ramification theory, class groups, elliptic curves and their group structure, applications to Fermat's last theorem. Prerequisite: MATH 3321.

MATH 5326. ALGEBRAIC TOPOLOGY. 3 Hours.

Basics of topology, Fundamental groups, covering spaces, VanKampen's Theorem, categories and functors, singular homology, relative homology, Mayer-Vietoris sequence, cohomology, cup products, the cohomology ring of a space, CW complexes. Prerequisites: MATH 3321, MATH 3335.

MATH 5327. FUNCTIONAL ANALYSIS I. 3 Hours.

Introduction to Hilbert and Banach spaces: Hahn-Banach, Banach-Steinhaus, and closed graph theorems. Riesz representation theorem and bounded linear operators in Hilbert space. Prerequisite: MATH 5317 or consent of the instructor.

MATH 5328. FUNCTIONAL ANALYSIS II. 3 Hours.

The theory of distributions and Sobolev spaces, with applications to differential equations. Compact operators and Fredholm theory. Spectral theory for unbounded operators. Prerequisite: MATH 5327.

MATH 5329. HOMOLOGICAL ALGEBRA. 3 Hours.

Projective and injective modules, projective and injective resolutions, Hom and tensor, the language of category theory, derived functors, Ext and Tor, complexes.

MATH 5330. ALGEBRAIC GEOMETRY. 3 Hours.

Theory of ideals in polynomial rings, Nullstellensatz, Hilbert's basis theorem, computation in polynomial rings, affine and projective varieties, singular and smooth points on varieties. Prerequisite: MATH 4321.

MATH 5331. ABSTRACT ALGEBRA I. 3 Hours.

Fundamental topics on groups, rings and modules that may include: abelian groups; dihedral groups; groups of permutations; normal subgroups; quotient groups; group actions; Lagrange's Theorem; Cayley's Theorem; Sylow's Theorems; factorization in commutative rings; localization in commutative rings; quotient rings; quotient modules; isomorphism theorems. Prerequisite: permission from instructor.

MATH 5332. ABSTRACT ALGEBRA II. 3 Hours.

Fundamental topics that may include: modules; chain conditions, noetherian rings and modules, artinian rings; Wedderburn's Theorem; localization with Ore conditions; Maschke's Theorem; special classes of rings such as regular algebras, Cohen-Macaulay rings, Gorenstein rings, universal enveloping algebras. Prerequisite: MATH 5331 or permission from instructor.

MATH 5333. LINEAR ALGEBRA AND MATRICES. 3 Hours.

Vector spaces, their sums, linear (in)dependence, bases, linear maps and their matrices, change of basis, inner-products, adjoints, diagonalization, eigenvectors and generalized eigenvectors, eigenvalues, Jordan form, characteristic and minimal polynomials, dual vector spaces, bilinear and quadratic forms. Prerequisite: MATH 3330 or consent of instructor.

MATH 5334. DIFFERENTIAL GEOMETRY. 3 Hours.

Introduction to the theory of curves and surfaces in three dimensional Euclidean space. Prerequisite: MATH 4334 or MATH 4335.

MATH 5336. CONCEPTS AND TECHNIQUES IN NUMBER THEORY. 3 Hours.

Topics include mathematical induction, fundamental theorem of arithmetic, inequalities, special sequences and sums, divisibility properties, greatest common divisor, division and Euclidean algorithm, properties of congruence and Diophantine equations.

MATH 5337. CONCEPTS AND TECHNIQUES IN CALCULUS. 3 Hours.

Topics studied include limits, continuity, differentiation, integration, numerical approximations, applications and Taylor series.

MATH 5338. NUMERICAL ANALYSIS I. 3 Hours.

Solution of equations including linear and nonlinear systems, interpolation and approximation, spline, numerical differentiation and quadrature. Prerequisite: MATH 2425 or consent of the instructor.

MATH 5339. NUMERICAL ANALYSIS II. 3 Hours.

Rigorous treatment of numerical aspects of linear algebra and numerical solution of ordinary differential equations, boundary value problems, introduction to numerical solution of partial differential equations. Prerequisite: MATH 5338 or consent of the instructor.

MATH 5340. DISCRETE MATHEMATICS FOR PROBLEM SOLVING. 3 Hours.

Topics may include functions, mathematical induction, principles of counting, combinatorics, sequences and recurrence relations, finite graph theory, and elementary game theory.

MATH 5341. MODERN GEOMETRY. 3 Hours.

Topics include Euclidean and non-Euclidean geometries with an emphasis on comparing intrinsic and extrinsic characteristics of geodesics and the resulting geometrical implications.

MATH 5342. CONCEPTS AND TECHNIQUES IN ALGEBRA. 3 Hours.

A study of algebra as described in the K-12 research literature and connections to algebraic structures. Topics include algebra as the study of functions and function relationships, algebra as the study of multiple representations with an emphasis on graphs, tables, and formulae, algebra as generalized arithmetic and quantitative reasoning, and algebra as a language.

MATH 5343. CONCEPTS AND TECHNIQUES IN PROBABILITY AND STATISTICS. 3 Hours.

Consideration of (1) exploring data: descriptive statistics of situations involving one and two variables; (2) anticipating patterns: probability and simulation; (3) design of experiments and planning a study; (4) statistical inference: confirming models. Use of a graphing calculator and other appropriate technology.

MATH 5344. MATHEMATICS-SPECIFIC TECHNOLOGIES. 3 Hours.

Focus on use of current mathematics-specific technologies for enhancing mathematical understanding and mathematics teaching. May include use of Geometer's Sketchpad, Fathom, graphing calculators and computer algebra systems.

MATH 5345. HISTORICAL APPROACH TO REAL ANALYSIS. 3 Hours.

A historical treatment of real analysis that explores motivations for the early definitions and theorems in analysis. Topics may include Fourier's introduction of trigonometric series and the issues it created for mathematicians of the early 19th century, Cauchy's efforts toward establishing a firm foundation for calculus, and Dirichlet's proof of the validity of the Fourier series expansion. Prerequisite: MATH 5337 or consent of the instructor.

MATH 5346. CONCEPTS AND TECHNIQUES IN PROBLEM SOLVING. 3 Hours.

A study of the application of various heuristics and general problem strategies in mathematics, with application to the teaching and learning of secondary school and college-level mathematics. Topics include analyzing, classifying, and modifying tasks, assessment of problem solving, and implementing problem solving in the classroom. Assignments require interaction in secondary school or college field settings.

MATH 5347. CONCEPTS AND TECHNIQUES IN MATHEMATICAL MODELING WITH APPLICATIONS. 3 Hours.

Topics studied include algebraic, graphical, geometrical and numerical techniques to model and solve applied problems.

MATH 5348. ADVANCED ALGEBRA IN SECONDARY SCHOOL MATHEMATICS. 3 Hours.

Major concepts of second-year algebra applied to the teaching and learning of secondary school mathematics. Topics include relations, algebraic, tabular, verbal and geometric representations of functions, transformations, including applications involving systems of equations and inequalities.

MATH 5350. APPLIED MATHEMATICS I. 3 Hours.

Development of models arising in the natural sciences and in engineering. Emphasis will be on the mathematical techniques and theory needed to analyze such models; these include aspects of the theory of differential and integral equations, boundary value problems, theory of distributions and transforms. Prerequisites: MATH 5307 and MATH 5333.

MATH 5351. APPLIED MATHEMATICS II. 3 Hours.

Continuation of MATH 5350; models arising in the physical sciences whose analysis includes such topics as the theory of operators in a Hilbert space, variational principles, branching theory, perturbation and stability analysis. Prerequisite: MATH 5350.

MATH 5352. CONCEPTS AND TECHNIQUES IN PRECALCULUS. 3 Hours.

Topics include functions (transcendental, inverse, parametric, polar, transformations), asymptotic behavior, conics, sequences, complex numbers.

MATH 5353. APPLIED LINEAR MODELS. 3 Hours.

The course covers, at an operational level, three topics: 1) the univariate linear model, including a self-contained review of the relevant distribution theory, basic inference methods, several parameterizations for experimental design and covariate-adjustment models and applications, and power calculation; 2) the multivariate linear model, including basic inference (e.g. the four forms of test criteria and simultaneous methods), applications to repeated measures experiments and power calculation; and 3) the univariate mixed model, including a discussion of the likelihood function and its maximization, approximate likelihood inference, and applications to complex experimental designs, missing data, unbalanced data, time series observations, variance component estimation, random effects estimation, power calculation and a comparison of the mixed model's capabilities relative to those of the classical multivariate model. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis) or equivalent.

MATH 5354. CATEGORICAL DATA ANALYSIS. 3 Hours.

This course covers classical methods for analyzing categorical data from a variety of response/factor structures (univariate or multivariate responses, with or without multivariate factors), based on several different statistical rationales (weighted least squares, maximum likelihood and randomization-based). Included are logistic regression, multiple logit analysis, mean scores analysis, observer agreement analysis, association measures, methods for complex experimental designs with categorical responses and Poisson regression. The classical log-linear model for the association structure of multivariate responses is briefly reviewed. Randomization-based inference (e.g. Mantel-Haenszel) is discussed as well. The necessary distribution theory (multinomial, asymptotics of weighted least squares and maximum likelihood) are discussed at an operational level. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis).

MATH 5355. STATISTICAL THEORY FOR RESEARCH WORKERS. 3 Hours.

Designed for graduate students not majoring in mathematics. Topics include basic probability theory, distributions of random variables, point estimation, interval estimation, testing hypotheses, regression, and an introduction to analysis of variance. Graduate credit not given to math majors. Prerequisite: calculus MATH 1426/MATH 2425/MATH 2326 or permission of instructor.

MATH 5356. APPLIED MULTIVARIATE STATISTICAL ANALYSIS. 3 Hours.

Statistical analysis for data collected in several variables, topics including sampling from multivariate normal distribution, Hotelling's T^2 , multivariate analysis of variance, discriminant analysis, principal components, and factor analysis. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

MATH 5357. SAMPLE SURVEYS. 3 Hours.

A comprehensive account of sampling theory and methods, illustrations to show methodology and practice, simple random sampling, stratified random sample, ratio estimates, regression estimates, systematic sampling, cluster sampling, and nonsampling errors. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

MATH 5358. REGRESSION ANALYSIS. 3 Hours.

A comprehensive course including multiple linear regression, non-linear regression and logistic regression. Emphasis is on modeling, inference, diagnostics and application to real data sets. The course begins by developing a toolbox of methods via a sequence of guided homework assignments. It culminates with projects based on consulting-level data analysis problems involving stratification, covariate adjustment and messy data sets. Some knowledge of the SAS package is required. Prerequisites: Math 5312/STATS 5312 or Math 5305/STATS 5305 with a B or better or permission of the instructor.

MATH 5359. SURVIVAL ANALYSIS. 3 Hours.

This course covers analysis of lifetime data with applications in engineering and biomedical research. Topics may include survival function, hazard function, cumulative hazard function, parametric distributions to model lifetime data, censoring, Kaplan-Meier estimator, testing for survival times for two or more groups, Cox proportional hazards model (both fixed and time dependent covariate), parametric regression models, regression diagnostics, accelerated failure time models, sample size determination, extensive use of R statistical software. Prerequisites: MATH 5305/STATS 5305 or MATH 5312/STATS 5312 or permission of instructor.

MATH 5361. APPLIED CALCULUS OF VARIATION. 3 Hours.

Functionals, variation, extremization, Euler's equation, direct and indirect approximation methods; applications to mechanics and control theory. Prerequisite: MATH 5302.

MATH 5362. MATHEMATICS OF LINEAR PROGRAMMING. 3 Hours.

The simplex method and the revised simplex method. Linear algebra for polyhedra and polytopes. Duality theory. Sensitivity analysis. Applications to transportation problems, network flow problems, matrix-games and scheduling problems. Integer programming. Quadratic programming. Prerequisite: MATH 3330.

MATH 5363. OSCILLATIONS AND WAVES. 3 Hours.

Development of methods and results related to phenomena in nature that exhibit oscillatory motion; mathematical techniques include Fourier series, ordinary and partial differential equations, and the theory of almost periodic functions. Prerequisite: MATH 3318.

MATH 5364. INTRODUCTION TO MATHEMATICAL CONTROL THEORY. 3 Hours.

Systems in science, engineering, and economics and their mathematical description by means of functional equations (ordinary, partial, integral, delay-type). Basic properties of various classes of systems: observability, controllability, stability, and oscillating systems; optimal control problems and applications. Prerequisite: MATH 3318 or MATH 4320.

MATH 5365. BIOMATHEMATICS. 3 Hours.

Mathematical techniques used in modeling such as perturbation theory, dimensional analysis, Fourier analysis, and differential equations. Applications to morphogenetics, population dynamics, compartmental systems, and chemical kinetics.

MATH 5366. INTRODUCTION TO NEURAL AND COGNITIVE MODELING. 3 Hours.

Principles of neural network modeling; application of these principles to the simulation of cognitive processes in both brains and machines; models of associative learning, pattern recognition, and classification. Prerequisite: consent of instructor.

MATH 5370. PROBLEM SOLVING IN K-8 MATHEMATICS. 3 Hours.

A study of the nature and aspects of problem solving in mathematics, with application to the teaching and learning of K-8 mathematics. Topics include deconstructing and modifying tasks, assessment of problem solving, and the roles of representation, conjecture & proof, and technology in problem solving. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5371. APPLIED NUMERICAL LINEAR ALGEBRA. 3 Hours.

Numerical solutions of linear algebraic systems, least squares problems, and eigenvalue problems; LU and QR decompositions, Schur and Singular Value decompositions, Gaussian elimination, QR algorithm, and Krylov subspace iterations for large and sparse linear algebra problems. Prerequisites: MATH 3330 or consent of the instructor.

MATH 5372. OPTIMIZATION METHODS & NUMERICAL SOLUTIONS OF NONLINEAR EQUATIONS. 3 Hours.

Unconstrained and constrained optimization, solutions of nonlinear system of equations; Newton and quasi-Newton methods, secant methods and variations, nonlinear least squares problems. Prerequisite: consent of the instructor.

MATH 5373. NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS. 3 Hours.

Numerical methods for approximating solutions of initial value problems, boundary value problems, including linear multistep methods, Runge-Kutta methods, shooting methods. Prerequisite: MATH 5300, MATH 3319 or consent of instructor.

MATH 5374. NUMERICAL SOLUTION OF PARTIAL DIFFERENTIAL EQUATIONS. 3 Hours.

Numerical methods for elliptic, parabolic, hyperbolic, mixed, and systems of partial differential equations; finite difference methods, finite element methods, spectral methods. Prerequisite: MATH 5373 or consent of instructor.

MATH 5375. CONSTRUCTING WHOLE NUMBER AND OPERATIONS IN K-8 MATHEMATICS. 3 Hours.

A study of the interaction between the structure of place-value numeration systems and the nature of the four arithmetic operations. The development of traditional and alternative computational arithmetic algorithms from conceptual and concrete models for operations, viewed through the lens of alternative numeration systems and research on children's mathematical thinking. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5376. CONSTRUCTING RATIONAL NUMBER AND OPERATIONS IN K-8 MATH. 3 Hours.

The meanings and representations of rational numbers, and the development of computations on rational numbers from algorithms for whole numbers, including concrete models for operations on fractions and decimals. Discussion of research on the learning and teaching of operations on rational numbers. Also, divisibility tests and factoring. Assignments require interaction in K-8 field settings. Prerequisite: MATH 5375.

MATH 5377. ALGEBRAIC THINKING IN K-8 MATHEMATICS. 3 Hours.

A study of the practice of making and justifying generalizations in K-8 mathematics, including field properties of operations, modular arithmetic (with applications to odd/even), relations and equivalence relations, the introduction and use of variables and unknowns, and the influence of representations on the form of mathematical arguments. Assignments require interaction in K-8 field settings. Prerequisite: MATH 5375.

MATH 5378. GEOMETRY CONCEPTS IN K-8 MATHEMATICS. 3 Hours.

Major concepts of geometry applied to the teaching and learning of K-8 mathematics. Topics include dimension, development of definitions, meanings of angle, geometric comparison relations, notions of center, and non-Euclidean geometries. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5379. MEASUREMENT CONCEPTS IN K-8 MATHEMATICS. 3 Hours.

The development of measurement concepts as applied to the teaching and learning of K-8 mathematics. Topics include the development and properties of standard and nonstandard units, notions of size, decomposing space, relationships between boundaries and interiors, the algebra of units, measuring time, and notions of heaviness. Assignments require interaction in K-8 field settings. Prerequisite: graduate standing.

MATH 5380. SEMINAR. 3 Hours.

Current topics in mathematics, may be repeated for credit twice. Prerequisite: consent of instructor.

MATH 5391. SPECIAL TOPICS IN MATHEMATICS. 3 Hours.

Topics in mathematics assigned individual students or small groups. Faculty members closely supervise the students in their research and study. In areas where there are only three hours offered, the special topics may be used by students to continue their study in the same area. Graded P/F/R. Prerequisite: permission of instructor.

MATH 5392. SELECTED TOPICS IN MATHEMATICS. 3 Hours.

May vary from semester to semester depending upon need and interest of the students. May be repeated for credit. Prerequisite: permission of Graduate Advisor.

MATH 5395. SPECIAL PROJECT. 3 Hours.

Graded P/F/R. Prerequisite: permission of Graduate Advisor.

MATH 5398. THESIS. 3 Hours.

MATH 5398 Graded R/F only; MATH 5698 graded P/F/R. Prerequisite: permission of Graduate Advisor.

MATH 5399. RESEARCH IN MATHEMATICS. 3 Hours.

Faculty directed individual study and research. May be repeated for credit. Graded P/F/R/W only. Prerequisite: permission of instructor.

MATH 5698. THESIS. 6 Hours.

Graded P/F/R. Prerequisite: permission of Graduate Advisor.

MATH 5699. RESEARCH IN MATHEMATICS. 6 Hours.

Faculty directed individual study and research. May be repeated for credit. Graded P/F/R/W only. Prerequisite: permission of instructor.

MATH 5999. RESEARCH IN MATHEMATICS. 9 Hours.

Faculty directed individual study and research. May be repeated for credit. Graded P/F/R/W only. Prerequisite: permission of instructor.

MATH 6180. SEMINAR FOR PROFESSIONAL DEVELOPMENT OF PhD STUDENTS IN SPECIAL PROJECTS. 1 Hour.

This seminar class is for Ph.D. students enrolled in special University projects. Topics include a survey of new Math, Science, Technology and Engineering advancements, Ph.D. students professional development and mentoring. Prerequisite: Prior approval of Project Director.

MATH 6310. FOUNDATION OF DATA SCIENCES. 3 Hours.

Basic knowledge and computational methods in data sciences, select topics in norms, semidefinite matrix, nonnegative matrix, Cholesky decomposition, QR decompositions, linear system, least squares problem, eigenvalue and singular value decompositions, low rank approximation, nonnegative matrix factorization, introduction to simplex method, KKT conditions for optimizations, Krylov subspace methods, and applications. Prerequisite: MATH 3330 or consent of the instructor.

MATH 6311. OPTIMIZATION ON BIG DATA. 3 Hours.

Introduction to big data analysis; real world applications of data science; linear system solutions; linear programming; duality theory; convex sets; convex functions; optimality conditions; unconstrained optimization; constraint optimization; conjugate direction methods; alternating direction method of multipliers; classification/regression models and algorithms; dimensionality reduction for visualization; projects on real data. Prerequisite: MATH 3330 or consent of the instructor.

MATH 6312. DATA MINING. 3 Hours.

The course focuses on topics including but not limited to: linear methods in regression, linear methods in classification, model assessment and selection, regularized models, splines, generalized additive models, model averaging, ensemble learning, support vector machines, neural networks, probabilistic graphical models, cluster analysis, dimension reduction techniques, and multidimensional scaling. Prerequisite: MATH 5305/STATS 5305 or MATH 5312/STATS 5312 or permission of instructor. Basic programming skills are preferred.

MATH 6313. TOPICS IN PROBABILITY AND STATISTICS. 3 Hours.

May be repeated for credit when the content changes.

MATH 6353. GENERALIZED LINEAR MODELS. 3 Hours.

This course covers modern methods for analyzing Bernoulli, multinomial and count data. It begins with a development of generalized linear model theory, including the exponential family, link function and maximum likelihood. Second is a discussion of the case of models for independent observations. Next is a discussion of models for repeated measures, based on quasi-likelihood methods. These include models (such as Markov chains) for categorical time series. Next is a treatment of models with random effects. Finally is a discussion of methods for handling missing data. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and preferably MATH 5313/STATS 5313. (Students without 5313 can still succeed but must deal with the slightly higher mathematical level of this course.).

MATH 6356. TIME SERIES ANALYSIS. 3 Hours.

This course covers classical methods of time series analysis, for both the time and frequency domains. For covariance stationary series, these include ARIMA modeling and spectral analysis. For nonstationary series, they include methods for detrending and filtering. Also included is a treatment of multivariate series, as well as a discussion of the Kalman filter state-space model. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and MATH 5313/STATS 5313.

MATH 6357. NONPARAMETRIC STATISTICS. 3 Hours.

This is a survey of classical nonparametric methods for inference in standard observational settings (one-sample, two-sample, k-samples and the univariate linear model), and includes a development of U-statistics, rank statistics and their asymptotic distribution theory. The mathematical level is fairly high. Prerequisite: MATH 5313/STATS 5313.

MATH 6391. SPECIAL TOPICS IN MATHEMATICS. 3 Hours.

Faculty directed individual study and research. May be repeated for credit when the content changes.

MATH 6399. DISSERTATION. 3 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree in mathematics.

MATH 6699. DISSERTATION. 6 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree in mathematics.

MATH 6999. DISSERTATION. 9 Hours.

Prerequisite: admission to candidacy for the Doctor of Philosophy degree in mathematics.

MATH 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Mathematics Education (MAED)

COURSES

MAED 5351. WHOLE NUMBERS, RATIONAL NUMBERS, & OPERATIONS. 3 Hours.

In this course students engage in activities and problem solving on concepts related to whole numbers, rational numbers and operations. Students in the course will learn to utilize research-based, problem-based teaching methods to promote K-12 student understanding. Students will experience how K-12 students learn these concepts as they themselves engage in computation and problem solving activities transferrable to classroom practice. In this course, students will engage in experiences to learn and teach their K-12 students on using numbers, number systems and their structure, operations and algorithms, quantitative reasoning, and technology.

MAED 5352. PATTERNS & ALGEBRA. 3 Hours.

This course engages students in problem-based teaching and curriculum development to help children learn problem solving and critical thinking with an emphasis on patterns, relations, functions, algebraic reasoning, analysis, and technology. The course incorporates research shown effective in helping children develop necessary skills for algebraic reasoning as a foundation for higher level mathematics learning.

MAED 5353. PROBABILITY & STATISTICS. 3 Hours.

In this course students will engage in learning experiences and readily usable curricula for teaching K-12 students concepts of probability and statistics, their applications, and technology. Students will examine K-12 student learning and research-based practices that best help them understand these mathematical concepts and that will promote their development of probabilistic reasoning abilities.

MAED 5354. PROBLEM SOLVING. 3 Hours.

In this course, students experience and practice innovative curricula for teaching and learning problem solving. Students engage in hands-on activities and apply various problem solving techniques, using mathematical processes to reason mathematically, to solve mathematical problems, to make mathematical connections within and outside of mathematics, and to communicate mathematically. Students learn to identify relevant and irrelevant variables in problems and work through problems to arrive at meaningful solutions. Students examine research on ways to help K-12 students become effective problem solvers as transferrable to other mathematics topics and subjects across the curriculum.

MAED 5355. CONCEPTUAL GEOMETRY. 3 Hours.

In this course students will experience and incorporate active learning curricula that utilize a variety of manipulative materials, diagrams, models, and pictures to study geometry and spatial reasoning. The students will learn effective, research-based practices for teaching geometry and examine ways to best help K-12 students build geometric and spatial understandings as a foundation for later, more complex abstract visualizations.

MAED 5356. MEASUREMENT. 3 Hours.

This course focuses on inquiry-based, problem-based curricula that help K-12 students learn concepts of measurement including units of measure, standardization, and error. Students will learn to use teaching techniques that will promote K-12 students' understanding as well as the application of measurement concepts to other subjects and to everyday life experiences.

Mechanical and Aerospace Engineering (MAE)

COURSES

MAE 1104. INTRODUCTION TO ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Students will become familiar with engineering and its many sub-fields, ethical responsibilities, creativity, and design.

MAE 1105. INTRODUCTION TO MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Opportunities are provided to develop skills in oral and written communication and department specific material. Case studies are presented and analyzed. Prerequisite: C or better in ENGR 1250 (or concurrent enrollment), or C or better in ENGR 1300 or MAE 1104.

MAE 1106. INTRODUCTION TO AEROSPACE ENGINEERING. 1 Hour.

An introduction to human flight and to the field of aerospace engineering through a combined theoretical and hands-on approach. Topics covered include history of flight and aerospace engineering and introductions to aerostatics and aerodynamics, aerospace structures, stability and control, and propulsion. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment).

MAE 1107. INTRODUCTION TO MECHANICAL ENGINEERING. 1 Hour.

Introduction to basic engineering concepts. Opportunities are provided to develop skills in oral and written communication, in engineering design teamwork, as well as in department-specific material. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment).

MAE 1140. PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Preparation for advanced study in mechanical and aerospace engineering curricula. Some College of Engineering requirements are satisfied by the content of this course. Prerequisite: C or better in MATH 1426 (or concurrent enrollment); or student group.

MAE 1312. ENGINEERING STATICS. 3 Hours. (TCCN = ENGR 2301)

A study of forces and force systems, resultants and components of force systems, forces due to friction, conditions of equilibrium, forces acting on members of trusses and frame structures, centroids and moments of inertia. Vector and index notation introduced. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250), MATH 1426 (or HONR-SC 1426), and PHYS 1443; or student group.

MAE 1351. INTRODUCTION TO ENGINEERING DESIGN. 3 Hours.

Foundational course in product design and manufacturing using computer-based methodologies. 3D parametric solid modeling of parts and assemblies. Technical sketching, and ASME Y14 engineering drawing standards. Industrial practices for product design and fabrication. Introduction to 3D product analysis tools. Prerequisite: C or better in MATH 1421 (or concurrent enrollment) or MATH 1426 (or concurrent enrollment) or HONR-SC 1426 (or concurrent enrollment); or student group.

MAE 2000. UNDERGRADUATE RESEARCH. 0 Hours.

Sophomore level undergraduate research. Prerequisite: Departmental good standing and permission of instructor. May be taken a maximum of 3 times.

MAE 2010. AUTOMOTIVE ENGINEERING PRACTICUM I. 0 Hours.

Practical design experience as full team member of automotive design competition team. Prerequisite: Permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

MAE 2312. SOLID MECHANICS. 3 Hours.

The relationship between stresses and strains in elastic bodies and the tension, compression, shear, bending, torsion, and combined loadings which produce them. Deflections and elastic curves, shear and bending moment diagrams for beams, and column theory. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250) and MAE 1312; or student group.

MAE 2315. FLUID DYNAMICS. 3 Hours.

Introduction to Fluid Dynamics and low speed aerodynamics; fluid properties; dimensional analysis; conservation equations in integral and differential form; potential flow theory and viscous flow. Prerequisites: C or better in each of the following, MAE 1106, MAE 2323 (or concurrent enrollment), MAE 3309 (or concurrent enrollment) or MAE 3310 (or concurrent enrollment), and MAE 3360 (or concurrent enrollment); or student group.

MAE 2323. DYNAMICS. 3 Hours. (TCCN = ENGR 2302)

The relation between forces acting on particles, systems of particles and rigid bodies, and the changes in motion produced. Review of kinematics and vector analysis, Newton's Laws, energy methods, methods of momentum, inertia tensor and Euler's equations of motion. Prerequisite: C or better in each of the following, MAE 1140 (or ENGR 1250), MAE 1312 and MATH 2425 (or HONR-SC 2425); or student group.

MAE 2360. NUMERICAL ANALYSIS & PROGRAMMING. 3 Hours.

Utilization of digital computers in mechanical and aerospace engineering. Computational algorithms and their representation in FORTRAN, C, and Matlab. Introduction to linear algebra and numerical methods. Prerequisite: C or better in MATH 2425 (or HONR-SC 2425) (or concurrent enrollment); or student group.

MAE 2381. EXPERIMENTAL METHODS AND MEASUREMENTS. 3 Hours.

Introduction to data analysis, incorporating statistics and probability, design and planning of engineering experiments for error prediction and control. Measurement and instrumentation, basic instruments, their calibration and use. Prerequisite: C or better in each of the following, MAE 1351 and MATH 2425 (or HONR-SC 2425) and PHYS 1443 (or HONR-SC 1443); or student group.

MAE 2391. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Special problems in mechanical and aerospace engineering for preprofessional students in mechanical or aerospace engineering. Prerequisite: Instructor permission.

MAE 3000. UNDERGRADUATE RESEARCH. 0 Hours.

Junior level undergraduate research. Prerequisite: Departmental good academic standing and permission of instructor. May be taken a maximum of 3 times.

MAE 3181. MATERIALS AND STRUCTURES LAB. 1 Hour.

Experiments to study materials behavior and deformation of structural elements. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2381 and C or better in MAE 3315 (or concurrent enrollment) or MAE 3242 (or concurrent enrollment); or student group.

MAE 3182. AERODYNAMICS AND FLUIDS LAB. 1 Hour.

Wind tunnel experiments to study flow phenomena of aerodynamics interest, including scale testing of airfoils, wings, and aircraft. Prerequisite: C or better in each of the following, MAE 2381, MAE 3302 (or concurrent enrollment), and MAE 3303 (or concurrent enrollment); or student group.

MAE 3183. MEASUREMENTS LABORATORY II. 1 Hour.

Fundamental measurement techniques and experimental data analysis in mechanical engineering in the fields of thermal, fluid, structures, design, and dynamic systems. Introduction to sensor calibration, digital data acquisition, uncertainty analysis, and report writing. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2381, MAE 3314, and MAE 3319; or student group.

MAE 3185. INTRODUCTION TO MECHATRONICS. 1 Hour.

Project based introduction to the application of software and hardware required to build functioning electromechanical systems. Integrates the theory of electrical circuits, electromechanics, electronics, mechanics, and mechanical devices, along with computer and microprocessor programming and the software-hardware interface, for practical applications. Prerequisite: Professional AE or ME program and C or better in each of MAE 2360, MAE 2381, MAE 3360 and EE 2320; or student group.

MAE 3242. MECHANICAL DESIGN I. 2 Hours.

The overall nature of design as a process is presented along with various models, methods, techniques, and tools for the various phases of the process provide the student with an excellent understanding of how to design. Students learn to design mechanical components based on stress/deflection and the associated failure theories. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, and MAE 3324; or student group.

MAE 3302. INCOMPRESSIBLE AERODYNAMICS. 3 Hours.

Introduction to and application of the methods used to determine the low speed aerodynamic forces on aerodynamic components such as wings and airfoils. Topics include potential flow theory for lifting flows; airfoil and finite wing theory; panel and vortex-lattice methods. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2315, MAE 2323, MAE 3309 (or MAE 3310), and MAE 3360; or student group.

MAE 3303. COMPRESSIBLE FLOW. 3 Hours.

Fundamental thermodynamic concepts of compressible flow, isentropic flow, normal and oblique shock waves; expansion waves; quasi-one dimensional flows within nozzles and diffusers, linearized compressible flow theory, the method of characteristics and supersonic nozzle design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following MAE 2315, MAE 2323, MAE 3309 (or MAE 3310), and MAE 3360; or student group.

MAE 3304. ASTRONAUTICS I. 3 Hours.

Introduction to astronautics, the solar system, and the two-body problem. Orbit shaping and orbit transfers. Patched conic approximations for interplanetary transfers. Introduction to the three-body problem and relative motion. Rigid spacecraft equation of motion. Active and passive attitude stabilization techniques for spacecraft. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 2323, MAE 2360, and MAE 3360; or student group.

MAE 3306. FLIGHT PERFORMANCE, STABILITY & CONTROL. 3 Hours.

Review of aerodynamics. Introduction to aircraft performance and the assessment of aircraft static stability and control characteristics. Performance topics covered include cruise, climb, gliding flight, turns, range and endurance. Static stability and control topics covered include longitudinal, lateral and directional stability and control power calculations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 3302 and MAE 3303.

MAE 3309. THERMAL ENGINEERING. 3 Hours.

Basic concepts and definitions, properties of pure substances, work and heat, first law of thermodynamics, second law of thermodynamics, entropy, and introduction to conductive, convective, and radiative transfer. Prerequisite: Must be in an EE or MAE department degree program and C or better in each of the following, CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment); MATH 2425 (or HONR-SC 2425) and PHYS 1444; or student group.

MAE 3310. THERMODYNAMICS I. 3 Hours.

Basic concepts and definitions, properties of pure substances, work and heat, first law of thermodynamics, second law of thermodynamics, entropy, thermodynamics of gases, vapors, and liquids in various nonflow and flow processes, and irreversibility and availability. Prerequisite: Must be in an MAE department degree plan and C or better in each of the following, CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment); MAE 1312 (or concurrent enrollment), MATH 2425 (or HONR-SC 2425), and PHYS 1444; or student group.

MAE 3311. THERMODYNAMICS II. 3 Hours.

Availability, power, refrigeration and heat pump cycles (both gas and vapor), property relations and equations of state, ideal gas mixtures, mixtures of gases and vapors, psychrometrics, adiabatic flame temperature, thermochemical equilibrium, and compressible flow. Emphasis is on applying these topics to thermal systems design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3313 (or concurrent enrollment) and MAE 3310; or student group.

MAE 3313. FLUID MECHANICS. 3 Hours.

Fundamental concepts of fluid mechanics leading to the development of both the integral and differential forms of the basic conservation equations. Application of the integral conservation equations to engineering problems in fluid dynamics including buoyancy and other hydrostatics problems. Dimensional analysis and similitude are also discussed. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2323, MAE 2360, MAE 3360, and MAE 3310 (or concurrent enrollment); or student group.

MAE 3314. HEAT TRANSFER. 3 Hours.

Topics cover the fundamental laws of heat and mass transfer, including steady and unsteady conduction, forced and free convection, and radiation as well as heat transfer in phase change. Applications of heat transfer to thermal systems design are included. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313 or C or better in MAE 3302.

MAE 3315. AEROSPACE STRUCTURAL STATICS. 3 Hours.

Overview of aircraft basic structural elements and materials; introduction to elasticity; equations of equilibrium; constitutive equations of isotropic solids; bending and torsion analysis of thin-walled beams; flexure shear of thin-walled beams with stringer reinforcement; introduction to fatigue and fracture analysis; failure criteria; energy method to find strain energy release rate; elastic column buckling. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2312; or student group.

MAE 3316. AEROSPACE STRUCTURAL DYNAMICS. 3 Hours.

Harmonic and periodic motion including both damped and undamped free and forced vibration. Single-and multi-degree-of-freedom discrete systems. Vibration of continuous systems. Introduction of finite element method for structural dynamics. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, MAE 3360, and MATH 3330; or student group.

MAE 3318. KINEMATICS AND DYNAMICS OF MACHINES. 3 Hours.

The motion and interaction of linkage and mechanisms. Fundamental concepts of kinematics and dynamics applied to the determination of degree of freedom mechanisms and forces acting on joints of mechanisms. Specific mechanisms and applications such as multi-body mechanisms, linkage synthesis, cam design, and balancing. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2323, or student group.

MAE 3319. DYNAMIC SYSTEMS MODELING AND SIMULATION. 3 Hours.

Introduction to modeling and prediction of behavior of engineering systems. Analytic and numerical simulation, state-space differential equations, and Laplace transform methods. Effects of physical characteristics of system elements on system design and dynamic performance. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3314 (or concurrent enrollment), EE 2320, and MATH 3330; or student group.

MAE 3324. STRUCTURE & MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Crystal structure and defects in materials. Diffusion, phase diagrams and phase transformations in metallic systems. The inter relationships between processing, structure, and properties of engineering materials with emphasis on the mechanical behavior of metals, polymers, and composite materials. Prerequisites: Must be in an MAE department degree program and C or better in each of the following, CHEM 1465 (or CHEM 1441 and CHEM 1442), MAE 2312 (or concurrent enrollment), and PHYS 1444; or student group.

MAE 3344. INTRODUCTION TO MANUFACTURING ENGINEERING. 3 Hours.

Introduction to casting, forming, machining, and joining processes for metals and nonmetals. Prerequisite: Must be in the professional ME program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 3360. ENGINEERING ANALYSIS. 3 Hours.

Mathematical analysis with emphasis on solution techniques and engineering applications. Topics include: ordinary differential equations (ODE), Laplace Transform, numerical solutions of ODE, boundary value problems, Fourier series, Sturm-Liouville problem and vector calculus. Prerequisite: Must be in an MAE department degree program and C or better in each of the following, MATH 2326 and MAE 2360 (or concurrent enrollment); or student group.

MAE 3405. FLIGHT DYNAMICS. 4 Hours.

Derivation of equation of motion (EOM) of a flight vehicle. Trimmed flight condition analysis based on the nonlinear EOM. Linearization of EOM for a given trimmed flight condition. State-space and transfer-function representations of the linear EOM. Aircraft stability and dynamic performance analysis based on the linear EOM. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3406 (or concurrent enrollment) or MAE 3306 (or concurrent enrollment) and MATH 3330; or student group.

MAE 3406. FLIGHT PERFORMANCE & STABILITY. 4 Hours.

Classical Aerodynamics including potential flow theory for lifting flows; airfoil and finite wing theory; panel and vortex-lattice methods. Lift and drag buildup for aircraft. Aircraft performance analysis including cruise, climbing, gliding and turning flight, range and endurance. Aircraft longitudinal, lateral and roll stability and control. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 (or concurrent enrollment).

MAE 4000. UNDERGRADUATE RESEARCH. 0 Hours.

Senior level undergraduate research. Prerequisite: Departmental good academic standing and permission of instructor. May be taken a maximum of 3 times.

MAE 4010. AUTOMOTIVE ENGINEERING PRACTICUM II. 0 Hours.

Practical design experience as full team member of automotive design competition team. Prerequisite: Permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

MAE 4151. AEROSPACE VEHICLE DESIGN II. 1 Hour.

Analysis and design of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, harmonization of individual design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Prerequisite: Must be in the professional ME or AE program and C or better in MAE 4350.

MAE 4188. DESIGN PROJECT LABORATORY II. 1 Hour.

The design project from MAE 4287 continued. The design is finalized, a physical model (prototype) is manufactured and tested. Redesign and retest is accomplished as desired. The final design is documented by written report and oral presentation. Exit survey forms and exit essays must be submitted to complete the requirements of this course. Prerequisite: Must be in the professional ME program and C or better in MAE 4287.

MAE 4191. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 1 Hour.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

MAE 4287. DESIGN PROJECT I. 2 Hours.

Team engineering approach to a design project that integrates engineering knowledge from several courses. Problem definition and creative synthesis of prospective design solutions. Engineering proposals, feasibility studies, trade-off studies, systems models and analysis, decision making, and engineering reports and presentations. Professionalism, ethics, and societal impact issues. Prerequisite: Must be in the professional ME program and C or better in MAE 4344 (or concurrent enrollment) and must be within two calendar semesters of graduation (possibly including an 11-week summer session). MAE 4287 and MAE 4188 must be taken in consecutive semesters.

MAE 4291. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 2 Hours.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

MAE 4301. SPECIAL TOPICS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Topics will vary from semester to semester depending on student interest and the availability of faculty. May be repeated, provided topics are different. Prior approval by the student's advisor required. Prerequisite: Must be in the professional ME or AE program and others that vary by topic.

MAE 4302. INTRODUCTION TO BEARING DESIGN AND LUBRICATION. 3 Hours.

The course introduces 1) selection principles and design guidelines for various rolling element bearings, 2) theory of liquid and gas lubrication, 3) various novel fluid film bearings used in modern high speed turbomachinery and energy systems, and 4) fundamental principles of rotordynamics. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313.

MAE 4304. ASTRONAUTICS II. 3 Hours.

The restricted three-body problem, the n-body problem, and approximations. Interplanetary transfers. Design considerations for both manned and unmanned interplanetary vehicles. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3304.

MAE 4305. FUNDAMENTALS OF ELECTRONIC PACKAGING. 3 Hours.

An introductory treatment of electronic packaging, from single chip to multichip, including materials, electrical design, thermal design, mechanical design, package modeling and simulation, processing considerations, reliability, and testing. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3309; or student group.

MAE 4306. COMPUTATIONAL TECHNIQUES FOR ELECTRONIC PACKAGING. 3 Hours.

Characterization of the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3309; or student group.

MAE 4307. FINITE ELEMENT METHODS. 3 Hours.

Static response of complex structures and continua; application to field problems; mesh generation; error estimation and adaptive refinement. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3242.

MAE 4310. INTRODUCTION TO AUTOMATIC CONTROL. 3 Hours.

Block diagram algebra, transfer functions, and stability criteria. The use of transient response, frequency response, and root locus techniques in the performance analysis, evaluation, and design of dynamic systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, (MAE 3314 and MAE 3319) or (MAE 3405 and EE 2320); or student group.

MAE 4312. CONTROL SYSTEMS COMPONENTS. 3 Hours.

The components used in mechanical, electronic, and fluid power control systems are studied. Modeling and performance analysis are used to help in the understanding of system behavior. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 4310.

MAE 4314. MECHANICAL VIBRATIONS. 3 Hours.

Harmonic and periodic motion including both damped and undamped free and forced vibration. Single and multi-degree-of-freedom discrete systems. Vibration of continuous systems. Introduction of finite element method for structural dynamics. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312, MAE 2323, MAE 3360, and MATH 3330; or student group.

MAE 4315. INTRODUCTION TO COMPOSITES. 3 Hours.

Composite classification, laminate coding, fiber and weight fractions of composite lamina; lamina constitutive equations; structural characteristics of [A], [B], [D] matrices; lamination theory; thermal and moisture induced load and moment; lamina stress analysis and failure prediction; issues in composite structural design. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 2312 (or CE 2313); or student group.

MAE 4320. HYDRAULIC AND PNEUMATIC SYSTEMS. 3 Hours.

The fundamentals of fluid mechanics as applied to hydraulic and pneumatic hardware. Mathematical models of pumps, motors, pistons, accumulators, valves, and transmission lines. Design and analysis procedures for implementing total fluid power systems with high operating efficiencies and adequate dynamic response characteristics. Theory is supported by laboratory demonstrations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3313, MAE 4310, and MAE 3310; or student group.

MAE 4321. AEROSPACE PROPULSION. 3 Hours.

Introduction to rocket and air-breathing propulsion systems. Development of thrust and efficiency relations, mission requirements, rocket and gas turbine engine cycle analysis, off-design performance, component design and performance analysis, advanced propulsion system concepts. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 or C or better in each of MAE 3313 and MAE 3311.

MAE 4322. ROCKET PROPULSION. 3 Hours.

Examines chemical, nuclear, and electrical propulsion concepts. Development of design and performance analysis methods. Flight performance of rocket powered vehicles. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3303 (or MAE 3311).

MAE 4323. ENERGY CONVERSION. 3 Hours.

Thermodynamics as applied to thermo-mechanical systems such as power cycles, engines, turbines, refrigeration, and air-conditioning systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3311 and MAE 3314.

MAE 4324. POWER PLANT ENGINEERING. 3 Hours.

Fundamental thermodynamics and heat transfer principles behind design and optimization of power generation systems with significant emphasis on component and system design. This class will cover a number of power plant types, including coal/gas fired, hydroelectric, nuclear, and solar. Concepts learnt in this class prepare students for an engineering career in power plants, oil, gas and related industries. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3310 (or MAE 3309); or student group.

MAE 4325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3311 or MAE 3303.

MAE 4326. COMPUTATIONAL AERODYNAMICS I. 3 Hours.

Solution of engineering problems by finite-difference methods, emphasis on aerodynamic problems characterized by single linear and non-linear equations, introduction to and application of major algorithms used in solving aerodynamics problems by computational methods. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314 or MAE 3303.

MAE 4327. HEATING, VENTILATION, AND AIR CONDITIONING. 3 Hours.

Application of engineering sciences to design of heating, venting, and air conditioning (HVAC) systems. Humidification and dehumidification, psychrometric charts, heat load, cooling load, degree-days, comfort zones, and air distribution systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3311 and MAE 3314.

MAE 4329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing (AM) are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for AM are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacture. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 1351 and MAE 3324; or student group.

MAE 4331. DESIGN FOR MANUFACTURING. 3 Hours.

The interaction between design and manufacturing stressed in terms of the design process, customer-focused quality, design specifications versus process capability and tolerances, and redesign for producibility. Topics include material and manufacturing process selection, tolerancing, quality function deployment (QFD), design for assembly (DFA), quality control techniques, reliability, and robust design. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242 and MAE 3344.

MAE 4335. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include: kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3318.

MAE 4336. ADVANCED MECHANICAL BEHAVIOR OF MATERIALS. 3 Hours.

Concept of stress and strain; elementary dislocation theory. Deformation of single crystals; strengthening mechanisms including solid solution strengthening, and precipitation hardening. Fracture mechanics; microscopic aspects of fracture, fatigue, and creep of materials; design and processing of materials for improved mechanical properties. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 4338. FAILURE ANALYSIS. 3 Hours.

Theory and practice of techniques for determining modes of failure and fracture of engineering materials. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2312 and MAE 3324; or student group.

MAE 4339. FRACTURE MECHANICS. 3 Hours.

Theory and applications of fracture mechanics. Stress analysis of cracks, crack-tip plasticity, fatigue crack growth, and stress corrosion cracking. Applicability to materials selection, structural design, failure analysis, and structural reliability. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3242.

MAE 4342. MECHANICAL DESIGN II. 3 Hours.

Analysis for the design and manufacture of basic mechanical elements, and their role in the design of machines. A brief review of relevant topics including stress/deflection, failure theories, and contact stress is initially conducted. It is then extended to the design of fundamental mechanical components including shafts, gears, springs, bearings, fasteners, and clutches/brakes. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242 and MAE 3318 (or concurrent enrollment).

MAE 4344. COMPUTER-AIDED ENGINEERING. 3 Hours.

A study of the principles of computer-aided engineering in mechanical and aerospace engineering. Applications in mechanical, structural, and thermal systems. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 3242, MAE 3314 (or concurrent enrollment), and MAE 3318.

MAE 4345. INTRODUCTION TO ROBOTICS. 3 Hours.

Overview of industrial robots. Study of principles of kinematics, dynamics, and control as applied to industrial robotic systems; robotic sensors and actuators; path planning; guidelines to robot arm design and selection; introduction to mechatronics; laboratory exercise in designing, building, and controlling a 3D-printed robotic manipulator. Prerequisite: Must be in the professional ME or AE program.

MAE 4347. HEAT EXCHANGER DESIGN. 3 Hours.

Design procedure system evaluation; design parameters in heat exchangers. The course considers various heat exchanger configurations and includes student design projects. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3314.

MAE 4348. COOLING OF ELECTRONIC PACKAGES. 3 Hours.

The calculation of heat loads and temperature fields using different cooling techniques. Includes parameter evaluation and design studies. Prerequisite: Must be in the professional ME or AE program and C or better in, MAE 3314 (or MAE 3309); or student group.

MAE 4350. AEROSPACE VEHICLE DESIGN I. 3 Hours.

Analysis and design of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, integration of design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Prerequisite: Must be in the professional ME or AE program and C or better in each of the following: MAE 3306 or MAE 3406 and MAE 3405.

MAE 4351. AEROSPACE VEHICLE DESIGN II. 3 Hours.

Analysis, design, and synthesis of an aerospace system such as a complete flight vehicle, a propulsion system, a structural system, or a control system; market analysis, operating studies, mission specification, civil and military certification requirements; design process, methods and tools; configuration concept selection, integration of individual design disciplines (aerodynamics, performance, flight mechanics, structures, cost, systems, etc.). Also included will be economic, environmental, sustainability, manufacturability, safety, social and political considerations. Formal written and oral reports are required. Exit survey forms and exit essays must be submitted to complete the requirements of this course. Prerequisite: Must be in the professional AE program and C or better in MAE 4350.

MAE 4352. SPACE VEHICLE AND MISSION DESIGN. 3 Hours.

Space vehicle design; influence of space environment, astrodynamics, and atmospheric reentry. Space vehicle sub system design; propulsion, attitude determination and control, structural design, thermal control, power and telecommunications. Investigation into mission design concepts and considerations. Prerequisite: Must be in the professional ME or AE program and C or better in each of the following, MAE 2323 and MATH 2326; or student group.

MAE 4357. AUTOMOTIVE ENGINEERING. 3 Hours.

Introduction to automotive engine types and performance, drive train modeling and vehicle loading characteristics, fueling requirements, fuel injection systems, tire characteristics and modeling, suspension characteristics and handling, braking systems and requirements. Course taught through lecture, student presentations and student design projects. Prerequisite: Must be in the professional ME, AE or EE program and C or better in each of the following, MAE 3360 (or MATH 3319) and MAE 2312 (or EE 3446); or student group.

MAE 4358. RACECAR ENGINEERING. 3 Hours.

This course is intended for Formula SAE team members and other interested students to develop new systems or analyze concepts for the Formula SAE or Formula Electric racecar and related equipment. The students will form teams and perform research and development on projects related to automotive or racecar engineering. Prerequisites: Must be in the professional ME, AE or EE program and C or better in each of the following, MAE 3360 (or Math 3319) and MAE 2312 (or EE 3446); or student group.

MAE 4362. INTRODUCTION TO MICRO AND NANOFUIDICS. 3 Hours.

As going down to micro scales, the basic hypothesis in the macro scale fluid mechanics may not be applicable in such scales. The objectives of this course are: to identify dominant forces and their effects in micro scale fluid systems that are different from those in the macro scales; to understand the fundamentals of micro fluidic phenomena; to discuss various microfluidic applications in research and commercial levels; and to explore new possible microfluidic applications in the emerging fields. Topics include overview of microfluidics, scaling laws, violation limit of the Navier-Stokes equations, surface force, surface tension, electrowetting, electrokinetics, dielectrophoresis, and soft lithography. Prerequisite: Must be in the professional ME or AE program and C or better in MAE 3313 and MAE 3310; or student group.

MAE 4363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects.

MAE 4378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Prerequisite: Admission to a professional engineering or science program.

MAE 4379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Prerequisite: B or better in MAE 4378 and admission to the UVS certificate program.

MAE 4382. RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES. 3 Hours.

This course is offered to graduate and senior level undergraduate students with engineering and science background to introduce them to micro/nano research and development for energy conversion and storage. This course will include: Scaling laws, MEMS fabrication, Nanomaterial synthesis, Electrochemical energy storage/conversion (Batteries, Fuel Cells & Supercapacitors), Solar energy (photovoltaics and solar thermal energy), Energy harvesting and Solar water splitting and electrocatalysis. Prerequisite: Must be in the professional ME or AE program.

MAE 4386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses. Prerequisite: Must be in the professional ME or AE program and C or better in EE 2320 and C or better in either MAE 3313 or MAE 2315, or student group.

MAE 4391. SPECIAL PROBLEMS IN MECHANICAL AND AEROSPACE ENGINEERING. 3 Hours.

Special problems in mechanical and aerospace engineering for students of professional program standing. Prerequisite: Must be in the professional ME or AE program.

Mechanical Engineering (ME)

COURSES

ME 5010. AUTOMOTIVE ENGINEERING PRACTICUM. 0 Hours.

Practical design experience as full member of automotive design competition team. Prerequisite: Permission of Director for the Arnold E. Petsche Center for Automotive Engineering.

ME 5101. GRADUATE SEMINAR. 1 Hour.

The purpose is to acquaint graduate students with ongoing research at UTA, and outside in academia and industry. Seminars are given by graduate students of the department based on their ongoing research. Seminars are also given by external speakers from academia, industry and government.

ME 5191. PROJECT STUDIES IN MECHANICAL ENGINEERING. 1 Hour.

May be repeated for credit as topics change. Project work performed under a non-thesis degree will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies. May be graded pass/fail.

ME 5197. RESEARCH IN MECHANICAL ENGINEERING. 1 Hour.

Research in master's programs.

ME 5291. PROJECT STUDIES IN MECHANICAL ENGINEERING. 2 Hours.

May be repeated for credit as topics change. Work performed as a thesis substitute will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies. May be graded P/F.

ME 5297. RESEARCH IN MECHANICAL ENGINEERING. 2 Hours.

Research in master's programs.

ME 5302. INTRODUCTION TO BEARING DESIGN AND LUBRICATION. 3 Hours.

The course introduces 1) selection principles and design guidelines for various rolling element bearings, 2) theory of liquid and gas lubrication, 3) various novel fluid film bearings used in modern high speed turbomachinery and energy systems, and 4) fundamental principles of rotordynamics.

ME 5303. CLASSICAL METHODS OF CONTROL SYSTEMS ANALYSIS AND SYNTHESIS. 3 Hours.

Equip the student with familiarity of significant tools of the control engineer. Topics covered include controllers and their effect on system performance and stability, block diagram algebra, stability and analysis, system performance definition, root locus, frequency techniques, and state variable methods. Digital simulation tools for design and simulation of control systems. Demonstration of controller design and performance in the laboratory. Also offered as AE 5303. Credit will be granted only once.

ME 5304. ADVANCED MECHANICS OF MATERIALS. 3 Hours.

This graduate level course will cover the calculation of stresses and strains in a body that experiences elastic, plastic and/or viscoelastic deformation. This course will also highlight nanoelasticity to show the size-dependent structure-property relations of nanomaterials and piezoelectricity to demonstrate the voltage-displacement relations of piezoelectric materials. Offered as AE 5304 and ME 5304. Credit will be granted only once. Prerequisite: MAE 2312 or equivalent.

ME 5305. DYNAMIC SYSTEMS MODELING. 3 Hours.

To equip the student with the capability of determining the necessary equations for distributed and lumped parameter modeling of mixed physical system types including mechanical, fluid, electrical, and thermal components. Models are formulated for computer simulation and analysis for systems with deterministic and stochastic inputs. Topics of random vibration and system identification are included. Offered as AE 5305 and ME 5305. Credit will be granted only once.

ME 5306. FLUID POWER CONTROL. 3 Hours.

Mathematical models for hydraulic and pneumatic control components and systems including hydraulic pumps, motors, and spool valves. The application of electrohydraulic and hydromechanical servomechanisms for position and velocity control are treated. Theory supported by laboratory demonstrations and experiments.

ME 5310. FINITE ELEMENT METHODS. 3 Hours.

Finite element method in the study of the static response of complex structures and of continua; applications to field problems; analytical methods emphasized, and digital computer application undertaken. Offered as AE 5310 and ME 5310. Credit will be granted only once.

ME 5311. STRUCTURAL DYNAMICS. 3 Hours.

Natural frequencies; forced response of complex structural systems studied through the use of the finite element method; computational aspects of these problems discussed, and digital computer applications undertaken. Offered as AE 5311 and ME 5311. Credit will be granted only once.

ME 5312. CONTINUUM MECHANICS. 3 Hours.

Study of the underlying physical and mathematical principles relating to the behavior of continuous media; interrelationships between fluid and solid mechanics. Offered as AE 5312 and ME 5312. Credit will be granted only once.

ME 5313. FLUID DYNAMICS. 3 Hours.

Basic conservation laws, flow kinematics, special forms of the governing equations, two-dimensional potential flows, surface waves and some exact solutions of viscous incompressible flows. Offered as AE 5313 and ME 5313. Credit will be granted only once.

ME 5314. FRACTURE MECHANICS IN STRUCTURAL DESIGN. 3 Hours.

Linear elastic fracture mechanics, general yielding fracture mechanics, damage tolerance and durability design, fail safe and safe life design criteria, analysis of fatigue crack growth, residual strength analysis. Offered as AE 5314 and ME 5314. Credit will be granted only once.

ME 5315. FUNDAMENTALS OF COMPOSITES. 3 Hours.

Fundamental relationships between the mechanical and hygrothermal behavior and the composition of multiphase media; failure criteria. Offered as AE 5315 and ME 5315. Credit will be granted only once.

ME 5316. THERMAL CONDUCTION. 3 Hours.

Fundamental laws, initial and boundary conditions, basic equations for isotropic and anisotropic media, related physical problems and steady and transient temperature distributions in solid structures.

ME 5317. CONVECTION HEAT TRANSFER. 3 Hours.

Equations of motion of viscous fluids are reviewed and the energy equations are introduced. Exact and approximate solutions are made for forced convective problems with non-isothermal and unsteady boundaries. Free convection and combined free- and forced-convection problems are solved.

ME 5318. RADIATIVE HEAT TRANSFER. 3 Hours.

General equations of radiative transfer derived and solved for special problems, and the elements of atomic, molecular, and continuum radiation are introduced.

ME 5319. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Continuation of ME 5310. Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Prerequisite: ME 5310 or equivalent.

ME 5320. DESIGN OPTIMIZATION. 3 Hours.

The purpose of this course is to present modern concepts of optimal design of structures. Basic ideas from optimization theory are developed with simple design examples. Analytical and numerical methods are developed and their applications discussed. Use of numerical simulation methods in the design process is described. Concepts of structural design sensitivity analysis and approximation methods will be discussed. The emphasis is made on the application of modern optimization techniques linked to the numerical methods of structural analysis, particularly, the finite element method. Prerequisite: AE 5310 or ME 5310.

ME 5321. ADVANCED CLASSICAL THERMODYNAMICS. 3 Hours.

Fundamentals of thermodynamics reviewed. Different treatments of principles studied, compared and formal relationships developed and applied to chemical, magnetic, electric and elastic systems.

ME 5322. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Prerequisite: ME 5311 or equivalent.

ME 5323. ENGINEERING RESEARCH METHODS. 3 Hours.

This hands-on course will teach the tools that are essential for conducting graduate research, with an aim to prepare the students for project-based graduate research. The course will be focused on the integration of engineering concepts to complete course projects that imitate mini research projects. Prerequisite: Undergraduate education in engineering or science.

ME 5324. POWER PLANT ENGINEERING. 3 Hours.

Fundamental thermodynamics and heat transfer principles behind design and optimization of power generation systems with significant emphasis on component and system design. This class will cover a number of power plant types, including coal/gas fired, hydroelectric, nuclear, and solar. Concepts learnt in this class prepare students for an engineering career in power plants, oil, gas and related industries.

ME 5325. COMBUSTION. 3 Hours.

Fundamental treatment of problems involving simultaneous occurrence of chemical reaction and transfer of heat, mass and momentum. Topics include kinetically controlled combustion phenomena; diffusion flames in liquid fuel combustion; combustion of solids; combustion of gaseous fuel jets; flames in premixed gasses. Offered as AE 5325 and ME 5325. Credit will be granted only once.

ME 5326. MANUFACTURING PROCESSES AND SYSTEMS. 3 Hours.

Survey and modeling of manufacturing, assembly, surface treatment, automation, and integration processes. Prerequisite: Graduate standing.

ME 5327. DESIGN FOR MANUFACTURING. 3 Hours.

The interaction between design and manufacturing stressed in terms of the design process, customer-focused quality, design specifications versus process capability and tolerances, and redesign for producibility. Topics include material and manufacturing process selection, tolerancing, quality function deployment (QFD), design for assembly (DFA), quality control techniques, reliability, and robust design. Prerequisite: ME 5326.

ME 5328. COMPUTATIONAL TECHNIQUES IN ELECTRONIC SYSTEMS. 3 Hours.

To develop the capability to characterize the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes. Also offered as MAE 4328.

ME 5329. ADDITIVE MANUFACTURING. 3 Hours.

The range of technologies and processes, both physical and digital, used to translate virtual solid model data into physical models using additive layering methods. Emphasis is given to application of these technologies to manufacture end use components and assemblies but rapid prototyping is also discussed. Metal, polymer, ceramic, and composite material applications of additive manufacturing are included. Discussion includes advantages and limitations of additive methods with respect to subtractive methods and to each other. Principles of design for additive manufacturing are covered along with discussion of applications. Students complete a project to design and build an engineering component or assembly for additive manufacturing. Offered as AE 5329 and ME 5329. Credit will be granted only once. Prerequisite: Graduate standing.

ME 5331. ANALYTIC METHODS IN ENGINEERING. 3 Hours.

Introduction to advanced analytic methods in engineering. Methods include multivariable calculus and field theory, Fourier series, Fourier and Laplace Transforms. Offered as AE 5331 and ME 5331. Credit will be granted only once. Prerequisite: Undergraduate degree in engineering, physics, or mathematics.

ME 5332. ENGINEERING ANALYSIS. 3 Hours.

Introduction to partial differential equations and complex variable theory with application to modeling of physical systems. Offered as AE 5332 and ME 5332. Credit will be granted only once.

ME 5333. THERMAL PHENOMENA IN MICROSYSTEMS. 3 Hours.

Introduction to experimental methods for microscale thermal transport, including experimental measurement techniques, design of experiments, data acquisition and analysis tools. Significant emphasis on carrying out mini-projects on related topics. Course learning outcomes are directly relevant for engineering jobs in semiconductors, energy conversion and other related industries. Offered as AE 5333 and ME 5333. Credit will be granted only once.

ME 5335. OPTIMAL CONTROL OF DYNAMIC SYSTEMS. 3 Hours.

Linear and nonlinear optimization methods; optimal control; continuous time Riccati equation; bang-bang control; singular arcs; differential inclusions; collocation techniques; design of optimal dynamic system trajectories. Offered as AE 5335 and ME 5335. Credit will be granted only once.

ME 5336. OPTIMAL ESTIMATION OF DYNAMIC SYSTEMS. 3 Hours.

Kalman filter design and implementation. Optimal filtering for discrete-time and continuous-time dynamical systems with noise. Wiener filtering. State-space determination. Offered as EE 6327, AE 5336 and ME 5336. Credit will be granted only once. Prerequisite: introductory systems or identification course is desirable. Also offered as AE 5336 and EE 6327. Credit will be granted only once.

ME 5337. INTRODUCTION TO ROBOTICS. 3 Hours.

An overview of industrial robots and applications to traditional and emerging applications. Coordinate systems and homogeneous transformations, kinematics of manipulators; motion characteristics and trajectories; dynamics and control of manipulators; actuation and design issues. Programming of industrial robotic manipulators in the laboratory. Offered as AE 5337 and ME 5337. Credit will be granted only once.

ME 5338. ANALYTICAL & COMPUTATIONAL DYNAMICS. 3 Hours.

The course focuses on developing the equations of motion for dynamic systems composed of multiple, connected and unconnected, rigid bodies using Kane's method and the Lagrangian approach. The resulting model is used to simulate and visualize the predicted motion. Topics include: kinematics, Euler parameters, kinematic constraints, virtual work, the calculus of variations, energy, momentum, contact, impact, and checking functions. Offered as AE 5338 and ME 5338. Credit will be granted only once.

ME 5339. STRUCTURAL ASPECTS OF DESIGN. 3 Hours.

Emphasis on determination of stresses and prediction of failure in machine and structural components; stress-strain relations in elastic and plastic regions; static failure and failure criteria; contact stress; notched sensitivity, strain-fatigue life relationship' characteristics of cracks in structural components. Offered as AE 5339 and ME 5339. Credit will be granted only once.

ME 5340. AUTOMOTIVE ENGINEERING. 3 Hours.

Introduction to automotive engine types and performance, drive train modeling and vehicle loading characteristics, fueling requirements, fuel injection systems, tire characteristics and modeling, suspension characteristics and handling, braking systems and requirements. Course taught through lecture, student presentations and student design projects.

ME 5341. CONTROL SYSTEM COMPONENTS. 3 Hours.

The components and hardware used in electronic, hydraulic, and pneumatic control systems; techniques of amplification, computation, compensation, actuation, and sensing; modeling of multiport systems as well as servo systems analysis. Pulse modulated systems. Offered as AE 5341 and ME 5341. Credit will be granted only once. Prerequisite: Undergraduate introductory control course in Mechanical Engineering or equivalent or ME 5303 or equivalent.

ME 5342. GAS DYNAMICS. 3 Hours.

Review of fundamental compressible flow theory, method of characteristics for perfect gases, the Rankine-Hugoniot conditions, linearized flow theory. Offered as AE 5342 and ME 5342. Credit will be granted only once.

ME 5343. TWO-PHASE FLOW AND BOILING HEAT TRANSFER. 3 Hours.

This is to introduce significant progress in phase change heat transfer and two-phase flow. Boiling heat transfer will be followed by the study of pressure drop and heat transfer in the pipes of two-phase flow. Boiling heat transfer includes pool boiling, forced convection boiling, and critical heat flux. Also selected topics by the instructor (heat pipe, condensation, Helmholtz wave instability, etc.) Also offered as AE 5343. Credit will be granted only once.

ME 5344. VISCOUS FLOWS. 3 Hours.

Navier-Stokes equations and Prandtl's boundary layer approximations; laminar and turbulent boundary layers including internal and external flows.

ME 5345. NUMERICAL HEAT TRANSFER AND FLUID FLOW. 3 Hours.

Introduction to numerical solutions for problems in heat transfer and fluid flow by the finite-volume method. The focus will be on numerical aspects pertaining to incompressible fluids. It provides the background training towards the use of commercial software. Offered as AE 5345 and ME 5345. Credit will be granted only once.

ME 5346. COOLING OF ELECTRONIC PACKAGES. 3 Hours.

This course deals with the development and application of analytical models of thermal phenomena occurring in electronic equipment. The calculation of heat loads and temperature fields using different cooling techniques. Includes parameter evaluation and design studies.

ME 5347. HEAT EXCHANGER DESIGN. 3 Hours.

Design procedures, system evaluations and design parameters in heat exchangers. Heat exchanger configurations; student design projects.

ME 5352. FUNDAMENTALS IN ELECTRONIC PACKAGING. 3 Hours.

An introductory treatment of electronic packaging, from single chip to multichip, including materials, electrical design, thermal design, mechanical design, package modeling and simulation, processing considerations, reliability, and testing.

ME 5353. COMPUTATIONAL TECHNIQUES FOR ELECTRONIC PACKAGING. 3 Hours.

Characterization of the thermo/mechanical reliability of microelectronics devices using commercial computational heat transfer codes (Icepak, Flotherm, and ANSYS). Industry related problems ranging from first level packages through system level packages analyzed. Formulate and model contemporary problems using commercial CFD codes.

ME 5354. FAILURES AND THEIR PREVENTION IN ELECTRONIC PACKAGES. 3 Hours.

A comprehensive overview of the fundamental causes for failures in electronic assemblies which include the printed wiring board, package, and second-level assemblies. Failure detection techniques and methodologies, key failure analysis techniques used will be discussed.

ME 5355. MECHANICAL FAILURE OF ELECTRONIC PACKAGES. 3 Hours.

Failure analysis, fatigue of electronic packages, fracture and creep behavior of solders. Mechanical properties of substrate materials. Electromigration and failure mechanisms.

ME 5356. CHIPSCALE PACKAGING. 3 Hours.

Overview of area array packaging with special emphasis on the maturing chip scale packaging technology. Topics covered will include the design concepts of this technology, the materials related aspects, the manufacturing processes, and their reliability in a variety of applications.

ME 5358. Racecar Engineering. 3 Hours.

This course intended for Formula SAE team members and other interested students to develop new systems or analyze concepts for the Formula SAE or Formula Electric racecar and related equipment. The students will form teams and perform research and development on projects related to automotive or racecar engineering.

ME 5359. APPLIED AUTOMOTIVE ENGINEERING. 3 Hours.

The purpose of this course is to gain practical experience in the design and fabrication of parts or systems for automotive applications. The student must write a proposal, give a public oral presentation, and prepare a formal final report. The student must have attained full team member status in a student design competition team. Prerequisites: permission of Director of the Arnold E. Petsche Center for Automotive Engineering.

ME 5360. MULTIDISCIPLINARY INVERSE DESIGN AND OPTIMIZATION. 3 Hours.

For a new design of any realistic device to be competitive, it must satisfy a number of often conflicting requirements, objectives, and constraints. This course offers a variety of basic concepts and methodologies for inverse design and optimization with practical applications in fluid mechanics, heat transfer, elasticity, and electromagnetism. Offered as AE 5360 and ME 5360. Credit will be granted only once.

ME 5362. INTRODUCTION TO MICRO AND NANOFLUIDICS. 3 Hours.

As going down to micro scales, the basic hypothesis in the macro scale fluid mechanics may not be applicable in such scales. The objectives of this course are: to identify dominant forces and their effects in micro scale fluid systems that are different from those in the macro scales; to understand the fundamentals of micro fluidic phenomena; to discuss various microfluidic applications in research and commercial levels; and to explore new possible microfluidic applications in the emerging fields. Topics include overview of microfluidics, scaling laws, violation limit of the Navier-Stokes equations, surface force, surface tension, electrowetting, electrokinetics, dielectrophoresis, and soft lithography. Prerequisite: MAE 2314 and MAE 3310 or equivalents.

ME 5363. INTRODUCTION TO ROTORCRAFT ANALYSIS. 3 Hours.

History of rotorcraft. Behavior of the rotor blade in hover and forward flight. Rotor configurations, dynamic coupling with the fuselage, elastic and aeroelastic effects. Offered as AE 5363 and ME 5363. Credit will be granted only once.

ME 5364. INTRODUCTION TO AERODYNAMICS OF ROTORCRAFT. 3 Hours.

Practical aerodynamics of rotors and other components of rotorcraft. Introduction to performance, handling qualities, and general flight mechanics related to rotorcraft design, test, and certification requirements. Emphasis is on rotorcraft mission capabilities as defined by the customer. Offered as AE 5364 and ME 5364. Credit will be granted only once.

ME 5365. INTRODUCTION TO HELICOPTER AND TILTROTOR SIMULATION. 3 Hours.

Dynamic and aerodynamic modeling of rotorcraft elements using vector mechanics, linear algebra, calculus and numerical methods. Special emphasis on rotors, aerodynamic interference, proper axis system representation, model assembly methods and trimming. Offered as AE 5365 and ME 5365. Credit will be granted only once.

ME 5366. FUEL CELLS AND APPLICATIONS. 3 Hours.

The course introduces: Principles and thermodynamics applied to fuel cell-based power generation systems; materials and manufacturing methods of two common fuel cells and their stacks; modeling, analysis, and design of fuel cells and various reformers; and design issue of balance of plants such as steam management systems.

ME 5374. NONLINEAR SYSTEMS ANALYSIS AND CONTROLS. 3 Hours.

Nonlinear systems; phase plane analysis; Poincare-Bendixon theorems; nonlinear system stability; limit cycles and oscillations; center manifold theorem, Lyapunov methods in control; variable structure control; feedback linearization; backstepping techniques. Offered as AE 5374 and ME 5374. Credit will be granted only once.

ME 5378. INTRODUCTION TO UNMANNED VEHICLE SYSTEMS. 3 Hours.

Introduction to UVS (Unmanned Vehicle Systems) such as UAS (Unmanned Aircraft Systems), UGS (Unmanned Ground System) and UMS (Unmanned Maritime System), their history, missions, capabilities, types, configurations, subsystems, and the disciplines needed for UVS development and operation. UVS missions could include student competitions sponsored by various technical organizations. This course is team-taught by engineering faculty. Offered as AE 5378 and ME 5378. Credit will be granted only once.

ME 5379. UNMANNED VEHICLE SYSTEM DEVELOPMENT. 3 Hours.

Introduction to the technologies needed to create an UVS (Unmanned Vehicle System). Integration of these technologies (embodied as a set of sensors, actuators, computing and mobility platform sub-systems) into a functioning UVS through team work. UVS could be designed to compete in a student competition sponsored by various technical organizations or to support a specific mission or function defined by the instructors. This course is team-taught by engineering faculty. Offered as AE 5379 and ME 5379. Credit will be granted only once. Prerequisite: B or better in MAE 4378 or AE 5378 or ME 5378 and admission to the UVS certificate program.

ME 5380. DESIGN OF DIGITAL CONTROL SYSTEMS. 3 Hours.

Difference equations, z- and w- transforms, discrete TF (Transfer Function). Discrete equivalence (DE) to continuous TF. Aliasing & Nyquist sampling theorem. Design by DE, root locus in z- plane & Youla parameterization. Discrete state- space model, minimality after sampling, pole placement, Moore-Kimura method, linear quadratic regulator, asymptotic observer. Computer simulation and/or laboratory implementation. Offered as EE 5324, AE 5380 and ME 5380. Credit will be granted only once. Prerequisite: undergraduate level controls course or equivalent. Also offered as AE 5380, EE 5324. Credit will be granted only once.

ME 5381. BOUNDARY LAYERS. 3 Hours.

An introductory course on boundary layers. The coverage emphasizes the physical understanding and the mathematical foundations of boundary layers, including applications. Topics covered include laminar and turbulent incompressible and compressible boundary layers, and an introduction to boundary layer transition. Offered as AE 5381 and ME 5381. Credit will be granted only once.

ME 5382. RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES. 3 Hours.

This course is offered to graduate and senior level undergraduate students with engineering and science background to introduce them to micro/nano research and development for energy conversion and storage. The course will cover topics such as Scaling laws, MEMS fabrication, Nanomaterial synthesis, Electrochemical energy storage/conversion (Batteries, Fuel Cells & Supercapacitors), Solar energy (photovoltaics and solar thermal energy), Energy harvesting and Solar water splitting and electrocatalysis.

ME 5386. WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS. 3 Hours.

A broad senior/graduate first course in wind/wave/ocean current energy harvesting systems, focused on fundamentals, and serving as the basis for subsequent MAE specialized follow-on graduate course offerings focused on structures (conventional and composite), aero/hydro-mechanical response and control, and tailoring and smart material actuation, respectively, as well as for non-MAE, specialized graduate courses. (also taught as AE 5386).

ME 5390. SPECIAL TOPICS IN MECHANICAL ENGINEERING. 3 Hours.

To provide formal instruction in special topics pertinent to Mechanical Engineering from semester to semester depending on the availability of faculty. May be repeated provided topics differ.

ME 5391. ADVANCED STUDIES IN MECHANICAL ENGINEERING. 3 Hours.

May be repeated for credit as topics change. Project work performed under a non-thesis degree will normally be accomplished under this course number, with prior approval of the Committee on Graduate Studies.

ME 5397. RESEARCH IN MECHANICAL ENGINEERING. 3 Hours.

Research in master's programs.

ME 5398. THESIS. 3 Hours.

Thesis.

ME 5698. THESIS. 6 Hours.

Thesis Prerequisite: GRAD ME thesis major.

ME 5998. THESIS. 9 Hours.

Thesis Prerequisite: GRAD ME thesis major.

ME 6196. MECHANICAL ENGINEERING INTERNSHIP. 1 Hour.

For students participating in internship programs. May be repeated for credit. Requires prior approval of ME Graduate Advisor.

ME 6197. RESEARCH IN MECHANICAL ENGINEERING. 1 Hour.

May be repeated for credit.

ME 6297. RESEARCH IN MECHANICAL ENGINEERING. 2 Hours.

May be repeated for credit.

ME 6299. DISSERTATION. 2 Hours.

Prerequisite: Admission to candidacy for the Doctoral of Philosophy degree.

ME 6310. ADVANCED FINITE ELEMENT METHODS. 3 Hours.

Modeling of large systems, composite and incompressible materials, substructuring, mesh generation, solids applications, nonlinear problems. Also offered as ME 6310.

ME 6311. ADVANCED STRUCTURAL DYNAMICS. 3 Hours.

Normal mode method for undamped and proportionally damped systems, component mode synthesis, generally damped systems, complex modes, effect of design modification on system response. Offered as AE 6311 and ME 6311. Credit will be granted only once. Prerequisite: ME 5311, AE 5311 or equivalent.

ME 6315. ADVANCED COMPOSITES. 3 Hours.

Review of current state-of-the-art applications of composites: composite structural analysis; structural properties, damage characterization and failure mechanism; stiffness loss due to damage, notched sensitivity; delamination; impact; fatigue characteristics; composite material testing; material allowables; characteristics of composite joints. Offered as AE 6315, ME 6315 and MSE 5349. Credit will be granted only once. Prerequisite: ME 5315, AE 5315 or MSE 5348 or equivalent.

ME 6316. COMPUTER AIDED DESIGN. 3 Hours.

Role of graphics; image representation, batch and interactive computing, methods of automated mathematical model generation in engineering design. Application in mechanical, structural, thermal, controls areas of mechanical engineering.

ME 6337. ADVANCED ROBOTICS. 3 Hours.

Advanced robotic design concepts considering structural statics, dynamics and control strategies for both rigid and flexible manipulators will be studied using optimization techniques and analytical approaches and introduction to micro- and mobile robotic devices. Study of emerging applications of robotics will be explored. Digital simulation of robotic devices and programming and demonstration of robotic devices in the laboratory. Prerequisites: AE 5337 or ME 5337 or equivalent.

ME 6344. HEAT TRANSFER IN TURBULENT FLOW. 3 Hours.

Introduction to heat transfer in turbulent boundary layers including internal and external flows, turbulence structure, the Reynolds analogy, van Driest hypothesis, high and low Prandtl number two equation model, effects of surface roughness on heat transfer. Also offered as AE 6344. Credit will be granted only once.

ME 6397. RESEARCH IN MECHANICAL ENGINEERING. 3 Hours.

May be repeated for credit.

ME 6399. DISSERTATION. 3 Hours.

May be repeated for credit.

ME 6697. RESEARCH IN MECHANICAL ENGINEERING. 6 Hours.

May be repeated for credit.

ME 6699. DISSERTATION. 6 Hours.

Prerequisite: Admission to candidacy for the Doctor of Philosophy degree.

ME 6997. RESEARCH IN MECHANICAL ENGINEERING. 9 Hours.

May be repeated for credit.

ME 6999. DISSERTATION. 9 Hours.

Admission to candidacy for the Doctor of Philosophy degree.

ME 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Mexican American Studies (MAS)

COURSES

MAS 2300. INTRODUCTION TO MEXICAN AMERICAN STUDIES. 3 Hours.

A multidisciplinary introduction to the Mexican American/Latino experience. Emphasis on history, culture, and contemporary socioeconomic and policy issues. Required for completion of the Mexican American Studies minor. This course satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture.

MAS 3301. INTRODUCTION TO LATINA/HISPANIC FEMINISM. 3 Hours.

This interdisciplinary course explores Latina/Hispanic feminism through the intersection of race, class, gender, and sexuality. This course is organized around the following issues: colonization, immigration, globalization, sexism, health, and violence. Through an analysis of cultural production, politics, socio-economics, literary texts, and feminist methodology, the goal of this course is to develop a robust understanding of how Latina/Hispanic feminist methodologies can be used as tools for social change and social justice. Offered as WOMS 3301, MAS 3301, and DIVR 3301. Credit will only be granted in one department.

MAS 3310. LATINOS IN THE U.S.. 3 Hours.

Examines the Latino experience in the U.S. from an interdisciplinary perspective. Discusses the commonalities and cultural differences among various Latino groups, and focuses on important contemporary Latino issues such as education, employment, family and gender, identity, immigration, and politics. May receive credit for either MAS 3310 or ANTH 3310.

MAS 3312. LATIN AMERICAN CULTURE AND CIVILIZATION. 3 Hours.

An interdisciplinary introduction to Latin American society, history and culture. Offered as MAS 3312 and SPAN 3312; credit will be granted for either MAS or SPAN. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

MAS 3314. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

MAS 3316. LATINO HEALTH ISSUES. 3 Hours.

A cross-cultural examination of issues in Latino health and relevant health practices in the United States through the lenses of social sciences. Themes include the Latino Threat Narrative, acculturation histories and health care status of major Latino ethnic enclaves in the U.S. Listed as SOCI 3316, MAS 3316, and ANTH 3316; may receive credit for either SOCI 3316, MAS 3316, or ANTH 3316.

MAS 3317. MEXICAN POLITICS AND U.S.-MEXICO RELATIONS. 3 Hours.

Current economic and political systems of Mexico and relevant issues in U.S.-Mexico relations. Trade, immigration, economic dependency, energy, contraband, and other topics. Offered as MAS 3317 and POLS 3317; credit will be given in only one department.

MAS 3318. BORDERS, CULTURES, AND CARTELS. 3 Hours.

Critically examines life on the Mexico-U.S. border through ethnography, taking into account the impact of the U.S. war on drugs and the influence of cartels on the lives of those living in the southern border region. Topics may include impacts and influences of drugs and narco life on religion, crime, music, and daily life at the nexus of US-Mexico relations. Listed as ANTH 3318 and MAS 3318; may receive credit for either ANTH 3318 or MAS 3318.

MAS 3319. DIVERSE POPULATIONS. 3 Hours.

Introduction to theoretical, practical, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior. This course is required for admission to the Bachelor of Social Work (BSW) program. Offered as AAST 3317, SOCW 3307 and MAS 3319; credit will be granted in only one department.

MAS 3320. U.S. IMMIGRATION POLICY AND THE AMERICAN DREAM. 3 Hours.

Focus on American identity through the examination of immigration to the United States, past and present, and the evolution of U.S. immigration policy. Topics include U.S. attitudes and policy responses to European, Asian, and Latin American immigration and to the incorporation of the descendants of African slaves and Native Americans. Emphasis on the decline of the melting pot idea and the incorporation of recent immigrants. Offered as MAS 3320, AAST 3319, and SOCW 3320. Credit will be granted only once.

MAS 3321. MEXICAN-AMERICAN HISTORY. 3 Hours.

The role of the Mexican American in the cultural and historical development of the United States with special emphasis on the Southwest. Offered as HIST 3321 & MAS 3321; credit will be granted only once.

MAS 3330. CULTURAL DIVERSITY AND IDENTITY. 3 Hours.

The ways identity is constructed in contemporary societies in an increasingly complex and multicultural world. Ethnic, racial, gender, and class identities. How and when identity is asserted and assigned, and how it can both draw boundaries and forge ties between peoples. Formerly listed as ANTH 2350. Credit cannot be given for both ANTH 2350 and ANTH 3330. Also listed as MAS 3330; credit cannot be granted for both ANTH 3330 and MAS 3330. Offered as AAST 3330 and ANTH 3330; credit will be granted in only one department.

MAS 3337. RACIAL & ETHNIC GROUPS IN US. 3 Hours.

Compares the immigration, acculturation, and adjustment processes of various racial/ethnic groups in the U.S. Examines historical and contemporary discrimination in relation to the social conditions of racial/ethnic minority groups in the U. S. Topics include classical and contemporary theory; individualistic, cultural, and structural arguments about social arrangements; and conflict among majority and minority groups. Offered as AAST 3337, MAS 3337, and SOCI 3337; credit will be granted in only one department. Credit will not be granted for both SOCI 3337 and SOCI 4310 or for MAS 3337 and MAS 4310.

MAS 3343. LATINO/A LITERATURE. 3 Hours.

Explores Latino/a literature of the United States from the nineteenth century through the present as conditioned by the intersections of race, class, gender, sexuality, and regional variation. Texts may include novels, poetry, drama, short fiction, and non-fiction by and about peoples in the U.S. with heritage from South America, Central America, the Caribbean, and Mexico. Offered as ENGL 3343 and MAS 3343; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 2350 or must be concurrently enrolled in ENGL 2350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

MAS 3346. MEXICAN AMERICAN AND CHICANO/A LITERATURE. 3 Hours.

Surveys Mexican American literature from 1848 to the present, including literature of the Chicano movement, focusing on important genres, themes, and historical developments. Offered as ENGL 3346 and MAS 3346; credit will be granted in only one department.

MAS 3347. TOPICS IN MULTICULTURAL AMERICAN LITERATURES. 3 Hours.

Focuses on literature produced within one or more ethnic communities in the U.S. in order to trace a theme or to explore issues such as intersectionality, hybridity/mestizaje, diaspora, or immigrant experiences. Topics may include Afro-Latino poetry, third-world feminist writing, multicultural literature of the Southwest, cultural memory and the Jewish literary tradition, or Asian-American fiction. Offered as ENGL 3347, AAST 3347, and MAS 3347; credit will be granted in only one department, and credit for MAS 3347 will be granted only once. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

MAS 3348. LATINO IMMIGRATION TO THE U.S.. 3 Hours.

Examines Latino immigration from the perspective of sociocultural anthropology. Focuses on how anthropologists have studied Mexican and other Latino immigrants, and discusses contemporary issues such as transnational communities, gender and immigration, citizenship, and immigrants' politics. The course seeks to familiarize students with the largest immigrant community in the U.S. through ethnographic case studies.

MAS 3363. TEXAS TO 1850. 3 Hours.

Multicultural heritage of Texas from pre-Colombian period to early statehood. Cultural contact; social, economic, and political change. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach in Texas schools. Offered as HIST 3345 and MAS 3363; credit will be granted in only one department.

MAS 3364. TEXAS SINCE 1845. 3 Hours.

Texas in the Mexican-American and Civil Wars. Political events and ethnic relations since annexation. Rise of cotton, cattle, and oil industries. Literature and music in the 20th century. Completion of either HIST 3345 or HIST 3346 is recommended for those planning to teach history in Texas secondary schools. Offered as HIST 3346 and MAS 3364; credit will be granted in only one department.

MAS 3375. LATIN AMERICAN HISTORY: ORIGINS THROUGH INDEPENDENCE. 3 Hours.

Latin America during the colonial period of Spanish and Portuguese rule. Pre-European civilizations; Iberian backgrounds; conquest of indigenous peoples; development of colonial institutions, economic patterns, social structures, and race relations; independence from Europe. Offered as MAS 3375 and HIST 3375; credit will be granted in only one department.

MAS 3376. LATIN AMERICAN HISTORY: POST-INDEPENDENCE TO THE PRESENT. 3 Hours.

The evolution of six Latin American nations during the 19th and 20th centuries. The social, economic, and political development of three social groups in three regions: the Europeanized southern cone area of Argentina, Chile, and Uruguay; the indigenous culture of the Andean mountains in Peru; the African background of Brazil and Cuba. Offered as MAS 3376 and HIST 3376; credit will be granted in only one department.

MAS 3377. HISTORY OF MEXICO. 3 Hours.

Mexican history from its pre-Colonial indigenous foundation to the current situation. A social and economic analysis of the major events in Mexican history with emphasis on the 19th and 20th centuries. The major theme in this class is the growth of Mexican nationalism and its relation to region, religion, and ethnicity. Offered as HIST 3377 and MAS 3377; credit will only be granted in one department.

MAS 3380. RACE, CRIME, AND JUSTICE. 3 Hours.

An examination of race in the context of the criminal justice system. Emphasis is on social construction of crime; and the treatment of racial minorities as victims and offenders by law enforcement, courts, and corrections. Offered as CRCJ 3380 and MAS 3380; credit will be granted only once. Offered as AAST 3380 and CRCJ 3380; credit will be granted in only one department.

MAS 4313. TOPICS IN HISPANIC CULTURE. 3 Hours.

Among the topics are Spanish or Latin American music, television, radio, film, and literature as culture. May be repeated for credit as topic changes. Prerequisite: SPAN 3315 with a grade of C or better. Offered as MAS 4313 and SPAN 4313; credit will be given for MAS 4313 or SPAN 4313 but not both in a given semester.

MAS 4315. TOPICS IN CONTEMPORARY LATIN-AMERICAN LITERATURE AND CULTURE, MODERNISM TO THE PRESENT. 3 Hours.

Topics may include: Latin-American literature and culture of Modernism, modern Latin-American literature and culture, or any particular movement, genre, work or author from Modernism to the present. May be repeated for credit when content changes. Offered as MAS 4315 and SPAN 4315; credit will be given for MAS 4315 or SPAN 4315 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

MAS 4317. CHICANO LITERATURE. 3 Hours.

Mexican-American literature, with special attention to its social, cultural, and linguistic background. Offered as MAS 4317 and SPAN 4317; credit will be given for MAS 4317 or SPAN 4317 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

MAS 4318. MEXICAN LITERATURE. 3 Hours.

Studies in Mexican fiction, poetry, drama, and literary essay. Offered as MAS 4318 and SPAN 4318; credit will be given for MAS 4318 or SPAN 4318 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

MAS 4319. POLITICS OF MEXICAN AMERICANS. 3 Hours.

The influence of Mexican-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Chicano Movement, current issues, and relations with other ethnic groups. Offered as MAS 4319 and POLS 4319; credit will be given in only one department.

MAS 4327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Considers women as characters in and writers of Hispanic literature. Includes the analysis of themes, language, and how the writings of women often give voice to lesser-known aspects of culture. Also listed as SPAN 4327. Credit cannot be given for both.

MAS 4350. TOPICS IN MEXICAN AMERICAN STUDIES. 3 Hours.

Subjects of interest in Mexican American and Latino studies. May be repeated for credit when topic changes.

MAS 4360. CONFERENCE COURSE. 3 Hours.

Permission of the director of the Center for Mexican American Studies required. Topics for research or study in designated areas assigned in consultation with course instructor.

MAS 4370. CAPSTONE MEXICAN AMERICAN STUDIES. 3 Hours.

In consultation with the course instructor, students will design a research project or an internship that will integrate their previous course work into a capstone experience in either the applied or the cultural studies stream of the Mexican American Studies minor.

MAS 4391. CONFERENCE COURSE. 3 Hours.

Permission of the director of the Center for Mexican American Studies required. Topics for research or study in designated areas assigned in consultation with course instructor.

MAS 4393. MEXICAN AMERICAN STUDIES INTERNSHIP. 3 Hours.

A combination of field-related experience in the service, community, and/or business sectors with an academic component. Prerequisite: At least two MAS courses and permission of the instructor.

Military Science (MILS)

COURSES

MILS 0180. LEADERSHIP LAB. 1 Hour.

A practical laboratory of applied leadership and skills. Student-planned, -organized and -conducted training, oriented toward leadership development. Laboratory topics include marksmanship, small unit tactics, multi-tiered programs focused on individual skill levels. Uniform and equipment provided. Concurrent enrollment in appropriate Military Science course (MILS 1141, MILS 1142, MILS 2251, MILS 2252, MILS 3341, MILS 3342, MILS 4341, MILS 4342, MILS 2291 and/or MILS 4391) required. Prerequisite: permission from the Professor of Military Science (PMS). May be repeated for credit.

MILS 1141. FOUNDATIONS OF LEADERSHIP. 1 Hour.

Fundamental concepts of leadership in a profession in both classroom and outdoor laboratory environments. The study of time management skills, basic drill and ceremony, physical fitness, repelling, leadership reaction course, first aid, making presentations and marksmanship. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in independent physical fitness training, plus optional participation in a weekend field training exercise.

MILS 1142. INTRODUCTION TO LEADERSHIP. 1 Hour.

Application of principles of leadership through participation in physically and mentally challenging exercises with upper division ROTC students. Course focuses on communication skills, organizational ethics, and study and time management techniques. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in individual physical fitness training, plus optional participation in a weekend field training exercise.

MILS 2251. INDIVIDUAL/TEAM DEVELOPMENT. 2 Hours.

Application of ethics-based leadership skills and fundamentals of ROTC's Leadership Development Program. Develop skills in oral presentations, concise writing, event planning, coordination of group efforts, advanced first aid, land navigation, and military tactics. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in individual physical fitness training, plus optional participation in a weekend field training exercise.

MILS 2252. INDIVIDUAL/TEAM MILITARY TACTICS. 2 Hours.

Introduction to individual and team aspects of military tactics in small unit operations. Includes use of radio communications, making safety assessments, movement techniques, planning for team safety/security, and pre-execution checks. Concurrent enrollment in MILS 0180 leadership lab and mandatory participation in individual physical fitness training, plus optional participation in a weekend field training exercise.

MILS 2291. CONFERENCE COURSE. 2 Hours.

Independent study. Designed to supplement the military science curricula by a student's concentrated study in a narrower field of military skill or subject matter. May be repeated for credit. Does not count for PE credit. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 2343. LEADERSHIP TRAINING CAMP (LTC). 3 Hours.

A rigorous five-week summer camp conducted at an Army post, stresses leadership, initiative and self-discipline. No military obligation incurred. Completion of MILS 2343 qualifies a student for entry into the Advanced Course. Three different cycles offered during the summer, but spaces are limited by the Army. Candidates can apply for a space any time during the school year prior to the summer. Open only to students who have not taken all four of MILS 1141, MILS 1142, MILS 2251, and MILS 2252, and who pass an ROTC physical examination. P/F grade only.

MILS 3333. SMALL UNIT TACTICS AND LEADERSHIP. 3 Hours.

A study of military tactics and leadership at squad, platoon, and company level in both classroom and outdoor laboratory environments. Includes mission planning; movement and maneuver formations and techniques; offensive operations, defensive operations, patrolling, and convoy movement; indirect fires planning; terrain analysis, route selection, danger areas, and security measures; risk management; and motivating subordinates.

MILS 3341. LEADERSHIP I. 3 Hours.

Development of ability to evaluate situations, plan and organize training, learn military tactics, review case studies in leadership management and develop teaching and briefing skills. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 3342. LEADERSHIP II. 3 Hours.

Practical application of squad and platoon leadership in tactical situations; operation of small unit communications systems. Development of the leaders' ability to express themselves, analyze military problems, and prepare and deliver logical solutions. Demanding physical fitness training and performance-oriented instruction, in preparation for Summer Field Training. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 3443. LEADER DEVELOPMENT AND ASSESSMENT COURSE. 4 Hours.

A five-week off-campus field training course stressing the practical application of leadership management, with emphasis on tactical and technical military field skills. Open only to students who have successfully completed MILS 3341 and MILS 3342, P/F grade only.

MILS 3495. NURSING ADVANCED SUMMER TRAINING. 4 Hours.

Seven-week off-campus internship at a major U.S. Army hospital for ROTC nursing students. A nursing practicum with the focus on providing the student with hands-on experience which integrates clinical, interpersonal, and leadership knowledge and skills. Practical experience and familiarization with Army nursing in a variety of clinical tasks in the areas of medical-surgical nursing, pediatrics, obstetrics, and, in some cases, intensive care in ICUs. May be used for partial credit for NURS 3647 or NURS 3347 with prior arrangement and approval of the Dean of Nursing.

MILS 4341. ADVANCED LEADERSHIP I. 3 Hours.

Stresses leadership qualities necessary for Command and Staff functions and operations. Plan and conduct meetings, briefings and conferences. Introduction to the Army Logistical System and the Personnel Management System. Preparation of after-action reports. Plan and conduct physical training programs. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 4342. ADVANCED LEADERSHIP II. 3 Hours.

Provides students with a basic working knowledge of the Military Justice System with emphasis on company-level actions and requirements, including Law of Land Warfare. Examines the ethical standards, professional roles, responsibilities, and uniqueness of the profession of officership. Concurrent enrollment in MILS 0180 mandatory. Prerequisite: permission of the Professor of Military Science (PMS).

MILS 4391. CONFERENCE COURSE. 3 Hours.

Independent study on an individual basis on current topics in military science. Performance will be assessed by oral examination, written test, or research paper as arranged. May be repeated for credit. Prerequisite: permission of the Professor of Military Science (PMS).

Modern Languages (MODL)

COURSES

MODL 1441. TOPICS IN MODERN LANGUAGE LEVEL I. 4 Hours. (TCCN = CZEC 1411)

(Chinese, etc.). This course parallels the 1441 courses in FREN 1441, GERM 1441, RUSS 1441, and SPAN 1441.

MODL 1442. TOPICS IN MODERN LANGUAGE LEVEL II. 4 Hours. (TCCN = CZEC 1442)

(Chinese, etc.). This course parallels the 1442 courses in FREN 1442, GERM 1442, RUSS 1442, and SPAN 1442.

MODL 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

MODL 2301. INTRODUCTION TO WORLD LANGUAGES. 3 Hours.

An overview of the linguistic features of some of the world's most widely spoken languages, as well as issues affecting languages in a globalized world. Topics include language families; global distribution; writing systems and vocabulary; language and society; languages and globalization. This course satisfies the University of Texas at Arlington core curriculum requirement in social and behavioral sciences. Taught in English.

MODL 2313. TOPICS IN MODERN LANGUAGE LEVEL III. 3 Hours. (TCCN = CZEC 2311)

(Chinese, etc.). This course parallels the 2313 courses in FREN 2313, GERM 2313, RUSS 2313, and SPAN 2313.

MODL 2314. TOPICS IN MODERN LANGUAGE LEVEL IV. 3 Hours. (TCCN = CZEC 2312)

(Chinese, etc.). This course parallels the 2314 courses in FREN 2314, GERM 2314, RUSS 2314, and SPAN 2314 .

MODL 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

MODL 3301. TOPICS IN COMPARATIVE LANGUAGES, CULTURE, AND LITERATURES. 3 Hours.

Comparisons of language and language/culture issues across languages and/or time. Topics may include folklore across cultures, comparison of language and cultural production (e.g., international film and international feminism). May be counted toward fulfilling core curriculum requirement in literature or culture. May be repeated for credit when content changes. No prerequisites.

MODL 3310. LOCALIZATION & TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: ARAB 2314, CHIN 2314, PORT 2314, or MODL 2314 with a grade of C or better.

MODL 3311. LOCALIZATION & TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of foreign language and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May be repeated once. Prerequisites: MODL 3310 with a grade of B or better.

MODL 3391. INDEPENDENT STUDY. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit.

MODL 3393. MODERN LANGUAGE INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

MODL 4305. METHODS OF MODERN LANGUAGE TEACHING. 3 Hours.

An applied linguistics course for modern language professionals, focusing on the application of research and theory in linguistics and second language acquisition to the classroom setting. May include specific methods, language learning strategies, cooperative language learning, component and performance skills, lesson planning, and intercultural communication. Prerequisite: Two language courses at the 3000 level with a grade of C or better, or consent of the instructor.

MODL 4310. GRAPHIC NOVELS AND THE MEDICAL WORLD. 3 Hours.

This course examines the ways in which the comic book medium can bring new insights to patient, healthcare, and clinical experiences. Students will become familiar with both major works of graphic medicine and key theoretical texts related to sequential art and to pathographies (autobiographies that revolve particularly around health issues). Includes a cultural comparison component through patient and practitioner stories from an American and from a French perspective. Taught in English. Students in French can read the material in French and write assignments in French with permission of the instructor.

MODL 4339. LANGUAGE ACQUISITION. 3 Hours.

Theory and practice of language acquisition. Techniques needed to understand and analyze the sounds, vocabulary, and grammar of the target language and how this knowledge informs classroom practice. Prerequisite: Completion of two 3000 level courses in the same language (Arabic, Chinese, French, German, Korean, Russian, or Spanish) with a grade of C or better, or consent of the instructor.

MODL 4340. TOPICS IN MODERN LANGUAGE PEDAGOGY. 3 Hours.

Topics, methods, and techniques specific to the teaching of modern languages and the creation of an effective and communicative language classroom. Recommended for students seeking teacher certification. May be repeated for credit as topic changes. Prerequisite: Completion of one 4000-level class or two 3000-level classes in the same language (Arabic, Chinese, French, German, Korean, Russian, or Spanish) with a grade of B or better.

MODL 4391. INDEPENDENT STUDY. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit.

MODL 4393. MODERN LANGUAGE INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Spanish, outside readings, and formal presentations. Prerequisite: Two 3000-level courses and permission of the instructor.

MODL 5300. HISTORY OF THE FRENCH LANGUAGE. 3 Hours.

Development of the French language from its earliest forms to the present. Required for the MA in MODL with French concentration.

MODL 5301. MODERN LANGUAGES FOR GRADUATE READING. 3 Hours.

An intensive one-semester course designed for Ph.D. candidates and other graduate students to fulfill departmental foreign language requirements. Sections may be offered in French, German, Russian, or other applicable or appropriate languages. Does not fulfill any graduate degree requirements.

MODL 5302. TOPICS ACROSS THE LANGUAGES. 3 Hours.

This topic course varies in focus and will be taught by in-house faculty or visiting scholars. Taught in English, it will consider issues to cultural and literary concerns across the languages. Possible course offerings include: From Novel to Film, History and/as Literature, Propaganda as Literature, The History and Aesthetics of Film, The Other in Literature and Culture, Freud and the Literary Imagination, and Modernism.

MODL 5304. CURRENTS IN EUROPEAN AND LATIN AMERICAN LITERATURES AND THOUGHT. 3 Hours.

An examination of the mainstream genres and movements in European and Latin American literatures from 1600 to the present. Taught in English. Required for MA students in Modern Languages. May not be repeated for credit.

MODL 5305. METHODS OF MODERN LANGUAGE TEACHING. 3 Hours.

Methods of Modern Language Teaching is an applied linguistics course for modern language professionals, focusing on the application of research and theory in linguistics and second language acquisition to the classroom setting. May include specific methods, language learning strategies, cooperative language learning, component and performance skills, and intercultural communication.

MODL 5306. L2 ACQUISITION. 3 Hours.**MODL 5307. TOPICS IN SECOND LANGUAGE ACQUISITION. 3 Hours.**

May include topics in the areas of second language acquisition, methodologies, culture, and disciplines related to second language acquisition. May be repeated for credit as topics change.

MODL 5308. TECHNOLOGY AND LANGUAGE INSTRUCTION. 3 Hours.

Presentation and critique of research regarding the use of electronic media in language instruction; emphasis on computer and video, with attention to the application of research findings to the language classroom.

MODL 5309. TRANSLATION THEORY. 3 Hours.

Provides an introduction to basic concepts and offers a general conceptual framework for the study of translation theory. Students acquire the tools to identify, analyze and resolve translation problems while developing a rational approach to translation. (Following the completion of this course, students are encouraged to enroll in FREN 5309, GERM 5309 or SPAN 5309, Practicum in Translation.).

MODL 5310. THEORIES OF LITERATURE AND CULTURE. 3 Hours.

Readings, analyses, and applications of recent literary and cultural theories. Particular attention to how such theories may serve to focus or refocus literature as cultural production. Required for the M.A. in French, German, and Spanish.

MODL 5391. CONFERENCE. 3 Hours.**MODL 5393. MODL GRADUATE INTERNSHIP. 3 Hours.**

Graduate internship in the Department of Modern Languages with the student performing duties related to the field of modern languages. A combination of field-related experience at the graduate level with an academic component. Students are required to submit an approved academic project related to the work performed. May be repeated with approval of Graduate Advisor.

Music (MUSI)

COURSES

MUSI 0010. STUDIO CLASS. 0 Hours.

Departmental performance classes, master classes, guest artist performances and lectures related to performance specializations. Students enroll concurrently with private lesson in specialization.

MUSI 0101. MARCHING BAND. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0102. WIND SYMPHONY. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0103. SYMPHONIC WINDS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0104. A CAPPELLA CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0105. WOMEN'S CHORUS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0106. CHAMBER SINGERS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0108. UNIVERSITY SINGERS. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0109. KEYBOARD ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0110. WOODWIND ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0111. BRASS CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0112. JAZZ ORCHESTRA. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0113. ELECTRIC GUITAR ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0114. PERCUSSION ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0115. MUSICAL THEATRE / OPERA LAB. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director. By audition only.

MUSI 0116. JAZZ ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0117. TROMBONE CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0118. MARCHING PERCUSSION. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0119. TRUMPET ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0120. FRENCH HORN ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0121. COLOR GUARD. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0122. JAZZ COMBO. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0123. VOCAL JAZZ. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0124. FLUTE CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0125. SAX CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0126. CHAMBER MUSIC. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0127. TUBA ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0128. ORCHESTRA. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0129. EARLY MUSIC PERFORMANCE PRACTICE. 1 Hour.

Study of early music for individual instruments. Topics will vary by semester. May be repeated for credit. Prerequisite: Permission of instructor.

MUSI 0130. SYMPHONIC BAND. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 0131. COMMERCIAL MUSIC ENSEMBLE. 1 Hour.

This course is open to Music Industry Studies students. This ensemble provides practical and artistic experience in ensembles rooted in commercial and popular music styles. Prerequisite: Approval of the ensemble director.

MUSI 0171. ELECTIVE PERFORMANCE. 1 Hour.

For students who desire elective private instruction in strings, woodwinds, brass, keyboard, voice, or percussion. May be repeated eight times for credit.

MUSI 0174. SECONDARY KEYBOARD. 1 Hour.

For music majors whose degree option requires secondary piano, organ, or harpsichord. A jury is required to receive credit. May be repeated for credit. Prerequisite: C or better in MUSI 2181 or faculty approval.

MUSI 0175. SECONDARY VOICE. 1 Hour.

For music majors whose degree option requires secondary voice. A jury is required to receive credit. May be repeated for credit.

MUSI 0271. ELECTIVE PERFORMANCE. 2 Hours.

For students who desire elective private instruction in strings, woodwinds, brass, keyboard, voice, or percussion. May be repeated for credit up to eight times.

MUSI 1101. JAZZ LISTENING. 1 Hour.

Jazz listening from a historical perspective. Students will develop intelligent listening habits with regard to genres and their innovators. Open to all students; required of jazz studies majors. May be repeated for credit as topic changes.

MUSI 1103. HIGH BRASS CLASS. 1 Hour. (TCCN = MUSI 1168)

Open to music majors only. Emphasis on pedagogical techniques for teaching the trumpet and French horn. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1104. WOODWIND CLASS I. 1 Hour. (TCCN = MUSI 1166)

Open to music majors only. Emphasis on pedagogical techniques for teaching the clarinet and flute. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1105. VOICE CLASS. 1 Hour. (TCCN = MUSI 1183)

Open to music majors only. A practical study of the physiology of the voice with emphasis on vocal technique, sound production, the changing voice, and limited repertoire.

MUSI 1106. LOW BRASS CLASS. 1 Hour.

Open to music majors only. Emphasis on pedagogical techniques for teaching the trombone and euphonium/tuba. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1107. WOODWIND CLASS II. 1 Hour.

Open to music majors only. Emphasis on pedagogical techniques for teaching the saxophone, oboe and bassoon. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 1140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1140 and THEA 1140; credit will be granted only in one department. Prerequisite: Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 1141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1141 and THEA 1141; credit will be granted only in one department. Prerequisite: C or better in MUSI 1140 or THEA 1140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 1142. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano.

MUSI 1143. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1142.

MUSI 1144. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass.

MUSI 1145. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1144.

MUSI 1146. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass.

MUSI 1147. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1146.

MUSI 1154. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano.

MUSI 1155. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1154.

MUSI 1180. FUNCTIONAL PIANO I. 1 Hour. (TCCN = MUSI 1181)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing.

MUSI 1181. FUNCTIONAL PIANO II. 1 Hour. (TCCN = MUSI 1182)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing. Prerequisite: C or better in MUSI 1180.

MUSI 1185. SIGHTSINGING AND EAR TRAINING I. 1 Hour. (TCCN = MUSI 1116)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing.

MUSI 1186. SIGHTSINGING AND EAR TRAINING II. 1 Hour. (TCCN = MUSI 1117)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing. Prerequisite: C or better in MUSI 1185.

MUSI 1236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar.

MUSI 1237. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 1236.

MUSI 1238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset.

MUSI 1239. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 1238.

MUSI 1240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice.

MUSI 1241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice.

MUSI 1242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano.

MUSI 1243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 1242.

MUSI 1244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings.

MUSI 1245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 1244.

MUSI 1246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds.

MUSI 1247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds.

MUSI 1248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass.

MUSI 1249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 1248.

MUSI 1250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion.

MUSI 1251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 1250.

MUSI 1252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass.

MUSI 1253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 1252.

MUSI 1254. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 1301.

MUSI 1255. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 1254.

MUSI 1257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ.

MUSI 1258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 1257.

MUSI 1267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord.

MUSI 1268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 1267.

MUSI 1300. MUSIC APPRECIATION. 3 Hours. (TCCN = MUSI 1306)

Course designed to develop intelligent listening and enjoyment of music. Provides an opportunity to increase the student's cultural experience and vocabulary. This course satisfies the University of Texas at Arlington's core curriculum requirement in Creative Arts.

MUSI 1301. ELEMENTS OF MUSIC. 3 Hours. (TCCN = MUSI 1303)

Basic musical notation, harmony, and theory for students who are pursuing the BFA in Musical Theatre and the non-music major.

MUSI 1302. JAZZ APPRECIATION. 3 Hours.

The development of American jazz from its African and European roots to the present. This course satisfies the University of Texas at Arlington Core Curriculum requirement in Creative Arts.

MUSI 1303. HISTORY AND APPRECIATION OF HIP HOP AND R&B MUSIC. 3 Hours.

Explores the history and evolution of Hip Hop and modern urban music, emphasizing musical style and social context, from rhythm and blues through the present. Offered as AAST 2303 and MUSI 1303; credit will be granted in only one department.

MUSI 1304. HISTORY OF ROCK MUSIC. 3 Hours.

Open to all students as fine arts elective. Explores the history and evolution of rock music emphasizing musical style and social context, from rhythm and blues through the present. This course satisfies the University of Texas at Arlington core curriculum requirement in creative arts.

MUSI 1324. EXPLORATIONS IN MUSIC THEORY. 3 Hours.

A study of music skills necessary for the Music Industry Studies and Music Theatre majors involving written and analytical perspectives. Prerequisite: C or better in MUSI 1301.

MUSI 1325. THEORY AND HARMONY I. 3 Hours. (TCCN = MUSI 1311)

Scales, intervals, triads, and part writing with primary triads. Prerequisite: For B.A. Music Industry students, C or better in MUSI 1301; For all other degrees, open to music majors or faculty approval.

MUSI 1326. THEORY AND HARMONY II. 3 Hours. (TCCN = MUSI 1312)

Part writing including all diatonic triads, seventh chords, and traditional non-chord tones. Prerequisite: C or better in MUSI 1325.

MUSI 2101. BRASS SURVEY. 1 Hour.

Open to music majors in the All-level Instrumental Option (orchestra emphasis) and All-level Choral Option only. Emphasis on pedagogical techniques for teaching brass instruments. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 2102. WOODWIND SURVEY. 1 Hour.

Open to music majors in the All-level Instrumental Option (orchestra emphasis) and All-level Choral Option only. Emphasis on pedagogical techniques for teaching woodwind instruments. Lectures and playing opportunities will provide information concerning the teaching of embouchure, tonguing, tonal and technical development to beginning students.

MUSI 2103. STRING CLASS. 1 Hour. (TCCN = MUSI 1190)

Open to music majors only. A practical study of the string instruments of the orchestra with emphasis on bowing techniques, articulation, performance of scales, and limited repertoire.

MUSI 2104. PERCUSSION CLASS. 1 Hour. (TCCN = MUSI 1188)

(MUSI 1188). Open to music majors only. A practical study of the percussion instruments of the band and orchestra with emphasis on rudimental techniques and performance of limited repertoire.

MUSI 2112. INTRODUCTION TO MUSIC EDUCATION. 1 Hour.

Comprehensive survey of instrumental, choral and elementary music through lecture and research pertaining to professional responsibilities and career opportunities.

MUSI 2140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2140 and THEA 2140; credit will be granted only in one department. Prerequisite: C or better in MUSI 1141 or THEA 1141. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 2141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2141 and THEA 2141; credit will be granted only in one department. Prerequisite: C or better in MUSI 2140 or THEA 2140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 2142. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1143.

MUSI 2143. PRIVATE LESSONS IN PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 2142.

MUSI 2144. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1145.

MUSI 2145. PRIVATE LESSONS IN DOUBLE BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 2144.

MUSI 2146. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 1147.

MUSI 2147. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is bass. Prerequisite: C or better in MUSI 2146.

MUSI 2154. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 1155.

MUSI 2155. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 2154.

MUSI 2180. FUNCTIONAL PIANO III. 1 Hour. (TCCN = MUSI 2181)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing. Prerequisite: C or better in MUSI 1181.

MUSI 2181. FUNCTIONAL PIANO IV. 1 Hour. (TCCN = MUSI 2182)

Required of and limited to music majors who are not piano majors or concentrates. The aim is to develop keyboard skills necessary to use the piano as a tool in teaching, composing, improvising, and performing. Prerequisite: C or better in MUSI 2180.

MUSI 2185. SIGHTSINGING AND EAR TRAINING III. 1 Hour. (TCCN = MUSI 2116)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing. Prerequisite: C or better in MUSI 1186.

MUSI 2186. SIGHTSINGING AND EAR TRAINING IV. 1 Hour. (TCCN = MUSI 2117)

This sequence of courses is required of music majors. Develops skills in aural skills and melodic sight-singing. Prerequisite: C or better in MUSI 2185.

MUSI 2190. BODY AND BREATHING FOR FITNESS. 1 Hour.

Course designed to improve a singers total body engagement in producing a healthy vocal tone. Prerequisite: Requires concurrent enrollment in voice lessons or permission of instructor.

MUSI 2222. DEVELOPMENTAL PRIVATE LESSONS. 2 Hours.

Continued work in technique and repertoire to meet the requirements of the sophomore barrier.

MUSI 2223. PREPARATORY PRIVATE LESSONS. 2 Hours.

Private instruction on technique and repertoire in preparation for the sophomore proficiency exam. May be repeated up to four times for credit.

MUSI 2227. COMPOSITION TECHNIQUES. 2 Hours.

An introduction to contemporary music designed to acquaint students with composition styles and techniques through written assignments. Required for music majors with emphasis in Composition, Theory, and Music/Media. Prerequisite: C or better in MUSI 2325.

MUSI 2236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 1237.

MUSI 2237. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 2236.

MUSI 2238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 1239.

MUSI 2239. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 2238.

MUSI 2240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 1241.

MUSI 2241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 2240.

MUSI 2242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 1243.

MUSI 2243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 2242.

MUSI 2244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 1245.

MUSI 2245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 2244.

MUSI 2246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 1247.

MUSI 2247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 2246.

MUSI 2248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 1249.

MUSI 2249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 2248.

MUSI 2250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 1251.

MUSI 2251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 2250.

MUSI 2252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 1253.

MUSI 2253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 2252.

MUSI 2254. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 1255.

MUSI 2255. PRIVATE LESSONS FOR B.A. STUDENTS. 2 Hours.

Students complete four semesters of these lessons within one of the following 3 tracks: Commercial, Jazz, or Classical. These courses are open to non-music majors only with written permission of the Music Department Chair. Prerequisite: C or better in MUSI 2254.

MUSI 2257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 1258.

MUSI 2258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 2257.

MUSI 2267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 1268.

MUSI 2268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 2267.

MUSI 2300. INTRODUCTION TO WORLD MUSIC. 3 Hours.

The music of Asia, Africa, and Oceania and the native traditions of the Americas; the role of music in the world's societies and non-Western music systems. This course satisfies the University of Texas at Arlington Core Curriculum Requirement in Creative Arts.

MUSI 2301. APPRECIATION OF MUSIC IN FILM. 3 Hours.

A study of the history, compositional styles and impact of music in films during the 20th century. This course satisfies the University of Texas at Arlington Core Curriculum requirement in Creative Arts.

MUSI 2302. MUSIC LITERATURE. 3 Hours. (TCCN = MUSI 1307)

An introduction to music literature of various style periods with an emphasis on reading orchestral scores.

MUSI 2325. THEORY AND HARMONY III. 3 Hours. (TCCN = MUSI 2311)

Modulation, chromatic part writing, and harmonic analysis. Prerequisite: C or better in MUSI 1326.

MUSI 2326. THEORY AND HARMONY IV. 3 Hours. (TCCN = MUSI 2312)

Harmonic, linear, and formal analysis of 19th- and 20th-century compositional techniques. Prerequisite: C or better in MUSI 2325.

MUSI 3101. ITALIAN AND FRENCH DICTION. 1 Hour.

A guide to correct pronunciation of Italian and French in vocal music.

MUSI 3103. VOCAL PEDAGOGY. 1 Hour.

A basic survey of the science of voice culture and the skills and knowledge needed to teach healthy, effective vocal production in school and/or private studio. Prerequisite: C or better in MUSI 2241.

MUSI 3104. VOCAL COACHING. 1 Hour.

Advanced instruction in diction, interpretation, and style for singers and collaborative instrumentalists. This course is designed as a supplement to applied lessons for advanced students. Permission of instructor required.

MUSI 3125. JAZZ THEORY & KEYBOARD FUNDAMENTALS I. 1 Hour.

Basic-to-intermediate jazz concepts including modes, harmony, chord progressions, and their keyboard applications. Prerequisite: C or better in MUSI 1325 or faculty approval.

MUSI 3126. JAZZ THEORY & KEYBOARD FUNDAMENTALS II. 1 Hour.

Intermediate-to-advanced jazz concepts including modes, harmony, chord progressions, and their keyboard applications. Prerequisite: C or better in MUSI 3125 or faculty approval.

MUSI 3127. COMPUTER COMPOSITION I. 1 Hour.

Course designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 1326 and MUSI 3394.

MUSI 3128. COMPUTER COMPOSITION II. 1 Hour.

Course designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 3127.

MUSI 3140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3140 and THEA 3140; credit will be granted only in one department. Prerequisite: C or better in MUSI 2141 or THEA 2141. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 3141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3141 and THEA 3141; credit will be granted only in one department. Prerequisite: C or better in MUSI 3140 or THEA 3140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 3191. SECONDARY LESSONS IN STRINGS. 1 Hour.

Open only to music majors in the All-Level Instrumental (Orchestra Emphasis) Program. Applied instruction in the fundamentals and techniques specific to string instruments. Taken twice; may not repeat study in any one instrument.

MUSI 3200. MARCHING BAND TECHNIQUES. 2 Hours.

Open to music majors only. A detailed study of the theory and history of marching band presentations.

MUSI 3211. EARLY CHILDHOOD MUSIC. 2 Hours.

Musical characteristics of children, folksong and composed literature, performance activities, song analysis, and techniques for reading and writing music. Open to music majors only. Prerequisite: C or better in MUSI 2112, MUSI 2186, MUSI 2326, and completion of the Music Education Proficiency Exam.

MUSI 3212. JAZZ TECHNIQUES. 2 Hours.

A study of jazz techniques as they apply to solo and ensemble performance.

MUSI 3213. INSTRUMENTAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for beginning and intermediate instrumental ensembles. Prerequisite: C or better in MUSI 2112, MUSI 2186, MUSI 2326, MUSI 4308, and completion of the Music Education Proficiency Exam.

MUSI 3214. CHORAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for beginning and intermediate choral ensembles. Offered every fall odd year. Prerequisite: C or better in MUSI 2112, MUSI 2186, MUSI 2326, and completion of the Music Education Proficiency Exam.

MUSI 3225. JAZZ IMPROVISATION I. 2 Hours.

The melodic and harmonic foundations of contemporary jazz solo performance. May be repeated for credit as topics change. Prerequisite: C or better in MUSI 3125 or approval of instructor.

MUSI 3226. JAZZ IMPROVISATION II. 2 Hours.

A continuation of Jazz Improvisation I. This course explores advanced techniques of contemporary jazz solo performance. Prerequisite: C or better in MUSI 3225 and MUSI 3126 or faculty approval.

MUSI 3236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 2237 and passing grade on the Sophomore Proficiency exam.

MUSI 3237. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 3236.

MUSI 3238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 2239 and passing grade on Sophomore Proficiency exam.

MUSI 3239. APPLIED INSTRUCTION ON A SECONDARY INSTRUMENT. 2 Hours.

Open to music majors only. Applied instruction that covers the fundamentals and techniques specific to a secondary instrument.

MUSI 3240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 2241 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 3240.

MUSI 3242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 2243 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 3242.

MUSI 3244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 2245 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 3244.

MUSI 3246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 2247 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 3246.

MUSI 3248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 2249 and Passing Grade on Sophomore Proficiency Exam.

MUSI 3249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 3248.

MUSI 3250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 2251 and passing grade on Sophomore Proficiency Exam.

MUSI 3251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 3250.

MUSI 3252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 2253 or MUSI 2145 and MUSI 2147, and passing grade on Sophomore Proficiency Exam.

MUSI 3253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 3252.

MUSI 3254. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 2143 and MUSI 2155 and passing grade on Sophomore Proficiency Exam.

MUSI 3255. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 3254.

MUSI 3257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 2258 and passing grade on Sophomore Proficiency Exam.

MUSI 3258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 3257.

MUSI 3259. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 3238.

MUSI 3267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 2268 and passing grade on Sophomore Proficiency Exam.

MUSI 3268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 3267.

MUSI 3294. APPLIED PEDAGOGY. 2 Hours.

A study of teaching techniques as they apply to studio or class instruction in applied music. Specific areas of study will change from semester to semester. May be repeated for credit. Prerequisite: Faculty approval.

MUSI 3295. PIANO PEDAGOGY. 2 Hours.

Open to music majors only. Teaching methods of beginning level private and class instruction. Prerequisite: Faculty approval.

MUSI 3300. MUSIC HISTORY I. 3 Hours.

The music of western civilization from ancient times to 1750. Prerequisite: C or better in MUSI 2326 or faculty approval.

MUSI 3301. MUSIC HISTORY II. 3 Hours.

The music of western civilization from 1750 to the present. Prerequisite: C or better in MUSI 2326 or faculty approval.

MUSI 3302. FORM AND ANALYSIS. 3 Hours.

Structure and analysis of the major forms of music literature. Prerequisite: C or better in MUSI 2326 and a passing grade on the Music Theory Proficiency Exam.

MUSI 3303. COUNTERPOINT. 3 Hours.

Overview of modal counterpoint; detailed study of harmonic counterpoint including canon, invention, and fugue. Prerequisite: C or better in MUSI 2326 and a passing grade on the Music Theory Proficiency Exam.

MUSI 3305. MUSIC FOR CHILDREN. 3 Hours.

A study of musical activities and the role of music in childhood. Includes music fundamentals, folk song literature, and musical characteristics of children. Cannot be counted toward a Bachelor of Music Degree.

MUSI 3308. INSTRUMENTAL CONDUCTING I. 3 Hours.

A practical study of basic instrumental conducting and score reading techniques. Open to music majors only. Prerequisites: C or better in MUSI 2186, MUSI 2326 and successful completion of the second semester lessons or above.

MUSI 3309. CHORAL CONDUCTING I. 3 Hours.

A practical study of the technical and expressive skills required of choral conductors, as well as the development of score study techniques and error detection skills necessary to successfully conduct choral ensembles. Open to music majors only. Prerequisites: C or better in MUSI 2186, MUSI 2326 and successful completion of the Sophomore Proficiency Exam.

MUSI 3316. STRATEGIES AND ASSESSMENT IN MUSIC EDUCATION. 3 Hours.

Open to music education majors only. Current trends in music education will be examined. Topics include effective differentiated instruction, positive classroom management, strategies for working with diverse learners, and examination of major learning theories and principles of cognitive, social, emotional, physical and aesthetic development. This course will also examine a variety of assessment techniques that are used in a music classroom. Assessment tools such as rubrics, rating scales, National Standards, TEKS, STAAR, and TExES will be examined and implemented into lesson planning. Prerequisite: C or better in MUSI 2112.

MUSI 3317. SINGING FOR THE ACTOR. 3 Hours.

An applied study of the vocal apparatus, vocal placement, the voice/body relationship, character, working with text, phrasing, and auditioning as they relate to singing in musical theatre for the Broadway or West End theatre. Emphasis is placed on integrating singing and acting skills. Prerequisites: THEA 1307, THEA 2352 and permission of faculty. Same as offering THEA 3317; may not be repeated and credit will only be granted in one department.

MUSI 3320. MUSIC AND TECHNOLOGY IN GAME AUDIO. 3 Hours.

Explores basics of music and audio for computer games, including composition, workflow, working with animation, and dialog/non-music sound. May be repeated for credit as topics change. Prerequisite: C or better in MUSI 3394 or permission of instructor.

MUSI 3321. KEYBOARD SYNTHESIZER PROGRAMMING AND TECHNIQUES. 3 Hours.

Explores the framework, process, and implementation of electronic music synthesis in composition and performance idioms. Topics covered are electronic sound design, hardware and soft synths.

MUSI 3322. INTRODUCTION TO SONGWRITING. 3 Hours.

Open to music majors only. Addresses strategies, techniques, and the craft of composing popular song. Prerequisite: MUSI 3126 or MUSI 1326.

MUSI 3323. BUSINESS OF MUSIC. 3 Hours.

A study of the structure of the music business and relationships among occupations in the industry. Topics include publishing, copyright licensing, artist management, the record industry, music in film and broadcasting, and career development and planning.

MUSI 3326. POST-TONAL ANALYSIS. 3 Hours.

Study of pitch, harmony, rhythm, & form in music from Debussy to the present. Prerequisite: C or better in MUSI 2186 and MUSI 2326 and passing grade on the Music Theory Proficiency Exam.

MUSI 3350. PRIVATE LESSONS IN VOICE. 3 Hours.

Courses meet the requirements of performance majors in voice. Performance of a junior (half) recital must be completed prior to the end of the 3351 semester. Prerequisite: C or better in MUSI 2241 and passing grade on Sophomore Proficiency exam.

MUSI 3351. PRIVATE LESSONS IN VOICE. 3 Hours.

Courses meet the requirements of performance majors in voice. Performance of a junior (half) recital must be completed prior to the end of the 3351 semester. Prerequisite: C or better in MUSI 3350.

MUSI 3352. PRIVATE LESSONS IN PIANO. 3 Hours.

Courses meet the requirements of performance majors in piano. Performance of a junior (half) recital is the minimum requirement for completion of this course. Prerequisite: C or better in MUSI 2243 and passing grade on Sophomore Proficiency exam.

MUSI 3353. PRIVATE LESSONS IN PIANO. 3 Hours.

Courses meet the requirements of performance majors in piano. Performance of a junior (half) recital must be completed prior to the end of the 3353 semester. Prerequisite: C or better in MUSI 3352.

MUSI 3354. PRIVATE LESSONS IN STRINGS. 3 Hours.

These courses meet the requirements of performance majors in strings. Performance of a junior (half) recital must be completed prior to the end of the 3355 semester. Prerequisite: C or better in MUSI 2245 and passing grade on Sophomore Proficiency exam.

MUSI 3355. PRIVATE LESSONS IN STRINGS. 3 Hours.

These courses meet the requirements of performance majors in strings. Performance of a junior (half) recital is required prior to the end of the 3355 semester. Prerequisite: C or better in MUSI 3354.

MUSI 3356. PRIVATE LESSONS IN WOODWINDS. 3 Hours.

Courses meet the requirements of performance majors in woodwinds. Performance of a junior (half) recital must be completed prior to the end of the 3357 semester. Prerequisite: C or better in MUSI 2247 and passing grade on Sophomore Proficiency Exam.

MUSI 3357. PRIVATE LESSONS IN WOODWINDS. 3 Hours.

Courses meet the requirements of performance majors in woodwinds. Performance of a junior (half) recital must be completed prior to the end of the 3357 semester. Prerequisite: C or better in MUSI 3356.

MUSI 3358. PRIVATE LESSONS IN BRASS. 3 Hours.

Courses meet the requirements of performance majors in brass. Performance of a junior (half) recital must be completed prior to the end of the 3359 semester. Prerequisite: C or better in MUSI 2249 and passing grade on Sophomore Proficiency exam.

MUSI 3359. PRIVATE LESSONS IN BRASS. 3 Hours.

Courses meet the requirements of performance majors in brass. Performance of a junior (half) recital must be completed prior to the end of the 3359 semester. Prerequisite: C or better in MUSI 3358.

MUSI 3360. PRIVATE LESSONS IN PERCUSSION. 3 Hours.

Courses meet the requirements of performance majors in percussion. Performance of a junior (half) recital must be completed prior to the end of the 3361 semester. Prerequisite: C or better in MUSI 2251 and passing grade on Sophomore Proficiency exam.

MUSI 3361. PRIVATE LESSONS IN PERCUSSION. 3 Hours.

Courses meet the requirements of performance majors in percussion. Performance of a junior (half) recital must be completed prior to the end of the 3361 semester. Prerequisite: C or better in MUSI 3360.

MUSI 3367. PRIVATE LESSONS IN ORGAN. 3 Hours.

Courses meet the requirements of performance majors in organ. Performance of a junior (half) recital must be completed prior to the end of the 3368 semester. Prerequisite: C or better in MUSI 2258 and passing grade on Sophomore Proficiency Exam.

MUSI 3368. PRIVATE LESSONS IN ORGAN. 3 Hours.

Courses meet the requirements of performance majors in organ. Performance of a junior (half) recital must be completed prior to the end of the 3368 semester. Prerequisite: C or better in MUSI 3367.

MUSI 3377. PRIVATE LESSONS IN HARPSICHORD. 3 Hours.

Courses meet the requirements of performance majors in harpsichord. Performance of a junior (half) recital must be completed prior to the end of the 3378 semester. Prerequisite: C or better in MUSI 2268.

MUSI 3378. PRIVATE LESSONS IN HARPSICHORD. 3 Hours.

Courses meet the requirements of performance majors in harpsichord. Performance of a junior (half) recital must be completed prior to the end of the 3378 semester. Prerequisite: C or better in MUSI 3377.

MUSI 3390. SCHENKERIAN ANALYSIS. 3 Hours.

An introduction to the methods of Schenkerian analysis and harmonic reduction. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory. Prerequisite: C or better in MUSI 2186, MUSI 2326, and a passing grade on the Music Theory Proficiency Exam.

MUSI 3391. ADVANCED SONATA THEORY. 3 Hours.

An in-depth examination of sonata form drawing on the concepts of Caplin's formal functions and Hepokoski and Darcy's sonata theory, including intensive writing and analysis assignments. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory. Prerequisite: C or better in MUSI 2186 and MUSI 2326 and passing grade on the Music Theory Proficiency Exam.

MUSI 3392. COMPOSITION I. 3 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: B or better in MUSI 2227, MUSI 2325, MUSI 2326, and MUSI 2186 and a passing grade on the Music Theory Proficiency Exam.

MUSI 3393. COMPOSITION II. 3 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 3392.

MUSI 3394. DIGITAL MUSIC TECHNOLOGY. 3 Hours.

An introduction to the computer and to its use in the field of music. Topics include basic computer operation, information-management software, computer-assisted instruction in music, and music notation and sequencing software, MIDI (Musical Instrument Digital Interface).

MUSI 3395. JAZZ COMPOSITION. 3 Hours.

An introduction to jazz composition, focusing on no more than four distinct melodic voices plus rhythm section. Functional and non-functional harmonic and melodic techniques are explored. Prerequisite: C or better in MUSI 3226 or permission of instructor and successful completion of the Jazz Proficiency Exam.

MUSI 3396. RECORD LABEL AND STUDIO MANAGEMENT. 3 Hours.

Practical experience in the business of running a recording studio and recording label. Topics may include, but are not limited to, website management, marketing, physical and digital distribution models, streaming services, equipment maintenance and inventory, facility supervision, and basic arts accounting practices. Prerequisite: Permission of instructor required.

MUSI 4101. GERMAN AND ENGLISH DICTION. 1 Hour.

A guide to correct pronunciation of German and English in vocal music.

MUSI 4102. VOCAL LITERATURE. 1 Hour.

Survey of major solo vocal works from the Classical Era to the present. Prerequisite: C or better in MUSI 2241 or permission of instructor.

MUSI 4111. ORCHESTRAL EXCERPTS. 1 Hour.

Study of orchestral excerpts for individual instruments. Topics will vary by semester. May be repeated for credit. Permission of instructor required.

MUSI 4117. MUSIC EDUCATION FIELD-BASED EXPERIENCE. 1 Hour.

Supervised and directed professional practice in local schools. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. Field-based experience must be taken the semester immediately preceding student teaching residency.

MUSI 4128. ADVANCED AUDIO RECORDING. 1 Hour.

Further study and practical studio work for students who have successfully completed the required recording techniques sequence utilizing Studio 301 in an independent study format. Prerequisite: C or better in MUSI 4326.

MUSI 4129. RECORDING ENSEMBLE. 1 Hour.

This course is open to Music Industry Studies students. This ensemble provides practical and artistic experience in a frequently encountered recording studio setting. Prerequisite: C or better in MUSI 4390 and Approval of the ensemble director.

MUSI 4140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4140 and THEA 4140; credit will be granted only in one department. Prerequisite: C or better in MUSI 3141 or THEA 3141. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 4141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4141 and THEA 4141; credit will be granted only in one department. Prerequisite: C or better in MUSI 4140 or THEA 4140. Open to Musical Theatre majors only or by permission of the Department Chair.

MUSI 4188. ADVANCED CONDUCTING. 1 Hour.

Open to music majors only. An intensive study of conducting that will include score-study techniques, left and right hand independence, video analysis, rehearsal observation, and other topics related to the art of conducting. Can fulfill one of the 3 elective hours for Performance majors. Prerequisite: MUSI 3308 or MUSI 3309, and permission of instructor.

MUSI 4191. CONFERENCE COURSE. 1 Hour.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Consent of the instructor or chair of the department.

MUSI 4205. ADVANCED FUNCTIONAL PIANO. 2 Hours.

Concentrated study of keyboard skills which include: sightreading, transposition, harmonization, and open score reading. Prerequisite: C or better in MUSI 2181 or faculty approval.

MUSI 4211. ELEMENTARY MUSIC. 2 Hours.

Focus on perception as it relates to children's development and participation in music through singing and playing instruments. Prerequisite: C or better in MUSI 3211.

MUSI 4213. INSTRUMENTAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for intermediate and advanced instrumental ensembles. Prerequisite: C or better in MUSI 3213 or faculty approval.

MUSI 4214. CHORAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for intermediate and advanced choral ensembles. Prerequisite: C or better in MUSI 3214 or faculty approval.

MUSI 4225. JAZZ IMPROVISATION III - ADVANCED. 2 Hours.

A continuation of Jazz Improvisation II. This course explores advanced techniques of contemporary jazz solo performance. Prerequisite: C or better in MUSI 3226 and successful completion of the Jazz Proficiency Exam.

MUSI 4236. PRIVATE LESSONS IN JAZZ GUITAR. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz guitar. Prerequisite: C or better in MUSI 3237.

MUSI 4238. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is jazz drumset. Prerequisite: C or better in MUSI 3259.

MUSI 4240. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3241.

MUSI 4241. PRIVATE LESSONS IN VOICE. 2 Hours.

This sequence of courses is required of music majors whose concentration is voice. Prerequisite: C or better in MUSI 4240.

MUSI 4242. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3243.

MUSI 4243. PRIVATE LESSONS IN PIANO. 2 Hours.

This sequence of courses is required of music majors whose concentration is piano. Prerequisite: C or better in MUSI 4242.

MUSI 4244. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3245.

MUSI 4245. PRIVATE LESSONS IN STRINGS. 2 Hours.

This sequence of courses meets the requirements of music majors whose concentration is strings. Prerequisite: C or better in MUSI 4244.

MUSI 4246. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3247.

MUSI 4247. PRIVATE LESSONS IN WOODWINDS. 2 Hours.

This sequence of courses is required of music majors whose concentration is woodwinds. Prerequisite: C or better in MUSI 4246.

MUSI 4248. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3249.

MUSI 4249. PRIVATE LESSONS IN BRASS. 2 Hours.

This sequence of courses is required of music majors whose concentration is brass. Prerequisite: C or better in MUSI 4248.

MUSI 4250. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3251.

MUSI 4251. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This sequence of courses is required of music majors whose concentration is percussion. Prerequisite: C or better in MUSI 4250.

MUSI 4252. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3253.

MUSI 4253. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This sequence of courses meets the requirements of jazz studies majors whose concentration is jazz bass. Prerequisite: C or better in MUSI 4252.

MUSI 4254. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This sequence of courses is required of and limited to music majors with jazz option for whom the principal instrument is piano. Prerequisite: C or better in MUSI 3255.

MUSI 4257. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3258.

MUSI 4258. PRIVATE LESSONS IN ORGAN. 2 Hours.

This sequence of courses is required of music majors whose concentration is organ. Prerequisite: C or better in MUSI 4257.

MUSI 4267. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Performance of a senior (half) recital is required for completion of this course for all students in the concentration Bachelor of Music in Preparation for Teacher Certification. Prerequisite: C or better in MUSI 3268.

MUSI 4268. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This sequence is required of music majors whose concentration is harpsichord. Prerequisite: C or better in MUSI 4267.

MUSI 4280. SPECIAL TOPICS IN MUSIC. 2 Hours.

Special studies in music. Topics will vary from semester to semester. May be repeated for credit when topics vary.

MUSI 4291. CONFERENCE COURSE. 2 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Consent of the instructor or chair of the department.

MUSI 4300. JAZZ PERSPECTIVES. 3 Hours.

An in-depth study of the history, literature, and styles of the jazz idiom. Open to music majors only. Prerequisite: Successful completion of the Jazz Proficiency Exam.

MUSI 4301. ORCHESTRATION. 3 Hours.

Scoring for strings, woodwinds, brass, percussion, and voice as related to orchestra, band, and choir. Prerequisite: C or better in MUSI 2186, MUSI 2326 and a passing grade on the Music Theory Proficiency Exam.

MUSI 4302. JAZZ ARRANGING. 3 Hours.

Arranging in the jazz and commercial idioms with emphasis on the large jazz ensemble. Prerequisite: C or better in MUSI 3125, MUSI 3225, and MUSI 3395, or consent of the instructor, and successful completion of the Jazz Proficiency Exam.

MUSI 4303. ADVANCED STRING CLASS. 3 Hours.

Open to music majors only. An advanced study of orchestral string instruments with emphasis on advanced technique and pedagogy. Prerequisite: C or better in MUSI 3191.

MUSI 4305. HISTORY OF MUSIC THEORY. 3 Hours.

Theorists and theoretical tracts from the ancient Greeks to the present day. Prerequisite: C or better in MUSI 2186, MUSI 2326, and a passing grade on the Music Theory Proficiency exam.

MUSI 4308. INSTRUMENTAL CONDUCTING II. 3 Hours.

Open to music majors only. A study of advanced conducting techniques, including score reading, rehearsal techniques, ensemble concepts, articulations and musical style. Prerequisite: C or better in MUSI 3308.

MUSI 4309. CHORAL CONDUCTING II. 3 Hours.

Open to music majors only. Application of the technical and expressive aspects of choral conducting, score study techniques, error detection skills, and rehearsal planning and implementation techniques in a laboratory-conducting situation. Offered every spring odd year. Prerequisite: C or better in MUSI 3309.

MUSI 4324. HISTORY OF MUSICAL THEATRE. 3 Hours.

A historical survey of American theatre music from the colonial period to the present. Open to all students as a fine arts elective.

MUSI 4325. RECORDING TECHNIQUES II. 3 Hours.

Students will continue to learn recording engineering through audio analysis, recording practice, and audio theory. Signal processing, analog tape techniques, mastering, and studio business will be discussed. Students will work independently on jazz and pop/rock recording projects in Studio 301. Prerequisite: C or better in MUSI 4390.

MUSI 4326. RECORDING TECHNIQUES III. 3 Hours.

This course builds upon the previous two courses by introducing students to more advanced aspects of audio engineering, such as combining MIDI and audio, syncing audio to video, advanced aural skills, and mixing automation. Students will be able to utilize Studio 301 and Irons Hall in order to pursue their recording work in a more independent fashion. Prerequisite: C or better in MUSI 4325.

MUSI 4327. TECHNIQUES AND TECHNOLOGY IN FILM COMPOSITION. 3 Hours.

Study in the technical and artistic requirements of film composition and the realization of film scores. Prerequisite: C or better in MUSI 3394.

MUSI 4328. ELECTRONIC MUSIC COMPOSITION AND PERFORMANCE. 3 Hours.

An exploration of strategies for composing electronic music that apply to a broad range of contemporary styles and genres. Through a series of guided exercises and projects, the class provides an opportunity for students to explore compositional approaches using electronic instruments and digital audio technologies. Prerequisite: C or better in MUSI 4325.

MUSI 4329. SOUND FOR NEW MEDIA. 3 Hours.

Explores the techniques and application of audio integration within media-centered environments, focusing on live broadcast audio applications over internet and other mediums for broadcast. Prerequisite: C or better in MUSI 4325.

MUSI 4349. FORMAL-FUNCTION THEORY. 3 Hours.

Introduction to William Caplin's Formal-Function Theory, including mastery of formal functions, harmonic progressions, the principal theme types, and full-movement forms. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory. Prerequisites: C or better in MUSI 2186, MUSI 2326, and a passing grade on the Music Theory Proficiency exam.

MUSI 4350. 20TH CENTURY FORM & TECHNIQUE. 3 Hours.

Introduction to twentieth-century form and techniques, as well as relevant analytical methods and compositional strategies. Seminar designed to meet the needs of students desiring to become theorists or teacher of theory. This course formerly MUSI 4490. Prerequisite: C or better in MUSI 2186 and MUSI 2326 and passing grade on the Music Theory Proficiency Exam.

MUSI 4351. MUSIC THEORY CAPSTONE/SEMINAR. 3 Hours.

Seminar designed to meet the needs of students desiring to become theorists or teachers of theory; includes preparation and presentation of a senior research project in music theory in a conference setting. This course formerly MUSI 4491. Prerequisite: Grade of C or better in MUSI 4390 (formerly MUSI 4490).

MUSI 4387. ANALYSIS OF POPULAR MUSIC. 3 Hours.

This course will explore form, melody, harmony, and voice-leading in a variety of popular styles since the early 20th century. Prerequisite: C or better in MUSI 2326 and a passing grade on the Theory Proficiency exam.

MUSI 4390. RECORDING TECHNIQUES I. 3 Hours.

Live performance and studio recording techniques. Topics include microphone selection and placement, equalization techniques, overdubbing, console-mixing, sound synchronization, and related recording techniques. Prerequisite: C or better in MUSI 3394.

MUSI 4391. CONFERENCE COURSE. 3 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Consent of the instructor or chair of the department.

MUSI 4392. JAZZ STUDIES SENIOR RECITAL/PROJECT. 3 Hours.

Senior recital or project for jazz studies majors. Designed in consultation with the Director of Jazz Studies. Prerequisites: completion of performance lesson requirements; consent of instructor or music department chair.

MUSI 4393. CAPSTONE IN MUSIC THEORY. 3 Hours.

Senior project in music theory, culminating in a professional presentation on a selected topic in music theory. Prerequisite: MUSI 4490.

MUSI 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

MUSI 4395. INTERNSHIP. 3 Hours.

The Internship course is designed to give students practical experience in a variety of music media and music business settings. The student must work with a local business for at least ten hours per week (140 hours total).

MUSI 4450. PRIVATE LESSONS IN VOICE. 4 Hours.

These courses meet the requirements of performance majors in voice. Performance of a senior (full) recital must be completed prior to the end of the 4451 semester. Prerequisite: C or better in MUSI 3351.

MUSI 4451. PRIVATE LESSONS IN VOICE. 4 Hours.

These courses meet the requirements of performance majors in voice. Performance of a senior (full) recital must be completed prior to the end of the 4451 semester. Prerequisite: C or better in MUSI 4450.

MUSI 4452. PRIVATE LESSONS IN PIANO. 4 Hours.

These courses meet the requirements of performance majors in piano. Performance of a senior (full) recital must be completed prior to the end of the 4453 semester. Prerequisite: C or better in MUSI 3353.

MUSI 4453. PRIVATE LESSONS IN PIANO. 4 Hours.

These courses meet the requirements of performance majors in piano. Performance of a senior (full) recital must be completed prior to the end of the 4453 semester. Prerequisite: C or better in MUSI 4452.

MUSI 4454. PRIVATE LESSONS IN STRINGS. 4 Hours.

These courses meet the requirements of performance majors in strings. Performance of a senior (full) recital must be completed prior to the end of the 4455 semester. Prerequisite: C or better in MUSI 3355.

MUSI 4455. PRIVATE LESSONS IN STRINGS. 4 Hours.

These courses meet the requirements of performance majors in strings. Performance of a senior (full) recital must be completed prior to the end of the 4455 semester. Prerequisite: C or better in MUSI 4454.

MUSI 4456. PRIVATE LESSONS IN WOODWINDS. 4 Hours.

These courses meet the requirements of performance majors in woodwinds. Performance of a senior (full) recital must be completed prior to the end of the 4457 semester. Prerequisite: C or better in MUSI 3357.

MUSI 4457. PRIVATE LESSONS IN WOODWINDS. 4 Hours.

These courses meet the requirements of performance majors in woodwinds. Performance of a senior (full) recital must be completed prior to the end of the 4457 semester. Prerequisite: C or better in MUSI 4456.

MUSI 4458. PRIVATE LESSONS IN BRASS. 4 Hours.

These courses meet the requirements of performance majors in brass. Performance of a senior (full) recital must be completed prior to the end of the 4459 semester. Prerequisite: C or better in MUSI 3359.

MUSI 4459. PRIVATE LESSONS IN BRASS. 4 Hours.

These courses meet the requirements of performance majors in brass. Performance of a senior (full) recital must be completed prior to the end of the 4459 semester. Prerequisite: C or better in MUSI 4458.

MUSI 4460. PRIVATE LESSONS IN PERCUSSION. 4 Hours.

These courses meet the requirements of performance majors in percussion. Performance of a senior (full) recital must be completed prior to the end of the 4461 semester. Prerequisite: C or better in MUSI 3361.

MUSI 4461. PRIVATE LESSONS IN PERCUSSION. 4 Hours.

These courses meet the requirements of performance majors in percussion. Performance of a senior (full) recital must be completed prior to the end of the 4461 semester. Prerequisite: C or better in MUSI 4460.

MUSI 4467. PRIVATE LESSONS IN ORGAN. 4 Hours.

These courses meet the requirements of performance majors in organ. Performance of a senior (full) recital must be completed prior to the end of the 4468 semester. Prerequisite: C or better in MUSI 3368.

MUSI 4468. PRIVATE LESSONS IN ORGAN. 4 Hours.

These courses meet the requirements of performance majors in organ. Performance of a senior (full) recital must be completed prior to the end of the 4468 semester. Prerequisite: C or better in MUSI 4467.

MUSI 4477. PRIVATE LESSONS IN HARPSICHORD. 4 Hours.

This course meets the requirements of performance majors in harpsichord. Performance of a senior (full) recital must be completed prior to the end of the 4478. Prerequisite: C or better in MUSI 3378.

MUSI 4478. PRIVATE LESSONS IN HARPSICHORD. 4 Hours.

These courses meet the requirements of performance majors in harpsichord. Performance of a senior (full) recital must be completed prior to the end of the 4478 semester. Prerequisite: C or better in MUSI 4477.

MUSI 4492. COMPOSITION III. 4 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 3393.

MUSI 4493. COMPOSITION IV. 4 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition. Prerequisite: C or better in MUSI 4492.

MUSI 5000. WIND SYMPHONY. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5001. SYMPHONIC WINDS. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5002. A CAPPELLA CHOIR. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5004. UNIVERSITY SINGERS. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5005. MUSICAL THEATRE/OPERA LAB. 0 Hours.

Exploration of opera roles, staging techniques, and repertoire. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5007. JAZZ ORCHESTRA. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5008. JAZZ ENSEMBLE. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5010. STUDIO CLASS. 0 Hours.

Departmental performance classes, master classes, guest artist performances and lectures related to performance specializations. Students enroll concurrently with private lesson in specialization.

MUSI 5011. ORCHESTRA. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5012. CHAMBER MUSIC. 0 Hours.

This course is an in-depth study of the repertoire of standard chamber ensembles such as string quartets and piano trios, woodwind quintets and brass quintets. Weekly coaching with professors culminates in a public performance where students demonstrate skills in music performance. Prerequisite: Approval of Ensemble Director and Graduate Advisor.

MUSI 5022. JAZZ COMBO. 0 Hours.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director and the graduate advisor.

MUSI 5100. WIND SYMPHONY. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5101. SYMPHONIC WINDS. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5102. A CAPPELLA CHOIR. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5103. CHAMBER SINGERS. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5104. UNIVERSITY SINGERS. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5106. KEYBOARD ENSEMBLE. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5107. JAZZ ORCHESTRA. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5108. JAZZ ENSEMBLE. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5109. VOCAL JAZZ. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5110. JAZZ COMBO. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5111. ORCHESTRA. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5112. CHAMBER MUSIC. 1 Hour.

This course is an in-depth study of the repertoire of standard chamber ensembles such as string quartets and piano trios, woodwind quintets and brass quintets. Weekly coaching with professors culminates in a public performance where students demonstrate skills in music performance. Prerequisite: Approval of Ensemble Director.

MUSI 5113. ORCHESTRAL EXCERPTS. 1 Hour.

Study of orchestral excerpts for individual instruments. Topics will vary by semester. May be repeated for credit. Permission of instructor required.

MUSI 5114. SAX CHOIR. 1 Hour.

The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Permission of Instructor.

MUSI 5115. VOCAL COACHING. 1 Hour.

Advanced instruction in diction, interpretation, and style for singers and collaborative instrumentalists. By permission of instructor.

MUSI 5116. ELECTRIC GUITAR ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5117. MUSIC EDUCATION FIELD-BASED EXPERIENCE. 1 Hour.

Supervised and directed professional practice in local schools. The student will be assigned to a public school site for five hours per week. Weekly seminars are required. This course must be taken the semester immediately preceding clinical student teaching.

MUSI 5120. PRIVATE LESSONS IN VOICE. 1 Hour.

This course provides private instruction in voice. This course may be repeated for credit as often as course content changes.

MUSI 5121. PRIVATE LESSONS IN PIANO. 1 Hour.

This course provides private instruction in piano. This course may be repeated for credit as often as course content changes.

MUSI 5122. PRIVATE LESSONS IN ORGAN. 1 Hour.

This course provides private instruction in organ. This course may be repeated for credit as often as course content changes.

MUSI 5123. PRIVATE LESSONS IN HARPSICHORD. 1 Hour.

This course provides private instruction in harpsichord. This course may be repeated for credit as often as course content changes.

MUSI 5124. PRIVATE LESSONS IN JAZZ PIANO. 1 Hour.

This course provides private instruction in jazz piano. This course may be repeated for credit as often as course content changes.

MUSI 5125. PRIVATE LESSONS IN VIOLIN. 1 Hour.

This course provides private instruction in violin. This course may be repeated for credit as often as course content changes.

MUSI 5126. PRIVATE LESSONS IN VIOLA. 1 Hour.

This course provides private instruction in violin. This course may be repeated for credit as often as course content changes.

MUSI 5127. PRIVATE LESSONS IN CELLO. 1 Hour.

This course provides private instruction in cello. This course may be repeated for credit as often as course content changes.

MUSI 5128. PRIVATE LESSONS IN BASS. 1 Hour.

This course provides private instruction in bass. This course may be repeated for credit as often as course content changes.

MUSI 5129. PRIVATE LESSONS IN JAZZ BASS. 1 Hour.

This course provides private instruction in jazz bass. This course may be repeated for credit as often as course content changes.

MUSI 5130. PRIVATE LESSONS IN GUITAR. 1 Hour.

This course provides private instruction in guitar. This course may be repeated for credit as often as course content changes.

MUSI 5131. PRIVATE LESSONS IN CLARINET. 1 Hour.

This course provides private instruction in clarinet. This course may be repeated for credit as often as course content changes.

MUSI 5132. PRIVATE LESSONS IN OBOE. 1 Hour.

This course provides private instruction in oboe. This course may be repeated for credit as often as course content changes.

MUSI 5133. PRIVATE LESSONS IN FLUTE. 1 Hour.

This course provides private instruction in flute. This course may be repeated for credit as often as course content changes.

MUSI 5134. PRIVATE LESSONS IN SAXOPHONE. 1 Hour.

This course provides private instruction in saxophone. This course may be repeated for credit as often as course content changes.

MUSI 5135. PRIVATE LESSONS IN BASSOON. 1 Hour.

This course provides private instruction in bassoon. This course may be repeated for credit as often as course content changes.

MUSI 5136. PRIVATE LESSONS IN TRUMPET. 1 Hour.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5137. PRIVATE LESSONS IN FRENCH HORN. 1 Hour.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5138. PRIVATE LESSONS IN TROMBONE. 1 Hour.

This course provides private instruction in trombone. This course may be repeated for credit as often as course content changes.

MUSI 5139. PRIVATE LESSONS IN TUBA. 1 Hour.

This course provides private instruction in tuba. This course may be repeated for credit as often as course content changes.

MUSI 5140. PRIVATE LESSONS IN EUPHONIUM. 1 Hour.

This course provides private instruction in euphonium. This course may be repeated for credit as often as course content changes.

MUSI 5145. PRIVATE LESSONS IN JAZZ DRUMSET. 1 Hour.

This course provides private instruction in jazz drumset. This course may be repeated for credit as often as course content changes.

MUSI 5150. PEDAGOGY IN MUSIC THEORY. 1 Hour.

Survey of materials and methods for teaching music theory at the undergraduate level. Observation of teaching methods and supervision of undergraduate teaching.

MUSI 5160. FLUTE CHOIR. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5161. WOODWIND ENSEMBLE. 1 Hour.

The music major must receive credit for the ensembles required in his/her option. The schedule of classes indicates which ensembles are offered each semester. Prerequisite: Approval of the ensemble director.

MUSI 5171. ELECTIVE PERFORMANCE. 1 Hour.

For students who desire elective private instruction in string, woodwinds, brass, keyboard, voice, or percussion.

MUSI 5188. ADVANCED CONDUCTING. 1 Hour.

Open to music majors only. An intensive study of conducting that will include score-study techniques, left and right hand independence, video analysis, rehearsal observation, and other topics related to the art of conducting. Permission of instructor required. Prerequisite: Permission of instructor.

MUSI 5190. KEYBOARD ACCOMPANIMENT. 1 Hour.

This course entails the student accompanying performances as specified and supervised by the instructor.

MUSI 5191. CONFERENCE COURSE IN MUSIC. 1 Hour.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: permission of instructor and Graduate Advisor.

MUSI 5205. MUSIC THEATRE/OPERA LAB. 2 Hours.

Exploration of opera roles, staging techniques, and repertoire. Prerequisite: Approval of the ensemble director.

MUSI 5211. EARLY CHILDHOOD MUSIC. 2 Hours.

Musical characteristics of children, folksong and composed literature, performance activities, song analysis, and techniques for reading and writing music.

MUSI 5212. ELEMENTARY MUSIC. 2 Hours.

Focus on perception as it relates to children's development and participation in music through singing and playing instruments.

MUSI 5213. CHORAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for beginning and intermediate choral ensembles.

MUSI 5214. CHORAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, vocal production, and performance practices for intermediate and advanced choral ensembles.

MUSI 5215. INSTRUMENTAL MATERIALS AND TECHNIQUES I. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for beginning and intermediate instrumental ensembles.

MUSI 5216. INSTRUMENTAL MATERIALS AND TECHNIQUES II. 2 Hours.

A study of literature, music selection, rehearsal planning, sound production, and performance practices for intermediate and advanced instrumental ensembles.

MUSI 5220. PRIVATE LESSONS IN VOICE. 2 Hours.

This course provides private instruction in voice. This course may be repeated for credit as often as course content changes.

MUSI 5221. PRIVATE LESSONS IN PIANO. 2 Hours.

This course provides private instruction in piano. This course may be repeated for credit as often as course content changes.

MUSI 5222. PRIVATE LESSONS IN ORGAN. 2 Hours.

This course provides private instruction in organ. This course may be repeated for credit as often as course content changes.

MUSI 5223. PRIVATE LESSONS IN HARPSICHORD. 2 Hours.

This course provides private instruction in harpsichord. This course may be repeated for credit as often as course content changes.

MUSI 5224. PRIVATE LESSONS IN JAZZ PIANO. 2 Hours.

This course provides private instruction in jazz piano. This course may be repeated for credit as often as course content changes.

MUSI 5225. PRIVATE LESSONS IN VIOLIN. 2 Hours.

This course provides private instruction in violin. This course may be repeated for credit as often as course content changes.

MUSI 5226. PRIVATE LESSONS IN VIOLA. 2 Hours.

This course provides private instruction in viola. This course may be repeated for credit as often as course content changes.

MUSI 5227. PRIVATE LESSONS IN CELLO. 2 Hours.

This course provides private instruction in cello. This course may be repeated for credit as often as course content changes.

MUSI 5228. PRIVATE LESSONS IN BASS. 2 Hours.

This course provides private instruction in bass. This course may be repeated for credit as often as course content changes.

MUSI 5229. PRIVATE LESSONS IN JAZZ BASS. 2 Hours.

This course provides private instruction in jazz bass. This course may be repeated for credit as often as content changes.

MUSI 5230. PRIVATE LESSONS IN GUITAR. 2 Hours.

This course provides private instruction in guitar. This course may be repeated for credit as often as course content changes.

MUSI 5231. PRIVATE LESSONS IN CLARINET. 2 Hours.

This course provides private instruction in clarinet. This course may be repeated for credit as often as course content changes.

MUSI 5232. PRIVATE LESSONS IN OBOE. 2 Hours.

This course provides private instruction in oboe. This course may be repeated for credit as often as course content changes.

MUSI 5233. PRIVATE LESSONS IN FLUTE. 2 Hours.

This course provides private instruction in flute. This course may be repeated for credit as often as course content changes.

MUSI 5234. PRIVATE LESSONS IN SAXOPHONE. 2 Hours.

This course provides private instruction in saxophone. This course may be repeated for credit as often as course content changes.

MUSI 5235. PRIVATE LESSONS IN BASSOON. 2 Hours.

This course provides private instruction in bassoon. This course may be repeated for credit as often as course content changes.

MUSI 5236. PRIVATE LESSONS IN TRUMPET. 2 Hours.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5237. PRIVATE LESSONS IN FRENCH HORN. 2 Hours.

This course provides private instruction in French Horn. This course may be repeated for credit as often as course content change.

MUSI 5238. PRIVATE LESSONS IN TROMBONE. 2 Hours.

This course provides private instruction in trombone. This course may be repeated for credit as often as course content changes.

MUSI 5239. PRIVATE LESSONS IN TUBA. 2 Hours.

This course provides private instruction in tuba. This course may be repeated for credit as often as course content changes.

MUSI 5240. PRIVATE LESSONS IN EUPHONIUM. 2 Hours.

This course provides private instruction in euphonium. This course may be repeated for credit as often as course content changes.

MUSI 5241. PRIVATE LESSONS IN PERCUSSION. 2 Hours.

This course provides private instruction in percussion. This course may be repeated for credit as often as course content changes.

MUSI 5242. PRIVATE LESSONS IN IMPROVISATION. 2 Hours.

This course provides private instruction in improvisation. This course may be repeated for credit as often as course content changes.

MUSI 5245. PRIVATE LESSONS IN JAZZ DRUMSET. 2 Hours.

This course provides private instruction in jazz drumset. This course may be repeated for credit as often as course content changes.

MUSI 5271. ELECTIVE LESSONS. 2 Hours.

For students who desire elective private instruction in strings, woodwinds, brass, keyboard, voice, or percussion. May be repeated eight times for credit.

MUSI 5291. CONFERENCE COURSE IN MUSIC. 2 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: permission of instructor and Graduate Advisor.

MUSI 5301. FORM AND STYLE ANALYSIS. 3 Hours.

A survey of the forms and styles of Western art music employing relevant analytical techniques.

MUSI 5302. THEORY & COMPOSITION SPECIAL TOPICS. 3 Hours.

This course covers topics which vary from semester to semester, and includes in-depth study of selected topics in music theory. This course may be repeated for credit as often as the content changes. (Formerly MUSI 5330.).

MUSI 5303. ADVANCED COUNTERPOINT. 3 Hours.

Advanced work in specialized areas of counterpoint.

MUSI 5305. HISTORY OF MUSIC THEORY. 3 Hours.

Theorists and theoretical tracts from the ancient Greeks to the present day.

MUSI 5308. MUSIC HISTORY SELECTED TOPICS. 3 Hours.

This course will consist of an in-depth study of a particular genre, composer, or period. It may be repeated as the course content changes.

MUSI 5316. STRATEGIES AND ASSESSMENT IN MUSIC EDUCATION. 3 Hours.

Open to music education majors only. Current trends in music education will be examined. Topics include effective differentiated instruction, positive classroom management, strategies for working with diverse learners, and examination of major learning theories and principles of cognitive, social, emotional, physical and aesthetic development. This course will also examine a variety of assessment techniques that are used in a music classroom. Assessment tools such as rubrics, rating scales, National Standards, TEKS, STAAR, and TExES will be examined and implemented into lesson planning.

MUSI 5320. PRIVATE LESSONS IN VOICE. 3 Hours.

This course provides private instruction in voice. This course may be repeated for credit as often as course content changes.

MUSI 5321. PRIVATE LESSONS IN PIANO. 3 Hours.

This course provides private instruction in piano. This course may be repeated for credit as often as course content changes.

MUSI 5322. PRIVATE LESSONS IN ORGAN. 3 Hours.

This course provides private instruction in organ. This course may be repeated for credit as often as course content changes.

MUSI 5323. PRIVATE LESSONS IN HARPSICHORD. 3 Hours.

This course provides private instruction in harpsichord. This course may be repeated for credit as often as course content changes.

MUSI 5324. PRIVATE LESSONS IN JAZZ PIANO. 3 Hours.

This course provides private instruction in jazz piano. This course may be repeated for credit as often as course content changes.

MUSI 5325. PRIVATE LESSONS IN VIOLIN. 3 Hours.

This course provides private instruction in violin. This course may be repeated for credit as often as course content changes.

MUSI 5326. PRIVATE LESSONS IN VIOLA. 3 Hours.

This course provides private instruction in viola. This course may be repeated for credit as often as course content changes.

MUSI 5327. PRIVATE LESSONS IN CELLO. 3 Hours.

This course provides private instruction in cello. This course may be repeated for credit as often as course content changes.

MUSI 5328. PRIVATE LESSONS IN BASS. 3 Hours.

This course provides private instruction in bass. This course may be repeated for credit as often as course content changes.

MUSI 5329. PRIVATE LESSONS IN JAZZ BASS. 3 Hours.

This course provides private instruction in jazz bass. This course may be repeated for credit as often as course content changes.

MUSI 5332. PRIVATE LESSONS IN OBOE. 3 Hours.

This course provides private instruction in oboe. This course may be repeated for credit as often as course content changes.

MUSI 5333. PRIVATE LESSONS IN FLUTE. 3 Hours.

This course provides private instruction in flute. This course may be repeated for credit as often as course content changes.

MUSI 5334. PRIVATE LESSONS IN SAXOPHONE. 3 Hours.

This course provides private instruction in saxophone. This course may be repeated for credit as often as course content changes.

MUSI 5335. PRIVATE LESSONS IN BASSOON. 3 Hours.

This course provides private instruction in bassoon. This course may be repeated for credit as often as course content changes.

MUSI 5336. PRIVATE LESSONS IN TRUMPET. 3 Hours.

This course provides private instruction in trumpet. This course may be repeated for credit as often as course content changes.

MUSI 5337. PRIVATE LESSONS IN FRENCH HORN. 3 Hours.

This course provides private instruction in French Horn. This course may be repeated for credit as often as course content changes.

MUSI 5338. PRIVATE LESSONS IN TROMBONE. 3 Hours.

This course provides private instruction in trombone. This course may be repeated for credit as often as course content changes.

MUSI 5339. PRIVATE LESSONS IN TUBA. 3 Hours.

This course provides private instruction in tuba. This course may be repeated for credit as often as course content changes.

MUSI 5340. PRIVATE LESSONS IN EUPHONIUM. 3 Hours.

This course provides private instruction in euphonium. This course may be repeated for credit as often as course content changes.

MUSI 5341. PRIVATE LESSONS IN PERCUSSION. 3 Hours.

This course provides private instruction in percussion. This course may be repeated for credit as often as course content changes.

MUSI 5342. PRIVATE LESSONS IN IMPROVISATION. 3 Hours.

This course provides private instruction in improvisation. This course may be repeated for credit as often as course content changes.

MUSI 5343. PRIVATE LESSONS IN GUITAR. 3 Hours.

This course provides private instruction in guitar. This course may be repeated for credit as often as course content changes.

MUSI 5344. PRIVATE LESSONS IN CLARINET. 3 Hours.

This course provides private instruction in clarinet. This course may be repeated for credit as often as course content changes.

MUSI 5345. PRIVATE LESSONS IN JAZZ DRUMSET. 3 Hours.

This course provides private instruction in jazz drumset. This course may be repeated for credit as often as course content changes.

MUSI 5347. PRIVATE LESSONS IN COMPOSITION. 3 Hours.

Individual instruction designed to meet the needs of students desiring to become composers or teachers of composition.

MUSI 5348. PRIVATE LESSONS IN JAZZ COMPOSITION. 3 Hours.

This course provides private instruction in jazz composition and/or arranging. This course may be repeated for credit as often as course content changes.

MUSI 5349. FORMAL-FUNCTION THEORY. 3 Hours.

Introduction to William Caplin's Formal-Function Theory, including mastery of formal functions, harmonic progressions, the principal theme types, and full-movement forms.

MUSI 5350. SELECTED TOPICS IN MUSIC PEDAGOGY. 3 Hours.

This course covers topics which vary from semester to semester and includes studies of teaching techniques applied to pre-K, elementary grades, the junior high school, the high school, the junior college, and the college or university. This course may be repeated for credit as often as the content changes.

MUSI 5351. PHILOSOPHY, HISTORY, AND CURRICULAR TRENDS IN MUSIC EDUCATION. 3 Hours.

A study of philosophy and history of music education and how curricular trends provide the context for contemporary music education.

MUSI 5352. PSYCHOLOGICAL FOUNDATIONS OF MUSIC EDUCATION. 3 Hours.

A study of the psychological foundations of music education. An investigation of topics such as perception of and responses to music, the nature of musical attributes, music learning, and the measurement of musical behavior.

MUSI 5353. PROJECT IN MUSIC EDUCATION. 3 Hours.

For students enrolled in the non-thesis option. Offers the opportunity to complete a professional project in music education relevant to the student's background, interest, and/or needs. The project should include, but not necessarily be limited to, appropriate written documentation. May be repeated for credit, but not more than 3 hours will apply to the Master of Music degree. Enrollment is required each term in which the project is in progress.

MUSI 5354. SELECTED TOPICS IN MUSIC LITERATURE. 3 Hours.

This course covers topics which vary from semester to semester and includes studies in musical literature for the following: 1) Wind Band Literature; 2) Orchestral Literature; 3) Choral Literature; 4) World Music Literature; 5) Jazz Literature. This course may be repeated for credit as often as the content changes.

MUSI 5355. REHEARSAL TECHNIQUES. 3 Hours.

A study of rehearsal techniques, including tone development, phrasing, rehearsal score study, and rehearsal organization. Topics, which may vary by semester, are 1) Choral; 2) Instrumental; 3) Jazz. May be repeated for credit when topics vary. Topics may be taken concurrently.

MUSI 5356. ORCHESTRAL EXCERPTS. 3 Hours.

Study of orchestral excerpts for individual instruments. Topics will vary by semester. May be repeated for credit. Permission of instructor required.

MUSI 5357. CURRENT TRENDS IN MUSIC EDUCATION. 3 Hours.

Current trends, social foundations and issues in music education.

MUSI 5358. TEACHING MUSIC IN HIGHER EDUCATION. 3 Hours.

Components of successful teaching in higher education will be explored. Topics will include developing a syllabus, creating a vitae, and preparing a lecture.

MUSI 5359. ADVANCED DICTION FOR SINGERS. 3 Hours.

A study of performance diction for singers and the pronunciation of the language as it applies to public performance. Topics include English, French, Italian, and German. May be repeated for credit when topics vary.

MUSI 5360. ADVANCED TECHNOLOGY FOR MUSICIANS. 3 Hours.

Intensive and extensive student-centered study topics to be selected from MIDI sequencing, multimedia development, advanced music notation and digital sampling and synthesis.

MUSI 5361. EARLY CHILDHOOD MUSIC. 3 Hours.

Practical application in authentic early childhood experiences.

MUSI 5362. INTRODUCTION TO RESEARCH IN MUSIC. 3 Hours.

An introduction to the methods and materials of research in music, including instruction on appropriate style formats for papers and theses.

MUSI 5363. RESEARCH IN MUSIC EDUCATION. 3 Hours.

An introduction to historical, philosophical, descriptive, and experimental research in music education and present research practices in music education.

MUSI 5364. ASSESSMENT IN MUSIC EDUCATION. 3 Hours.

Assessment techniques that are appropriate to music study will be reviewed and examined. The focus will include interpreting standardized test results and the development of appropriate and effective measurement tools to use in music classrooms.

MUSI 5365. MEANING & REPRESENTATION IN MUSIC. 3 Hours.

This course will explore the basic questions of meaning in music, including the question of whether or not music can truly have meaning at all. Students will explore various philosophical, scientific, and musical (i.e. from composers and performers) viewpoints through readings, discussion, and writing.

MUSI 5366. JAZZ STYLE AND ANALYSIS. 3 Hours.

An in depth examination of the improvisational techniques used by prominent jazz musicians. Topics will include transcription and theoretical analysis over different periods and styles in jazz.

MUSI 5387. ANALYSIS OF POPULAR MUSIC. 3 Hours.

This course will explore form, melody, harmony, and voice-leading in a variety of popular styles since the early 20th century.

MUSI 5388. 20TH CENTURY FORM & TECHNIQUE. 3 Hours.

Introduction to twentieth-century form and techniques, as well as relevant analytical methods and compositional strategies.

MUSI 5389. POST-TONAL ANALYSIS. 3 Hours.

Study of pitch, harmony, rhythm, & form in music from Debussy to the present.

MUSI 5390. SCHENKERIAN ANALYSIS. 3 Hours.

An introduction to the methods of Schenkerian analysis and harmonic reduction. Seminar designed to meet the needs of students desiring to become theorists or teachers of theory.

MUSI 5391. CONFERENCE COURSE IN MUSIC. 3 Hours.

Special problems in music. Topic may change from semester to semester. May be repeated for credit. Prerequisite: Permission of instructor and Graduate Advisor.

MUSI 5392. ADVANCED SONATA THEORY. 3 Hours.

An in-depth examination of sonata form drawing on the concepts of Caplin's formal functions and Hepokoski and Darcy's sonata theory, including intensive writing and analysis assignments.

MUSI 5393. CONDUCTING. 3 Hours.

Applied lessons in conducting. This course is an in-depth study of conducting technique as applied to choral or instrumental ensembles. It may be repeated for credit as the content changes.

MUSI 5398. THESIS. 3 Hours.

The graduate student must be registered for MUSI 5398 when in consultation over the thesis with the advisor or supervisory committee. Prerequisite: MUSI 5363.

MUSI 5698. THESIS. 6 Hours.

The graduate student must be registered for MUSI 5698 in the semester or term in which the Master of Music degree will be conferred. Prerequisite: MUSI 5363.

Nuclear Engineering (NE)

COURSES

NE 3301. INTRODUCTION TO NUCLEAR ENGINEERING. 3 Hours.

Fundamentals of radiation, radiation decay, binding energy, nuclear reactions, radiation interactions, shielding, radiation detections and measurement of radiation, applications of nuclear science and engineering such as principles of nuclear reactors, reactor generations I, II, III, IV, fusion reactor, radiation therapy, food irradiation, radionuclide production, radiopharmaceuticals, principles of positron emission tomography (PET). Prerequisite: PHYS 1444; MATH 3319 or MAE 3360.

NE 4302. NUCLEAR REACTOR THEORY AND TECHNOLOGY OF THE NUCLEAR POWER PLANT. 3 Hours.

The course covers the theoretical aspect of reactor theory and analysis along with the complete understanding of the nuclear reactor systems, major components, operations, control and overall safety aspect of nuclear power plant technology. The theoretical topics in the course will include the neutronics behavior of fission reactors, primarily from a one-speed diffusion perspective. Reactor kinetics and dynamics, criticality, fission product poisoning, reactivity control, reactor stability and introductory concepts in fuel management, followed by slowing down and one-speed diffusion theory. Use of industry adopted software and power plant simulation for evaluating basic reactor parameters. Prerequisite: NE 3301 or PHYS 3446 or permission of instructor.

NE 4303. NUCLEAR POWER PLANT ENGINEERING. 3 Hours.

Thermal hydraulic processes involved in the transfer of power from the reactor core to the secondary systems of nuclear power plants. Major topics include an overview of nuclear heat generation, fluid dynamics with respect to the flow in reactor channels, steady state radial and axial temperature distribution, thermal analysis of fuel elements and subchannel flow, Hot channel factors, two-phase flow dynamics. Prerequisite: NE 3301 or MAE 3314 or MAE 3309 or permission of instructor.

NE 4391. SPECIAL TOPICS IN NUCLEAR ENGINEERING. 3 Hours.

Special topics in the field of nuclear engineering. Topic may vary from semester to semester. May be repeated for credit when topic changes. Departmental approval required in advance to use for degree credit. Prerequisite: NE 3301 or consent of instructor.

Nursing (NURS)

COURSES

NURS 2200. CONCEPTS IN PROFESSIONAL NURSING. 2 Hours.

Designed to introduce the pre-nursing student to specific professional concepts in nursing. Selected concepts and processes for professional nursing will include an introduction to nursing's theoretical, philosophical, ethical, and legal dimensions with an emphasis on professional formation. Course activities will focus on development of teamwork, communication skills, effective decision-making and reflective practice.

NURS 2232. LEARNING PROFESSIONAL NURSING AND LIFE SKILLS. 2 Hours.

This course focuses on the development and successful use of time management, test-taking skills, study methods, and additional student success strategies that can support students enrolled in the upper division prelicensure Bachelor of Science in Nursing (BSN) program. Required for students who fail an upper division nursing course. Prerequisite: Admission to the BSN program.

NURS 2300. INTRODUCTION TO PROFESSIONAL AND CLINICAL CONCEPTS IN NURSING. 3 Hours.

Designed to introduce the pre-nursing student to specific professional concepts in nursing as well as academic success strategies. Selected concepts and processes for professional nursing will include an introduction to nursing's theoretical, philosophical, ethical, and legal dimensions with an emphasis on professional formation. Course activities will focus on development of teamwork, communication skills, effective decision making and reflective practice.

NURS 3100. COOPERATIVE NURSING WORK EXPERIENCE. 1 Hour.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. This course is graded as pass/fail. Prerequisite: Consent of instructor.

NURS 3137. INDEPENDENT STUDY. 1 Hour.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3147. SPECIALIZED TOPICS IN NURSING. 1 Hour.

Areas of special interest. May be repeated with varied topics. Must complete with C or better for credit. Prerequisite: Junior standing and consent of instructor.

NURS 3200. COOPERATIVE NURSING WORK EXPERIENCE. 2 Hours.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. This course is graded as pass/fail. Prerequisite: Consent of instructor.

NURS 3237. INDEPENDENT STUDY. 2 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3247. SPECIALIZED TOPICS IN NURSING. 2 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: Junior standing and consent of instructor.

NURS 3261. NURSING OF OLDER ADULTS. 2 Hours.

Selected concepts and issues related to aging and its impact on society and health care. Introduction to gerontologic nursing principles. Clinical application in diverse settings across the continuum of care. Prerequisite: NURS 3632, NURS 3320.

NURS 3300. COOPERATIVE NURSING WORK EXPERIENCE. 3 Hours.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. Must earn a C or better to earn credit. Prerequisite: Admission into nursing degree program.

NURS 3309. MEDICAL TERMINOLOGY FOR HEALTHCARE PROVIDERS. 3 Hours.

This course will enable the student to speak, use, and understand commonly used terms in the healthcare field. This course can be used as the upper division elective. Formerly taught as BIOL 3309. Credit will not be given for both.

NURS 3315. RN-BSN HOLISTIC HEALTH ASSESSMENT ACROSS THE LIFESPAN. 3 Hours.

Theory and practice of holistic health assessment of individuals and families across the life span designed for the registered nurse. RN-BSN students only. Prerequisite: or Corequisite NURS 3345.

NURS 3320. HOLISTIC HEALTH ASSESSMENT ACROSS THE LIFESPAN. 3 Hours.

Theory and practice of holistic health assessment of individuals and families across the life span with emphasis on normal findings. Prerequisite: or Corequisite: NURS 3632.

NURS 3321. NURSING RESEARCH. 3 Hours.

Basic concepts, processes and applications of nursing research. Research role of the nurse in decision making and clinical practice. Prerequisite: NURS 3632.

NURS 3325. RN-BSN HOLISTIC CARE OF THE OLDER ADULT. 3 Hours.

Introduction to gerontologic nursing principles and standards. Selected concepts and issues related to aging and its impact on society and health care. RN-BSN students only. Previously listed as NURS 3322. Prerequisite: or Corequisite: NURS 3345.

NURS 3333. PROMOTING HEALTHY LIFESTYLES. 3 Hours.

Focus on health promotion and disease prevention strategies that promote healthy lifestyles and empower individuals, families, and populations to achieve optimal health and wellness. The role of the nurse in health promotion is emphasized. Students will examine the impact of nurses' overall wellness on patient safety. Prerequisite: Acceptance into the upper division nursing program.

NURS 3335. RN-BSN PROMOTING HEALTHY LIFESTYLES. 3 Hours.

Focus on health promotion and disease prevention strategies that promote healthy lifestyles and empower individuals, families, and populations to achieve optimal health and wellness. The role of the nurse in health promotion is emphasized. Students will examine the impact of nurses' overall wellness on patient safety. RN-BSN students only. Previously NURS 3435. Prerequisite: NURS 3345.

NURS 3337. INDEPENDENT STUDY. 3 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn a grade of C or better for credit. Prerequisite: Consent of Instructor.

NURS 3344. ENHANCING NURSING PRACTICE AND SAFETY WITH HISPANIC PATIENTS THROUGH BETTER COMMUNICATION. 3 Hours.

Explores and augments the understanding of factors which facilitate or inhibit effective communication with Spanish-speaking clients. Focus on vocabulary specific to assessment and intervention with persons whose primary language is Spanish.

NURS 3345. ROLE TRANSITION TO PROFESSIONAL NURSING. 3 Hours.

Course addresses the role transition to Professional Nursing, nursing theory, ethics, decision making, critical thinking/clinical judgment, introduction to evidence-based practice, and informatics/technology in practice. Identifies strategies for personal and professional empowerment. Prerequisite: Accepted to RN to BSN program.

NURS 3347. SPECIALIZED TOPICS IN NURSING. 3 Hours.

Areas of special interest. May be repeated with varied topics. Must earn a C or better to earn credit.

NURS 3352. THE LEGACY OF THE FAMILY. 3 Hours.

Explore and enhance understanding and application of the principles of family science knowledge in therapeutic relationships with families across the lifespan.

NURS 3365. PHARMACOLOGY IN NURSING PRACTICE. 3 Hours.

Introduction to current concepts of pharmacology and their relationship to nursing practice. Included are basic principles of drug actions, side effects for major drug classifications, and the role of the nurse in drug therapeutics. Must be taken no more than three years prior to acceptance into the nursing program. Prerequisite: BIOL 2457, BIOL 2458, CHEM 1451.

NURS 3366. PATHOPHYSIOLOGIC PROCESSES: IMPLICATIONS FOR NURSING. 3 Hours.

Pathophysiologic alterations, their interactions, and effects on persons across the life span as a basis for therapeutic nursing interventions. Must be taken no more than three years prior to acceptance into the nursing program. Prerequisite: BIOL 2457, BIOL 2458, CHEM 1451.

NURS 3375. RN-BSN HEALTH POLICY, LEGAL ASPECTS AND INFORMATICS IN NURSING. 3 Hours.

This course provides an introduction to legal and ethical concepts, values, and behaviors necessary for transitioning to a professional nursing role. Topics include health care policy development, legal overview and peer-review process, health care informatics, economic and political issues, laws, rules, challenges, boundaries, malpractice and societal issues and trends influencing health care. Prerequisite: NURS 3345.

NURS 3381. PSYCHIATRIC MENTAL HEALTH NURSING OF INDIVIDUALS, FAMILIES, AND GROUPS. 3 Hours.

Application of the nursing process with emphasis on critical thinking, therapeutic nursing interventions, and effective communication and interpersonal skills as they relate to persons with psychiatric mental health conditions. Prerequisite: NURS 3632 and NURS 3320.

NURS 3437. INDEPENDENT STUDY. 4 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3447. SPECIALIZED TOPICS IN NURSING. 4 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3537. INDEPENDENT STUDY. 5 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3547. SPECIALIZED TOPICS IN NURSING. 5 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: Junior standing and consent of instructor.

NURS 3632. CLINICAL NURSING FOUNDATIONS. 6 Hours.

Basic therapeutic nursing interventions with individuals and families in diverse settings using nursing process framework. Prerequisite: or Corequisite: NURS 3320.

NURS 3637. INDEPENDENT STUDY. 6 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be offered with any combination of lecture/lab hours. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

NURS 3647. SPECIALIZED TOPICS IN NURSING. 6 Hours.

Areas of special interest. May be repeated with varied topics. Must earn C or better for credit. Prerequisite: junior standing and consent of instructor.

NURS 3661. NURSING OF ADULTS. 6 Hours.

Application of the nursing process with emphasis on critical thinking, therapeutic nursing interventions, and effective communication for persons experiencing medical-surgical problems. Theory and clinical application in diverse settings. Prerequisite: NURS 3632 and NURS 3320.

NURS 4100. COOPERATIVE NURSING WORK EXPERIENCE. 1 Hour.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. Prerequisite: Consent of instructor.

NURS 4199. ROLE DEVELOPMENT IN PROFESSIONAL NURSING SEMINAR. 1 Hour.

The course addresses professional nursing role development integrating concepts of professional comportment. Prerequisite: NURS 3661, NURS 3381.

NURS 4200. COOPERATIVE NURSING WORK EXPERIENCE. 2 Hours.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. Prerequisite: Consent of instructor.

NURS 4223. PROFESSIONAL NURSING TRENDS. 2 Hours.

Analysis of societal issues and trends influencing health care. Application of ethical, legal, economic, and political concepts. Identification of strategies for personal and professional empowerment. Prerequisite: NURS 4431, NURS 4441, and NURS 4581.

NURS 4300. COOPERATIVE NURSING WORK EXPERIENCE. 3 Hours.

Designed for nursing cooperative education student to integrate classroom study with career-related practical experience in the workplace. Prerequisite: Admission into nursing degree program.

NURS 4323. HEALTH POLICY, LEGAL ASPECTS AND INFORMATICS IN NURSING. 3 Hours.

This course provides an introduction to legal and ethical concepts, values, and behaviors necessary for transitioning to a professional nursing role. Topics include health care policy development, legal overview and peer-review process, health care informatics, economic and political issues, laws, rules, challenges, boundaries, malpractice and societal issues and trends influencing health care. Prerequisite: NURS 4331, NURS 4341, and NURS 4581.

NURS 4325. RN-BSN NURSING RESEARCH. 3 Hours.

Basic concepts, processes and applications of nursing research. Research role of the nurse in decision making and clinical practice. RN-BSN students only. Prerequisite: ENGL 2338 or equivalent, Math 1308 or equivalent, and NURS 3345 or NURS 3645.

NURS 4331. NURSING OF CHILDREN AND ADOLESCENTS. 3 Hours.

Nursing care for infants, children, adolescents, and their families. Theory and clinical application in diverse settings. Prerequisite: NURS 3661, NURS 3381.

NURS 4341. NURSING OF THE CHILDBEARING FAMILY. 3 Hours.

Application of the nursing process with emphasis on critical thinking, communication and therapeutic nursing interventions as related to care of individuals and families during the childbearing experience. Prerequisite: NURS 3381 and NURS 3661.

NURS 4350. CAPSTONE: Transition to Professional Nursing. 3 Hours.

Focus on the synthesis of knowledge acquired throughout the curriculum and the enactment of the professional nurse role in a concentrated practicum. Prerequisite: or Corequisite: NURS 4350, NURS 4462, NURS 4323.

NURS 4351. BSN NURSING LEADERSHIP AND MANAGEMENT. 3 Hours.

Exploration of organizational strategies, leadership theories and societal trends with implications for decision making in health care. Introduction to management skills needed by professional nurses in diverse settings. Prerequisites: NURS 4331, NURS 4341, NURS 4581.

NURS 4393. NURSING CERTIFICATION. 3 Hours.

NURS 4455. RN-BSN NURSING LEADERSHIP & MANAGEMENT. 4 Hours.

Exploration of organizational strategies, leadership theories and societal trends with implications for decision making in health care. Introduction to management skills needed by professional nurses with clinical application in diverse settings. RN-BSN students only. Prerequisite: or Corequisite: NURS 3345.

NURS 4462. POPULATION AND COMMUNITY HEALTH NURSING. 4 Hours.

Integrate knowledge from nursing theory and public health science in assessing health care needs of aggregates, communities, and society. Prerequisite: NURS 4331, NURS 4341, NURS 4581.

NURS 4465. RN-BSN POPULATION AND COMMUNITY HEALTH NURSING. 4 Hours.

Integrates knowledge from nursing theory and public health science in assessing health care needs of aggregates, communities, and society for the Registered Nurse. RN-BSN students only. Prerequisite: NURS 3345.

NURS 4581. NURSING OF ADULTS WITH COMPLEX NEEDS. 5 Hours.

Use of critical thinking, therapeutic nursing interventions and communication skills in promoting quality of life for persons with complex health needs. Application of nursing roles in diverse settings. Prerequisite: NURS 3661, NURS 3381.

NURS 4685. RN-BSN CAPSTONE. 6 Hours.

Synthesis of knowledge acquired in the RN-BSN curriculum and development of the Nurse Role with evolving professional issues, health care environment, lifelong learning, and promotion of the Nursing profession designed for Registered Nurses RN-BSN student only. Prerequisite: NURS 4325, NURS 4455 Corequisite: NURS 4465.

NURS 5110. NEONATAL ASSESSMENT LAB. 1 Hour.

Conduct comprehensive health assessment in the neonatal population. Prerequisite: NURS 5220 or concurrent enrollment or permission of instructor or Certificate Program Standing.

NURS 5112. THERAPY CONCEPTS FOR PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONERS. 1 Hour.

This course provides evidenced based practice principles of non-pharmacological individual, family and group therapies for psychiatric disorders and mental health problems across the lifespan. Prerequisite: NURS 5315, NURS 5410 or concurrent enrollment, NURS 5140 or concurrent enrollment, or Certificate Program Standing.

NURS 5120. ADULT-GERONTOLOGY ASSESSMENT LAB. 1 Hour.

Conduct comprehensive health assessment in the adult-gerontology population. Prerequisite: NURS 5220 or concurrent enrollment or Certificate Program Standing.

NURS 5130. PEDIATRIC ASSESSMENT LAB. 1 Hour.

Conduct comprehensive health assessment in the pediatric population. Prerequisite: NURS 5220 or concurrent enrollment or Certificate Program Standing.

NURS 5140. PSYCHIATRIC ASSESSMENT LAB FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 1 Hour.

Introduces the PMHNP student to the psychiatric mental health assessment applied to the pediatric, adult, and geriatric patient with a mental health disorder through knowledge acquisition and skill development. Prerequisite: NURS 5220, NURS 5120, and NURS 5130, NURS 5410 or concurrent enrollment, NURS 5112 or concurrent enrollment, or Certificate Program Standing.

NURS 5170. INDEPENDENT STUDY IN NURSING. 1 Hour.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, P, R. Prerequisite: Graduate standing.

NURS 5190. TOPICS IN NURSING. 1 Hour.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 5204. NEONATAL NURSING I. 2 Hours.

Clinical management of the high-risk neonate with a focus on the perinatal and transition periods as well as stabilization of the ill newborn at birth. Includes fluid and electrolyte management, nutrition, and identification of the indications and complications associated with invasive skills and procedures relevant to the high-risk neonate. Prerequisite: NURS 5315; NURS 5316 or NURS 5220 or concurrent enrollment and NURS 5110 or concurrent enrollment or Certificate Program Standing.

NURS 5210. NEUROSCIENTIFIC BASES IN PSYCHIATRY AND MENTAL HEALTH. 2 Hours.

This course provides the scientific foundations of neurobiology for various psychiatric disorders and mental health problems across the lifespan. An analysis of the relationships between neurobiology, psychopharmacology and genetics for various psychiatric disorders and mental health problems will be provided. Prerequisite: NURS 5315, NURS 5220, NURS 5120, NURS 5130, or Certificate Program Standing.

NURS 5211. DIAGNOSTIC PRINCIPLES IN PSYCHIATRY AND MENTAL HEALTH. 2 Hours.

This course provides the scientific foundations for diagnostics for various psychiatric disorders and mental health problems across the lifespan. Prerequisite: NURS 5315; NURS 5210 or concurrent enrollment or Certificate Program Standing.

NURS 5212. THERAPY CONCEPTS FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 2 Hours.

This course provides evidenced based practice principles of non-pharmacological individual, family and group therapies for psychiatric disorders and mental health problems across the lifespan. Prerequisite: NURS 5315; NURS 5210 or concurrent enrollment, NURS 5211 or concurrent enrollment or Certificate Program Standing.

NURS 5213. PSYCHOPHARMACOLOGY FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 2 Hours.

This course provides advanced study of clinical psycho-pharmacological therapeutics for the psychiatric mental health nurse practitioner. Foundations of advanced psychopharmacology in common and complex mental health disorders and conditions in populations across the lifespan are explored. Prerequisite: NURS 5334, NURS 5410, NURS 5140, NURS 5112, NURS 5222 or concurrent enrollment, NURS 5223 or concurrent enrollment.

NURS 5220. ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING. 2 Hours.

Apply theoretical foundations of comprehensive health assessment across the lifespan. Prerequisite: Graduate or Certificate Program Standing. NURS 5315 or Special Permission.

NURS 5222. CHILD, ADOLESCENT, AND SPECIAL POPULATIONS PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP. 2 Hours.

This course provides the scientific foundations and evidence-based practice principles necessary for managing children, adolescents, and special populations (and/or at risk for) various commonly occurring and complex psychiatric disorders and mental health problems as well as comorbid medical illnesses. Prerequisite: NURS 5410, NURS 5213, NURS 5112, NURS 5223 or concurrent enrollment, or Certificate Program Standing.

NURS 5223. ADULT AND GERIATRIC PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP. 2 Hours.

This course provides the scientific foundations and evidence-based practice principles necessary for managing adult and geriatric populations with (and/or at risk) for commonly occurring and complex psychiatric disorders and mental health problems as well as co-morbid medical illnesses. Prerequisite: NURS 5410, NURS 5140, NURS 5213 or concurrent enrollment, NURS 5222 or concurrent enrollment, or Certificate Program Standing.

NURS 5270. INDEPENDENT STUDY IN NURSING. 2 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, P, R. Prerequisite: Graduate Standing and permission of instructor.

NURS 5290. TOPICS IN NURSING. 2 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 5302. CURRICULUM DEVELOPMENT IN NURSING EDUCATION. 3 Hours.

Explore the nature of nursing education. Focus on the curriculum process and its application to nursing education programs. Prerequisite: Graduate standing.

NURS 5308. NURSING INFORMATICS. 3 Hours.

Focus on application of computer technology that supports the dissemination of health care data, information and knowledge. Selected software packages/applications are presented and used. Prerequisite: NURS 5367.

NURS 5310. TEACHING AND LEARNING THEORIES AND STRATEGIES IN NURSING EDUCATION. 3 Hours.

Teaching/Learning theories, strategies, and evaluation for educators. Prerequisite: Graduate standing.

NURS 5311. NURSING MANAGEMENT IN THE HEALTH CARE ENVIRONMENT. 3 Hours.

Considers development of management and organizational theories as applied to health care organizations and their environment. Prerequisite: NURS 5367.

NURS 5312. ASSESSMENT AND EVALUATION STRATEGIES IN NURSING EDUCATION. 3 Hours.

Integration of concepts of assessment and evaluation into a nursing evaluation framework. Prerequisite: Graduate standing.

NURS 5313. CLINICAL PROCEDURES FOR ADVANCED PRACTICE NURSES. 3 Hours.

A theory and clinical procedures course designed for the Advanced Practice Nurse to acquire skills and procedures in the clinical management of selected patients. Prerequisite: NURS 5220; NURS 5120; NURS 5130 or concurrent enrollment and NURS 5334 or Certificate program standing.

NURS 5315. ADVANCED PATHOPHYSIOLOGY. 3 Hours.

Builds on a previous understanding of anatomy and physiology and focuses on developing advanced knowledge of physiologic and pathophysiologic concepts across the life span. Prerequisite: Graduate Standing.

NURS 5318. ADVANCED PATHOPHYSIOLOGY FOR NURSE EDUCATORS. 3 Hours.

This course develops advanced knowledge of pathophysiology. Principles of advanced physiology and pathophysiology are applied to disease processes, plans of care, and teaching plans. This course prepares Nurse Educators to educate clients, students, colleagues to facilitate patients and/or their support systems understanding of the disease process plan of care. Prerequisite: NURS 5367 and NURS 5310 and NURS 5329 and NURS 5302 and NURS 5312.

NURS 5319. ADVANCED PHARMACOLOGY FOR NURSE EDUCATORS. 3 Hours.

This course develops advanced knowledge of clinical pharmacological therapeutics through the evaluation of classes of drugs and pharmacologic plans of care. This course prepares Nurse Educators to educate clients, students, and colleagues to facilitate patients and/or their support systems understanding of the pharmacologic plan of care. Prerequisite: NURS 5318.

NURS 5322. CHILD, ADOLESCENT AND GERIATRIC PSYCHIATRIC MENTAL HEALTH FOR THE PSYCH NP. 3 Hours.

This course provides the scientific foundations and evidenced based practice principles necessary for managing children, adolescents, and geriatric populations with (and/or at risk for) various commonly-occurring and complex psychiatric disorders and mental health problems and comorbid medical illnesses. Prerequisite: NURS 5210 and NURS 5211. NURS 5212 or concurrent enrollment or Certificate Program Standing.

NURS 5323. ADULT PSYCHIATRIC MENTAL HEALTH FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER. 3 Hours.

This course provides the scientific foundations and evidence based practice principles necessary for managing adults with (and/or at risk) for commonly occurring and complex psychiatric disorders and mental health problems as well as co-morbid medical illnesses. Prerequisite: NURS 5210 and NURS 5211. NURS 5212 or concurrent enrollment; NURS 5322 or concurrent enrollment or Certificate Program Standing.

NURS 5324. PSYCHIATRIC MENTAL CLINICAL PRACTICE I. 3 Hours.

This course provides application of theoretical knowledge and clinical skills to patients with commonly occurring psychiatric and mental health disorders across the life span in the context of advanced nursing practice. Prerequisite: NURS 5222 and NURS 5223 or Certificate Program Standing. Good academic standing (GPA 3.0).

NURS 5325. PSYCHIATRIC MENTAL HEALTH CLINICAL PRACTICE II. 3 Hours.

This course provides application of theoretical knowledge and clinical skills to patients with various commonly occurring and complex psychiatric and mental health disorders across the life span in the context of advanced nursing practice. Prerequisite: NURS 5324 or concurrent enrollment, or Certificate Program Standing. Good academic standing (GPA 3.0).

NURS 5327. EXPLORATION OF SCIENCE AND THEORIES FOR NURSING. 3 Hours.

This course provides a critical examination of the philosophical and theoretical bases for nursing science. Prerequisite: Graduate standing.

NURS 5329. ROLE OF THE NURSE EDUCATOR. 3 Hours.

Investigation of the roles and functions of the nurse educator. Prerequisite: Graduate program standing.

NURS 5333. FAMILY I. 3 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on pediatric wellness, women's health, men's health, and geriatrics concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 and NURS 5313 or Certificate Program Standing.

NURS 5334. ADVANCED PHARMACOLOGY FOR NURSE PRACTITIONERS. 3 Hours.

Study of clinical pharmacological therapeutics for advanced nursing practice. Prerequisites: NURS 5315 or Certificate Program Standing.

NURS 5335. FAMILY II. 3 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of commonly occurring conditions seen in primary care patients across the lifespan. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 and NURS 5313 or Certificate Program standing.

NURS 5336. FAMILY III. 3 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on adult wellness, psychiatric, and cardiometabolic concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 and NURS 5313 or Certificate Program standing.

NURS 5337. FAMILY CLINICAL PRACTICE 1. 3 Hours.

Initial clinical preceptorship in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the family nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5432, NURS 5433, NURS 5434 and Good academic standing (GPA 3.0) or certificate program standing.

NURS 5338. FAMILY CLINICAL PRACTICE 2. 3 Hours.

Continued clinical preceptorship with opportunities for increased clinical knowledge in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the family nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5432, NURS 5433, NURS 5434, NURS 5337 or concurrent enrollment; Good academic standing (GPA 3.0) or Certificate Program standing.

NURS 5339. ROLES AND FUNCTIONS OF THE NURSE ADMINISTRATOR. 3 Hours.

Examine and implement administrative and managerial roles in health care organizations. Prerequisite: NURS 5311.

NURS 5340. MANAGEMENT SEMINAR AND PRACTICE. 3 Hours.

Synthesize management, organizational, and leadership concepts and theories in selected health care settings. Prerequisite: NURS 5308; NURS 5311; NURS 5339; NURS 5341; NURS 5343; NURS 5342; NURS 5382. Good Academic Standing (3.0 GPA).

NURS 5341. FINANCIAL MANAGEMENT IN NURSING. 3 Hours.

Analyze and apply financial management concepts to financial planning, budgeting, and reimbursement systems in health care. Prerequisite: NURS 5311.

NURS 5342. MANAGEMENT OF NURSING OPERATIONS. 3 Hours.

Examine strategic planning for health care systems. Prerequisite: NURS 5311.

NURS 5343. NURSING LEADERSHIP AND COMPLEX HEALTH CARE SYSTEMS. 3 Hours.

Analyze leadership strategies in current and predicted health care systems including dimensions of workforce and workplace issues, leadership, and evidenced-based decision-making. Prerequisite: NURS 5367.

NURS 5348. NURSING CARE AT THE END OF LIFE. 3 Hours.

Addresses concepts of palliative care of patients with life limiting disease and their families. Explores the physiology of end stage disease processes, clinical approaches to pain and symptom management, societal issues and trends in end of life care, models of care delivery and the impact of personal values and beliefs about death. Prerequisite: Graduate Standing.

NURS 5350. ROLE OF THE NURSE IN ADVANCED PRACTICE. 3 Hours.

Theory and application of the multiple roles of the advanced practice nurse within the health care system. Prerequisite: Graduate Standing.

NURS 5352. ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 1. 3 Hours.

Clinical experience in primary and long term health care settings with focus on managing adolescents, adults, and elders with common episodic acute and chronic health care needs. Prerequisite: NURS 5462 or concurrent enrollment; Good academic standing (GPA 3.0) or certificate program standing.

NURS 5353. ADULT GERONTOLOGY PRIMARY CARE CLINICAL PRACTICE 2. 3 Hours.

Continued clinical experience in primary and long term health care settings with focus on managing adolescents, adults, and elders with common episodic acute and chronic health care needs. Prerequisite: NURS 5462 and NURS 5352 or concurrent enrollment and Good academic standing (GPA 3.0) or certificate program standing.

NURS 5354. ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 1. 3 Hours.

Clinical experience in specialty practice and high acuity health care settings with focus on managing adolescents, adults, and elders with common secondary and tertiary health care needs. Prerequisite: NURS 5463 or concurrent enrollment and Good academic standing (GPA 3.0) or certificate program standing.

NURS 5355. ADULT GERONTOLOGY ACUTE CARE CLINICAL PRACTICE 2. 3 Hours.

Continued clinical experience in specialty practice and high acuity health care settings with focus on managing adolescents, adults, and elders with common secondary and tertiary health care needs. Prerequisite: NURS 5354 or concurrent enrollment; Good academic standing (GPA 3.0) or certificate program standing.

NURS 5356. GLOBAL HEALTH POLICY, HEALTH LITERACY, AND MODELS OF CARE FOR OLDER ADULTS. 3 Hours.

This course will focus on healthcare policy issues and models of healthcare delivery for older adults at the state, national and global levels. Prerequisite: Graduate Standing.

NURS 5357. ADVANCED CLINICAL MANAGEMENT OF OLDER ADULTS WITH COMPLEX MULTIMORBIDITY. 3 Hours.

This course will focus upon an inter-professional approach to develop advanced knowledge in the chronic health care management of older adults, their families, and communities in a variety of health care settings. Prerequisite: Graduate Standing or permission of instructor.

NURS 5358. ADVANCED CLIN MGMT OF OLDER ADULTS W/COMPLEX MULTIMORBIDITY DURING ACUTE ILLNESS CRISIS. 3 Hours.

This course will focus upon an inter-professional approach to develop advanced knowledge in aging issues and paradigms of care for the older adult; in addition, this course will accentuate the management of older adults with acute health problems, their families, and communities in a variety of health care settings. Prerequisite: Graduate Standing or permission of instructor.

NURS 5360. SIMULATION APPLICATION IN NURSING. 3 Hours.

Application of and active learning strategies in nursing education. Prerequisite: NURS 5367, NURS 5220.

NURS 5362. TEACHING PRACTICUM. 3 Hours.

Nursing education preceptorship in selected health care sites with opportunities to apply clinical and educational knowledge, skills, and concepts in a guided, progressive context of nursing education. Graded F,R,P,W. Prerequisite: Completion of all courses in the Nursing Education Program and Good academic standing (GPA 3.0).

NURS 5366. PRINCIPLES OF RESEARCH IN NURSING. 3 Hours.

This course focuses on integration of theoretical and empirical principles of nursing research to generate evidence for nursing practice. Prerequisite: Graduate Standing.

NURS 5367. EVIDENCE BASED PRACTICE. 3 Hours.

Preparation to lead evidence-based practice teams, to interpret best evidence, to plan for change, to evaluate outcomes, and to disseminate the project. Prerequisite: Graduate standing; NURS 5366 and NURS 5327.

NURS 5370. INDEPENDENT STUDY IN NURSING. 3 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F,R,P,W. Permission of instructor. Graduate standing.

NURS 5371. PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 1. 3 Hours.

Initial clinical preceptorship in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5465. Good academic standing (GPA 3.0) or Certificate program standing.

NURS 5372. PEDIATRIC PRIMARY CARE CLINICAL PRACTICE 2. 3 Hours.

Continue clinical preceptorship in selected primary health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5371 or concurrent enrollment. Good academic standing (GPA 3.0) or Certificate Program Standing.

NURS 5373. PEDIATRIC ACUTE CARE CLINICAL PRACTICE 1. 3 Hours.

Initial clinical preceptorship in selected acute and chronic care health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric acute care nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5467 or concurrent enrollment. NURS 5466 or concurrent enrollment. Good academic standing (GPA 3.0) or Certificate program standing.

NURS 5374. PEDIATRIC ACUTE CARE CLINICAL PRACTICE 2. 3 Hours.

Continue clinical preceptorship in selected acute and chronic care health practice sites with opportunities to apply knowledge and concepts of advanced nursing practice implementing the pediatric nurse practitioner role in evidenced based patient care. Prerequisite: NURS 5466; NURS 5373 or concurrent enrollment. Good academic standing (GPA 3.0) or Certificate program standing.

NURS 5380. INDEPENDENT STUDY IN RESEARCH. 3 Hours.

Detailed study and participation in a faculty sponsored research project. Topic and mode of study are agreed upon by the student and instructor prior to registration. Permission of instructor. Graded F,R,P,W.

NURS 5382. NURSING AND HEALTH CARE POLICY: ISSUES AND ANALYSIS. 3 Hours.

Analyze historical, current, and predicted national, state, and local health care policy processes. Prerequisite: NURS 5367.

NURS 5388. STATISTICS FOR HEALTH CARE. 3 Hours.

This course provides students with the basic knowledge and skills to effectively use biostatistics in different research design and data analysis, and to understand articles in related professional journals. Topics include choosing correct statistical methods and study designs in nursing research and practice; descriptive statistics; probability and probability distributions; estimation and hypothesis testing, simple linear regression, introduction to analysis of variance and an introduction to the use of statistical software packages. Prerequisite: Undergraduate Statistics.

NURS 5390. TOPICS IN NURSING. 3 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 5392. GENOMICS AND NANOTECHNOLOGY IN HEALTH CARE PRACTICE. 3 Hours.

Genomics and nanotechnology are emerging as principal drivers to improve human diagnosis and treatment modalities. This course is designed to introduce tools used in these fields. Health care outcomes, in relation to innovations produced from these fields, will be described. Prerequisite: Graduate standing.

NURS 5393. ADVANCED CLINICAL NURSING PRACTICE I. 3 Hours.

Development of advanced knowledge base of specialized clinical concepts and the application of this knowledge in selected clinical areas. Prerequisite: Graduate standing.

NURS 5395. HEART FAILURE PATHOPHYSIOLOGY AND EXERCISE REHABILITATION. 3 Hours.

The goal of this course is to provide students with fundamental knowledge related to heart failure (HF) pathophysiology, and the role of evidence based exercise rehabilitation to improve overall health related physical fitness and quality of life. Prerequisite: Graduate Standing or Approval of Instructor.

NURS 5396. CURRENT BIOTECHNOLOGY IN HEALTH CARE. 3 Hours.

The goal of this course is to provide students with fundamental knowledge and current advances of biotechnology in medicine and healthcare, and train them how to apply these new technologies in their pertinent fields. Prerequisite: Graduate Standing. Approval of instructor.

NURS 5397. ETHICAL RESEARCH AND THE PROPOSED IRB/IACUC PROTOCOL. 3 Hours.

Ethical research practices that the learner will be able to demonstrate through a written research protocol using good clinical practice (GCP) to ensure protection of subjects/animals. Related topics include social-behavioral and biomedical research certifications, and issues related to scientific misconduct. Prerequisite: Graduate standing or permission of instructor.

NURS 5398. THESIS. 3 Hours.

Graded F,R.

NURS 5410. INTRODUCTION TO PSYCHIATRIC MENTAL HEALTH FOR THE PMHNP. 4 Hours.

This course provides the neuroscientific foundations for various psychiatric disorders and mental health problems across the lifespan. An analysis of the relationships between the neurobiology, neurophysiology, genetic, and epigenetic aspects of various psychiatric disorders and mental health problems will be explored. Prerequisite: NURS 5315, NURS 5220, NURS 5120, NURS 5130, or Certificate Program Standing.

NURS 5432. FAMILY I. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on pediatric wellness, women's health, men's health, and geriatrics concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 or Certificate Program standing.

NURS 5433. FAMILY II. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of commonly occurring conditions seen in primary care patients across the lifespan. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 or Certificate Program standing.

NURS 5434. FAMILY III. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner primary care management of designated acute, chronic and complex health problems of individuals and families across the lifespan. Particular emphasis will be on adult wellness, psychiatric, and cardiometabolic concepts and conditions. Prerequisite: NURS 5418 or NURS 5220 and NURS 5120 and NURS 5130; NURS 5334 or Certificate Program standing.

NURS 5447. NEONATAL NURSING III. 4 Hours.

This course focuses on advanced concepts of pharmacological and technological therapies and evidence based knowledge for the management of designated complex acute and chronic health problems affecting infants (birth to 2 years of age) and their families including ethical issues. Prerequisite: NURS 5537 or Certificate Program Standing.

NURS 5450. NEONATAL NP CLINICAL PRACTICE. 4 Hours.

Integration of clinical management of the high-risk neonate through clinical preceptorships in selected health practice sites with application of knowledge, skills and concepts in a guided, progressive context of advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisites: NURS 5334 and NURS 5316 or NURS 5220 and NURS 5110 and NURS 5204 and NURS 5537 or concurrent enrollment and Good academic standing (GPA 3.0) or Certificate Program Standing.

NURS 5461. ADULT GERONTOLOGY MANAGEMENT ACROSS THE CONTINUUM OF CARE. 4 Hours.

Foundations of advanced knowledge of common acute and chronic health problems in adolescents, adults, and elders across health care settings. Prerequisite: NURS 5220; NURS 5120 and NURS 5334, and NURS 5367 or concurrent enrollment, or Certificate Program Standing.

NURS 5462. ADULT GERONTOLOGY PRIMARY CARE. 4 Hours.

Focus on an inter-professional approach and the development of advanced knowledge in the primary care management of adults from adolescence through old age, their families, and communities in a variety of health care settings. Prerequisite: NURS 5461 or Certificate Program Standing.

NURS 5463. ADULT GERONTOLOGY ACUTE CARE. 4 Hours.

Focuses on a collaborative, inter-professional approach in the evaluation, diagnosis, and management of adolescents, adults, and gerontological patients who are experiencing acute, critical, and complex chronic illnesses across the continuum of care. Prerequisite: NURS 5461 or Certificate Program Standing.

NURS 5465. PRIMARY PEDIATRIC CARE. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioners management of designated minor acute, chronic and chronic health problems of pediatric patients and their families in primary care healthcare settings. Prerequisite: NURS 5334; NURS 5220; NURS 5130; NURS 5367 or concurrent enrollment.

NURS 5466. PEDIATRIC ACUTE CARE. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner management of designated critical, acute, chronic and complex health problems of pediatric patients and their families in an acute care facility. Prerequisite: NURS 5465.

NURS 5467. PEDIATRIC COMPLEX CARE. 4 Hours.

This course focuses on advanced concepts and knowledge for nurse practitioner management of designated acute, chronic and complex health problems of pediatric patients and their families in multiple healthcare settings. Prerequisite: NURS 5465 or concurrent enrollment or Certificate program standing.

NURS 5470. INDEPENDENT STUDY IN NURSING. 4 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Prerequisite: Permission of instructor. Graded F,R,P,W.

NURS 5537. NEONATAL NURSING II. 5 Hours.

This course focuses on advanced concepts of pharmacological and technological therapies and evidence based knowledge for the management of designated complex, acute health problems affecting infants (birth to 2 years of age). Graded (A,B,C,D,F,I,W). Prerequisite: NURS 5204 and NURS 5334 and NURS 5316 or NURS 5220 and NURS 5110; NURS 5367 or concurrent enrollment or Certificate Program Standing.

NURS 5610. NEONATAL NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of neonatal advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: NURS 5447 and NURS 5450. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5640. ADULT GERONTOLOGY ACUTE CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of adult gerontology acute care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5640: NURS 5354 and NURS 5355. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5640: NURSC 5354 and NURSC 5355. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5645. ADULT GERONTOLOGY PRIMARY CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of adult gerontology primary care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5645: NURS 5352 and NURS 5353. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5645: NURSC 5352 and NURSC 5353. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5650. PSYCHIATRIC MENTAL HEALTH NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of family psychiatric mental health care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: NURS 5324 and NURS 5325. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5660. FAMILY NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of Family Primary Care Advanced Nursing Practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5660: NURS 5337 and NURS 5338. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5660: NURSC 5337 and NURSC 5338. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSG: NURSG 5337 and NURSG 5338. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5670. INDEPENDENT STUDY IN NURSING. 6 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Prereq: Permission of instructor. Graded F,R,P,W.

NURS 5680. PEDIATRIC ACUTE CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of pediatric acute care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5680: NURS 5373 and NURS 5374. Good Academic Standing (GPA 3.0) or Certificate Program standing. For NURSC 5680: NURSC 5373 and NURSC 5374. Good Academic Standing (GPA 3.0) or Certificate Program standing.

NURS 5685. PEDIATRIC PRIMARY CARE NP ADVANCED PRACTICUM. 6 Hours.

Clinical preceptorships in selected health practice sites with opportunities to apply knowledge, skills and concepts in a guided, progressive context of pediatric primary care advanced nursing practice. The ratio of credit to clinical hours is 1:4. Prerequisite: For NURS 5685: NURS 5371 and NURS 5372. Good Academic Standing (GPA 3.0) or Certificate Program Standing. For NURSC 5685: NURSC 5371 and NURSC 5372. Good Academic Standing (GPA 3.0) or Certificate Program Standing.

NURS 5698. THESIS. 6 Hours.

Graded F, R, P.

NURS 6170. INDEPENDENT STUDY IN NURSING. 1 Hour.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F,R, P.

NURS 6190. SPECIAL TOPICS IN NURSING. 1 Hour.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6270. INDEPENDENT STUDY IN NURSING. 2 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, R, P.

NURS 6290. TOPICS IN NURSING. 2 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6301. THEORETICAL EVOLUTION IN SCIENCE. 3 Hours.

Philosophies of science and epistemologies, their influence on knowledge development for nursing practice, and strategies for theory development and analysis. Prerequisite: Graduate standing.

NURS 6302. ISSUES IN STUDYING THE HEALTH OF CULTURALLY DIVERSE AND VULNERABLE POPULATIONS. 3 Hours.

Social and cultural factors affecting health among sub-populations defined by age, education, gender, ethnicity, culture, religion, occupation, vulnerability, income and geography. Prerequisite: Graduate Standing. DNP or PhD program.

NURS 6304. MEASUREMENT IN CULTURALLY DIVERSE AND VULNERABLE POPULATIONS. 3 Hours.

Evaluate measurement tools/instruments for studying culturally diverse and vulnerable populations. Prerequisite: NURS 6301, Theoretical Evolution in Science, or permission of instructor. Course is predicated on prior learning related to concept analysis, basic statistics including correlation.

NURS 6305. QUALITATIVE RESEARCH. 3 Hours.

Philosophical foundation for and methodological issues in using qualitative approaches for scientific and knowledge development. Prerequisite: Graduate standing.

NURS 6306. RESEARCH DESIGN. 3 Hours.

Application of advanced nursing research methods to design studies that improve health outcomes in culturally diverse populations. Prerequisites: NURS 6304 or permission of instructor.

NURS 6307. POPULATION HEALTH. 3 Hours.

This course focuses on analyzing determinants of health, then designing health strategies to improve outcomes of populations. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). 6327 if in DNP Program.

NURS 6308. STATE OF THE SCIENCE: BACKGROUND IN RESEARCH. 3 Hours.

Application of criteria for appraising strengths and weaknesses of published studies; Synthesis of research literature on a selected topic. Prerequisite: Graduate standing.

NURS 6311. MANUSCRIPT DEVELOPMENT FOR PUBLICATION. 3 Hours.

This course provides a frame for which students focus their prose in order to disseminate their work to a broad audience of clinical, education, or research oriented practitioners. This course allows participants to critique peers' work to enhance their own skills as a peer reviewer, to enhance their career, and support other authors' writing efforts. The participants will write and explore the differences between peer reviewing and editing by critiquing sample review comments. Prerequisite: Approval of instructor. Doctoral Graduate standing.

NURS 6318. PARAMETRIC STATISTICS FOR HEALTHCARE RESEARCH. 3 Hours.

Advanced knowledge and skills to use biostatistics effectively in different research designs and data analyses. Use of a statistical software package to manipulate datasets and perform statistical analyses. Emphasis will be placed on parametric statistical methods for complex research questions and designs. Prerequisite: Graduate-level introductory statistics course.

NURS 6319. PSYCHOMETRIC AND NONPARAMETRIC STATISTICS FOR HEALTHCARE RESEARCH. 3 Hours.

Basic knowledge and skills to select the appropriate biostatistical analysis for different research designs, analyze data, interpret statistical results, and understand research articles in professional journals. Emphasis will be placed on reliability and validity of instruments commonly used in healthcare; outcome measurement in health care; common research designs in health care research; nonparametric statistics for dependent samples and independent samples; logistic regression; and survival analysis. Prerequisite: Graduate-level introductory statistics course.

NURS 6320. LEADERSHIP IN HEALTH CARE SYSTEMS. 3 Hours.

This course focuses on the DNP nurse influencing health systems change at any level. Prerequisite: Doctoral Standing. Prerequisite or co-requisite with NURS 6327 if full time.

NURS 6321. EPIDEMIOLOGY. 3 Hours.

Introduces the basic principles and biostatistical methods of epidemiology and demonstrates their applicability to population health. Prerequisite: Graduate Standing.

NURS 6322. TRANSLATIONAL RESEARCH. 3 Hours.

This course provides a review of core research concepts as a foundation for evidence appraisal and translation. New practice-based clinical inquiry methods and strategies are explored to promote translation science for application in the DNP role. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). NURS 6327, NURS 6320.

NURS 6323. EVIDENCE APPRAISAL. 3 Hours.

In this course, students will use analytical methods to critically appraise existing research and literature to select and implement the best evidence for practice. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). NURS 6327, NURS 6320, and NURS 6322.

NURS 6324. CLINICAL INFORMATION SYSTEMS. 3 Hours.

This course focuses on the selection, assessment, and use of information systems, technology, and data to evaluate and monitor outcomes of care, care systems, and quality improvement. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B) NURS 6327, NURS 6320.

NURS 6326. PROJECT PROPOSAL DEVELOPMENT. 3 Hours.

This course provides the student an opportunity to design an evidence-based process and intervention to improve practice and the practice environment. Prerequisite: Doctoral Standing. NURS 6327, NURS 6307, NURS 6382, NURS 6320, NURS 6322, NURS 6323, and NURS 6324.

NURS 6327. CLINICAL SCHOLARSHIP TO IMPROVE HEALTHCARE OUTCOMES. 3 Hours.

This course will develop clinical scholarship and analytical methods to improve healthcare outcomes. Prerequisite: Graduate Standing; Graduate Level Statistics (with minimum of a B).

NURS 6330. LARGE DATABASES. 3 Hours.

This course is designed to educate students on the theoretical framework behind the design, administration, and analysis of population-based health surveys. The focus is on datasets containing health and behavioral variables, but the skills learned are transferable to other areas of research as well. At the conclusion of this course students will be prepared to produce descriptive statistics about a population using data collected under complex survey design. With the collaboration of the instructor, this course culminates in the development, analysis, and reporting of a research conducted using a CDC database.

NURS 6331. DNP PRACTICUM I PRACTICE. 3 Hours.

During this course, students implement evidence-based solutions that influence health outcomes. Prerequisite: NURS 6307, NURS 6320, NURS 6321, NURS 6322, NURS 6323, NURS 6324, NURS 6326, NURS 6382. DNP status and good academic standing (GPA 3.0).

NURS 6333. DNP PRACTICUM II PRACTICE. 3 Hours.

During this course, students implement and evaluate evidence-based solutions that influence health outcomes. Prerequisite: NURS 6307, NURS 6320, NURS 6621, NURS 6322, NURS 6323, NURS 6324, NURS 6326, NURS 6382 NURS 6620. Good academic standing (GPA 3.0).

NURS 6370. INDEPENDENT STUDY IN NURSING. 3 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, R, P.

NURS 6381. RESEARCH PRACTICUM. 3 Hours.

With the active guidance and under the supervision of an active researcher, the student will complete at least 75 hours of research activities, such as designing studies, seeking IRB and organizational approvals, obtaining informed consent, collecting and analyzing data, conducting laboratory experiments, or disseminating findings. This is practical research experience in preparation for the student's dissertation in the PhD Program in Nursing. Prerequisite: Doctoral standing. By permission of Research Advisor.

NURS 6382. HEALTH CARE POLICY. 3 Hours.

Critique policies and processes to provide leadership in developing and implementing policies and/or regulations that influence institutional, local, state, federal, and/or international healthcare outcomes. Prerequisite: Doctoral Standing. Graduate Level Statistics (with minimum of a B). NURS 6327 if in DNP program.

NURS 6390. TOPICS IN NURSING. 3 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6399. DISSERTATION. 3 Hours.

Graded F, R. Prerequisite: Admission to candidacy for the Doctor in Nursing degree.

NURS 6470. INDEPENDENT STUDY IN NURSING. 4 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F, R, P.

NURS 6490. TOPICS IN NURSING. 4 Hours.

Selected topics in advanced nursing. May be repeated for credit as topics change.

NURS 6620. DNP PRACTICUM I. 6 Hours.

During this course, students implement evidence-based solutions that influence health outcomes. Prerequisite: NURS 6307, NURS 6320, NURS 6322, NURS 6323, NURS 6324, NURS 6326, NURS 6327, and NURS 6382. Good academic standing (GPA 3.0).

NURS 6621. DNP PRACTICUM II. 6 Hours.

During this course, students evaluate evidence-based solutions that influence health outcomes. Prerequisite: NURS 6620 and DNP status, Good academic standing (3.0).

NURS 6699. DISSERTATION. 6 Hours.

Graded F, R, P, W. Prerequisite: Admission to candidacy for the Doctor in Nursing degree.

NURS 6999. DISSERTATION. 9 Hours.

Graded F, R, P. Prerequisite: Admission to candidacy for the Doctor in Nursing degree.

NURS 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Nursing - Elective (AP) (NURS-EL)

COURSES

NURS-EL 3300. COOPERATIVE NURSING WORK EXPERIENCE. 3 Hours.

Designed for nursing cooperative education students to integrate classroom study with career-related practical experience in the workplace. Must earn a C or better to earn credit. Prerequisite: Admission into nursing degree program.

NURS-EL 3347. SPECIALIZED TOPICS IN NURSING. 3 Hours.

Areas of special interest. May be repeated with varied topics. Must earn a C or better to earn credit.

NURS-EL 3352. THE LEGACY OF THE FAMILY. 3 Hours.

Explore and enhance understanding and application of the principles of family science knowledge in therapeutic relationships with families across the lifespan.

Nursing - Independent Studies (NURS-IS)

COURSES

NURS-IS 3137. INDEPENDENT STUDY. 1 Hour.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit.

Prerequisite: Consent of instructor.

NURS-IS 3237. INDEPENDENT STUDY. 2 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn C or better for credit.

Prerequisite: Consent of instructor.

NURS-IS 3337. INDEPENDENT STUDY. 3 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn a grade of C or better for credit.

Prerequisite: Consent of Instructor.

NURS-IS 5370. INDEPENDENT STUDY IN NURSING. 3 Hours.

Detailed in-depth study in a specific topic area. Topic and mode of study are agreed upon by student(s) and instructor prior to registration. May be repeated for credit when topics vary. Graded F,R,P,W. Permission of instructor. Graduate standing.

Nursing - Lower Level (NURS-LL)

Nursing - Mexico Study Abroad (NURS-MX)

COURSES

NURS-MX 3337. INDEPENDENT STUDY. 3 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be repeated with various topics. Must earn a grade of C or better for credit. Prerequisite: Consent of Instructor.

NURS-MX 3637. INDEPENDENT STUDY. 6 Hours.

Topic and mode of study are agreed upon by the student and instructor. May be offered with any combination of lecture/lab hours. May be repeated with various topics. Must earn C or better for credit. Prerequisite: Consent of instructor.

Nursing - Student Success (NURS-SS)

COURSES

NURS-SS 2232. LEARNING PROFESSIONAL NURSING AND LIFE SKILLS. 2 Hours.

This course focuses on the development and successful use of time management, test-taking skills, study methods, and additional student success strategies that can support students enrolled in the upper division prelicensure Bachelor of Science in Nursing (BSN) program. Required for students who fail an upper division nursing course. Prerequisite: Admission to the BSN program.

Nursing - Upper Level (NURS-UL)

COURSES

NURS-UL 3333. PROMOTING HEALTHY LIFESTYLES. 3 Hours.

Focus on health promotion and disease prevention strategies that promote healthy lifestyles and empower individuals, families, and populations to achieve optimal health and wellness. The role of the nurse in health promotion is emphasized. Students will examine the impact of nurses' overall wellness on patient safety. Prerequisite: Acceptance into the upper division nursing program.

NURS-UL 3352. THE LEGACY OF THE FAMILY. 3 Hours.

Explore and enhance understanding and application of the principles of family science knowledge in therapeutic relationships with families across the lifespan.

NURS-UL 3365. PHARMACOLOGY IN NURSING PRACTICE. 3 Hours.

Introduction to current concepts of pharmacology and their relationship to nursing practice. Included are basic principles of drug actions, side effects for major drug classifications, and the role of the nurse in drug therapeutics. Must be taken no more than three years prior to acceptance into the nursing program. Prerequisite: BIOL 2457, BIOL 2458, CHEM 1451.

NURS-UL 3366. PATHOPHYSIOLOGIC PROCESSES: IMPLICATIONS FOR NURSING. 3 Hours.

Pathophysiologic alterations, their interactions, and effects on persons across the life span as a basis for therapeutic nursing interventions. Must be taken no more than three years prior to acceptance into the nursing program. Prerequisite: BIOL 2457, BIOL 2458, CHEM 1451.

NURS-UL 3632. CLINICAL NURSING FOUNDATIONS. 6 Hours.

Basic therapeutic nursing interventions with individuals and families in diverse settings using nursing process framework. Prerequisite: or Corequisite: NURS 3320.

Nursing Transferred Course (NRST)

Operations Management (OPMA)

COURSES

OPMA 3306. OPERATIONS MANAGEMENT. 3 Hours.

Introduction to concepts and problem-solving techniques important in operations management and production management. Topics include demand forecasting, capacity management, resource allocation, inventory management, supply chain management, quality control, project management.

Prerequisite: Concurrent enrollment with BSTAT 3321 or BSTAT 3322.

OPMA 3308. OPERATIONS PLANNING AND CONTROL. 3 Hours.

Course covers operations planning and control systems in manufacturing and service organizations. Topics include inventory control, material requirements planning, Just-in-Time and lean manufacturing, production scheduling, capacity planning, operations planning and control software.

Prerequisite: OPMA 3306.

OPMA 3310. PROJECT MANAGEMENT. 3 Hours.

Course covers concepts and issues important in effectively managing projects. Topics include project selection, project planning, negotiation, budgeting, scheduling, resource allocation, project control, project auditing, and project termination. Corequisite: OPMA 3306.

OPMA 4191. STUDIES IN OPERATIONS MANAGEMENT. 1 Hour.

Advanced studies, on an individual basis, in the various fields of operations management. May be repeated for credit with consent of department chair.

Prerequisite: 90 credit hours and permission of instructor.

OPMA 4291. STUDIES IN OPERATIONS MANAGEMENT. 2 Hours.

Advanced studies, on an individual basis, in the various fields of operations management. May be repeated for credit with consent of department chair.

Prerequisite: 90 credit hours and permission of instructor.

OPMA 4301. COMPUTER MODELS IN OPERATIONS MANAGEMENT. 3 Hours.

Course covers applications of computer models used in operations management. Prerequisite: OPMA 3306.

OPMA 4302. SUPPLY CHAIN LOGISTICS. 3 Hours.

Physical supply, in-plant movement and storage, and physical distribution which comprise logistics systems in industry. Topics include facility location, transportation, warehousing, inventory control, distribution networks, and logistics information systems. Prerequisite: OPMA 3306.

OPMA 4303. INTRODUCTION TO MANAGEMENT SCIENCES. 3 Hours.

Introduction to optimization and quantitative analysis of business problems. Topics include applications of linear and integer programming, network analysis, simulation, game theory, queuing theory, and other operations research tools. Prerequisite: OPMA 3306, may be taken concurrently.

OPMA 4307. QUALITY PLANNING AND ANALYSIS. 3 Hours.

Quality of products and services needed by society, to include consideration of quality costs and improvements, designing for quality, process controls, inspections, testing, acceptance sampling, management controls, and quality information systems. Prerequisite: OPMA 3306 and BUSA 3321/STAT 3321.

OPMA 4309. GLOBAL SUPPLY CHAIN MANAGEMENT. 3 Hours.

Course covers concepts and issues important in managing supply chains. A strategic view is taken of the way companies coordinate their operations with suppliers and customers in a global marketplace. The strategic use of information systems to better manage supply chains is also covered.

Prerequisite: OPMA 3306 and OPMA 4302.

OPMA 4310. SUPPLY CHAIN ANALYTICS-THEORY AND PRACTICE. 3 Hours.

Analytics is used to assist decision makers to make well-informed data-driven decisions. The course covers Analytics techniques and tools used in Supply Chain. It covers various quantitative techniques and advanced technologies, such as data mining, big data, statistics, etc. In addition to learning concepts, students will also learn widely used advanced tools hands-on. Prerequisite: OPMA 3306 and basic computer knowledge.

OPMA 4312. PURCHASING MANAGEMENT. 3 Hours.

Examines the purchasing management role and responsibilities in the firm. This will cover issues of quality, solicitation techniques, source selection, pricing principles, legal aspects, value analysis, purchasing systems and ongoing administration of commercial, industrial and government contracts.

Prerequisite: OPMA 3306 and OPMA 4302.

OPMA 4314. SERVICE OPERATIONS. 3 Hours.

Service operations make up the fastest-growing segment in economies throughout the developed world. This course is intended to help emerging business leaders understand challenges and opportunities inherent in the unique nature of service operations. This course emphasizes both strategic and tactical decision-making, with a focus on the effective design, delivery and improvement of service outputs. Prerequisite: OPMA 3306.

OPMA 4331. SEMINAR IN OPERATIONS MANAGEMENT. 3 Hours.

Readings and discussion of special topics in operations management. May be repeated for credit with consent of department chair. Prerequisite: Junior or senior standing and consent of instructor.

OPMA 4391. STUDIES IN OPERATIONS MANAGEMENT. 3 Hours.

Advanced studies, on an individual basis, in the various fields of operations management. May be repeated for credit with consent of department chair.

Prerequisite: 90 credit hours and permission of instruction.

OPMA 4393. OPERATIONS MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in operations management. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

OPMA 5199. GRADUATE OPERATIONS MANAGEMENT INTERNSHIP. 1 Hour.

Practical training in operations management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

OPMA 5299. GRADUATE OPERATIONS MANAGEMENT INTERNSHIP. 2 Hours.

Practical training in operations management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

OPMA 5321. INTRODUCTION TO MANAGEMENT SCIENCES. 3 Hours.

Introduction to optimization and quantitative analysis of business problems. Topics include applications of linear and integer programming, network analysis, simulation, game theory, queuing theory, and other operations research tools.

OPMA 5361. OPERATIONS MANAGEMENT. 3 Hours.

Introduction to concepts and problem-solving techniques important in production management and operations management. Topics include demand forecasting, capacity management, resource allocation, inventory management, supply chain management, quality control, and project management. Prerequisite: BSTAT 5301 or equivalent.

OPMA 5362. SERVICES OPERATIONS. 3 Hours.

Service operations make up the fastest-growing segment in economies throughout the developed world. This course is intended to help emerging business leaders understand challenges and opportunities inherent in the unique nature of service operations. This course emphasizes both strategic and tactical decision-making, with a focus on the effective design, delivery and improvement of service outputs. Prerequisite: OPMA 5361.

OPMA 5363. OPERATIONS PLANNING AND CONTROL. 3 Hours.

Course covers operations planning and control systems in manufacturing and service organizations. Topics include inventory control, material requirements planning, Just-In-Time and lean manufacturing, production scheduling, capacity planning, and operations planning and control software. Previous introductory course in operations management suggested.

OPMA 5364. PROJECT MANAGEMENT. 3 Hours.

Course covers concepts and issues important in effectively managing projects. Topics include project selection, project planning, negotiation, budgeting, scheduling, resource allocation, project control, project auditing, and project termination.

OPMA 5365. PURCHASING MANAGEMENT. 3 Hours.

Examines the purchasing management role and responsibilities in the firm. This will cover issues of quality, solicitation techniques, source selection, pricing principles, legal aspects, value analysis, purchasing systems and ongoing administration of commercial, industrial and government contracts. Prerequisite: OPMA 5361 and OPMA 5369.

OPMA 5367. QUALITY MANAGEMENT. 3 Hours.

Course focuses on quality of products and services needed by society. Topics include consideration of quality cost and improvements, designing for quality, process controls, inspections, testing, acceptance sampling, management controls, and quality information systems. Previous introductory course in statistics suggested.

OPMA 5368. GLOBAL SUPPLY CHAIN MANAGEMENT. 3 Hours.

Course covers concepts and issues important in managing supply chains. A strategic view is taken of the way companies coordinate their operations with suppliers and customers in a global marketplace. The strategic use of information systems to better manage supply chains is also covered. Previous introductory course in operations management suggested. Prerequisite: OPMA 5361 and OPMA 5369.

OPMA 5369. SUPPLY CHAIN LOGISTICS. 3 Hours.

Course covers physical supply, in-plant movement and storage, and physical distribution of materials, which comprise logistics systems in industry. Topics include facility location, transportation, warehousing, inventory control, distribution networks, and logistics information systems. Previous introductory course in operations management suggested. Prerequisite: OPMA 5361 or equivalent.

OPMA 5379. ORGANIZATIONAL RESEARCH PROJECT. 3 Hours.

Students conduct a research project at a local organization, focusing on applications of business concepts studied in their coursework. Prerequisite: Cohort MBA Major.

OPMA 5382. INDEPENDENT STUDIES IN OPERATIONS MANAGEMENT. 3 Hours.

Extensive analysis of an Operations Management topic.

OPMA 5389. INDEPENDENT STUDIES IN MILITARY ACQUISITION. 3 Hours.

This course is reserved for military officers in the Training with Industry or I-Grade programs at UT Arlington. Studies consist of an acquisition practicum with training at an assigned agency and a required seminar at UT Arlington.

OPMA 5392. SELECTED TOPICS IN OPERATIONS MANAGEMENT. 3 Hours.

In-depth study of selected topics in operations management. May be repeated when topics vary.

OPMA 5399. GRADUATE OPERATIONS MANAGEMENT INTERNSHIP. 3 Hours.

Practical training in operations management. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities.

OPMA 5689. INDEPENDENT STUDIES IN MILITARY ACQUISITION. 6 Hours.

This course is reserved for military officers in the Training with Industry or I-GRAD programs at UT Arlington. Studies consist of an acquisition practicum with training at an assigned agency and a required seminar at UT Arlington.

OPMA 5989. INDEPENDENT STUDIES IN MILITARY ACQUISITION. 9 Hours.

This course is reserved for military officers in the Training with Industry or I-Grade programs at UT Arlington. Studies consist of an acquisition practicum with training at an assigned agency and a required seminar at UT Arlington.

OPMA 6370. SEMINAR IN OPERATIONS MANAGEMENT. 3 Hours.

Doctoral seminar that is a comprehensive and integrative study of operations management that focuses on theoretical frameworks, applications of models, and methods of analysis. Prerequisite: Doctoral standing.

OPMA 6371. INTEGRATED OPERATIONS STRATEGY AND RESEARCH. 3 Hours.

Linkages between the manufacturing and strategy development functions. Research issues within production/operations management. Current techniques/designs for achieving effective research. Prerequisite: Doctoral standing and previous introductory course in operations management suggested.

OPMA 6380. RESEARCH IN OPERATIONS MANAGEMENT. 3 Hours.

Independent research under the supervision of a faculty member. May be repeated for credit. Prerequisite: Doctoral standing.

OPMA 6382. INDEPENDENT STUDIES IN OPERATIONS MANAGEMENT. 3 Hours.

Extensive analysis of an operations management topic.

OPMA 6392. SPECIAL TOPICS IN OPERATIONS MANAGEMENT. 3 Hours.

Advanced doctoral level topics in Operations Management. May be repeated when topics vary. Prerequisite: Doctoral standing.

Philanthropy (PCOM)

COURSES

PCOM 2301. INTRODUCTION TO NONPROFITS AND PHILANTHROPY. 3 Hours.

An overview of working in the nonprofit sector and exploring the issues and values surrounding philanthropy and not-for-profit organizations. Topics include history of philanthropy, theories of the nonprofit sector, law and governance, programming, mission, volunteer recruiting, and fundraising.

PCOM 3301. FUNDRAISING AND DEVELOPMENT. 3 Hours.

Examination of the fundraising practices and development role in nonprofits including the role of government support, earned revenue, private giving, and legal and ethical contexts of fundraising. Topics include the major areas of philanthropy in addition to the fundraising tools such as grant proposals, special events, planned giving, capital campaigns, and new technologies. Prerequisite: PCOM 2301.

PCOM 3309. ORGANIZATIONAL COMMUNICATION. 3 Hours.

Communication functions within formally structured social systems such as business, government, and education. Emphasis on conceptual schemes for conducting analysis of training programs in organizational communication. Credit will not be given for both COMS 3309 and PCOM 3309. Prerequisite: COMS 2304 with a grade of C or better (2.0/4.0), COMS 1301, and 3 hours of Math.

PCOM 3320. STRATEGIC SOCIAL MEDIA COMMUNICATION. 3 Hours.

Developing strategy and content for social media, engaging in audience analysis, understanding the unique attributes of various platforms, and communicating ethically and effectively across those platforms. Credit will not be given for both PCOM 3320 and PREL 3320.

PCOM 4301. NONPROFIT MANAGEMENT. 3 Hours.

Leadership of nonprofits including staff, volunteers, marketing, advocacy, and board development. Topics include the creation of compelling programs and the use of storytelling to appeal to target audiences. Operational and financial aspects of nonprofit management, mission and governance of organizations, and strategic planning for effective management are also covered. Prerequisite: COMM 3315, PCOM 2301, PCOM 3301.

PCOM 4315. BUSINESS PRESENTATIONS. 3 Hours.

The role of internal and external informative and persuasive presentations in business organizations. Extensive readings and practice with an emphasis on research, development, organization, and critical evaluation of oral and visual presentations. Credit will not be given for both COMS 4315 and PCOM 4315. Prerequisite: COMS 1301 and a grade of C or better (2.0/4.0) in COMS 2302 or COMS 2305.

PCOM 4320. MANAGERIAL COMMUNICATION. 3 Hours.

Analysis of the role of the business manager; readings in research and theory with emphasis on problem-solving and motivation. Credit will not be given for both COMS 4320 and PCOM 4320. Prerequisite: COMM 3315 and COMS 3309 with a grade of C or better (2.0/4.0), or permission of the department.

PCOM 4393. SPECIAL TOPICS. 3 Hours.

Special studies in philanthropy. Topic varies from semester to semester. May be repeated when topic changes for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission.

PCOM 4395. DIRECTED INTERNSHIP IN NONPROFITS AND PHILANTHROPY. 3 Hours.

Application of practices and theories within a nonprofit. Students work with a host organization in their area of interest applying knowledge to practical situations. Instructor-led seminar sessions examine current events and trends affecting nonprofits. Prerequisite: COMM 3315, PCOM 2301, and PCOM 3301.

Philosophy (PHIL)

COURSES

PHIL 1301. FUNDAMENTALS OF REASONING. 3 Hours.

The analysis of arguments and rhetorical forms. Deals with common forms of valid and fallacious reasoning and includes exercises and drill in practical reasoning.

PHIL 1304. CONTEMPORARY MORAL PROBLEMS. 3 Hours. (TCCN = PHIL 2306)

Examination of ethical problems and theories which have a bearing on contemporary life. Texts may include both classical and contemporary ethical writings and deal with problems such as the conditions under which life may be taken (abortion, capital punishment, medical ethics), business ethics, social justice, and individual rights.

PHIL 2300. INTRODUCTION TO PHILOSOPHY. 3 Hours. (TCCN = PHIL 1301)

An examination of one or more basic problems of lasting interest to philosophers. Typical problems may include human nature and limits of knowledge. Formerly listed as PHIL 1300. Credit cannot be received for both PHIL 1300 and PHIL 2300.

PHIL 2311. LOGIC. 3 Hours. (TCCN = PHIL 2303)

The development of formal and symbolic systems (categorical, propositional, and predicate) for the analysis of arguments.

PHIL 2312. ETHICS. 3 Hours.

Ethics is the philosophical study of morality. This course is an introduction to the main normative ethical theories, such as theological voluntarism, utilitarianism, and Kantianism. A normative ethical theory provides an answer to the question, "What is it that makes right acts right?"

PHIL 2313. PHILOSOPHY OF THE ARTS. 3 Hours.

Problems in the philosophy of art and art criticism; the history of aesthetic theory.

PHIL 2314. PERSPECTIVES ON SCIENCE AND MATHEMATICS. 3 Hours.

Topics and episodes in the history of science and mathematics from a philosophical point of view. Students are brought to understand that science has a fascinating history, is underpinned by deep philosophical presuppositions, and depends upon special social and cultural factors for its continued growth and revision.

PHIL 2315. TOPICS IN PHILOSOPHY. 3 Hours.

In-depth treatment of philosophical topics or movements, such as Existentialism, Philosophy of Science Fiction, Brain and Mind, Asian Philosophy. May be repeated for credit as content changes.

PHIL 2316. COMPUTATION, MIND, AND PARADOX. 3 Hours.

A philosophical and historical introduction to the foundations of logic and mathematics, the psychology of reasoning, and the computational theory of mind. Topics may include: logic, set theory, axiom systems; number and infinity; fallacies of deductive and probabilistic reasoning; Bayesian epistemology; algorithms; artificial intelligence, computational theories of mind and brain.

PHIL 3301. HISTORY OF PHILOSOPHY: ANCIENT PHILOSOPHY. 3 Hours.

The beginning and the early developments of the western philosophic tradition. Ancient Greek philosophy, basically the Pre-Socratics, Socrates, Plato and Aristotle.

PHIL 3302. HISTORY OF PHILOSOPHY: ROMAN AND MEDIEVAL PHILOSOPHY. 3 Hours.

Post-Aristotelians (e.g., the later Stoics, the Epicureans, Neo-Platonists); philosophy of the early Church Fathers through Aquinas and later Scholastics.

PHIL 3303. HISTORY OF PHILOSOPHY: RENAISSANCE AND EARLY MODERN EUROPEAN PHILOSOPHY. 3 Hours.

The philosophical views of Galileo, Newton, Bacon, and Hobbes, the Continental Rationalists and British Empiricists, and a brief introduction to the philosophy of Immanuel Kant.

PHIL 3304. HISTORY OF PHILOSOPHY: NINETEENTH AND EARLY TWENTIETH CENTURY PHILOSOPHY. 3 Hours.

Major philosophers from Kant to the early 20th century.

PHIL 3307. SEMINAR IN RESEARCH METHODS AND PHILOSOPHICAL WRITING. 3 Hours.

Examination of philosophical methodology; philosophical analysis, philosophical writing, discipline-specific bibliographic tools, etc. Students write a series of short papers on topics of interest. Prerequisite: PHIL 2311 and one other PHIL course.

PHIL 3315. EXISTENTIALISM. 3 Hours.

Readings in existentialist philosophy and literature with a special emphasis on such themes as alienation, anxiety, the self, absurdity, value, freedom, and responsibility. Texts may include writings from Kierkegaard, Nietzsche, Heidegger, Sartre, Camus, de Beauvoir, Jaspers, and others.

PHIL 3316. PHILOSOPHY OF RELIGION. 3 Hours.

Problems that engage philosophy of religion (e.g., the existence of God, theodicy, religious language) and the way these problems have been treated by some outstanding Western thinkers.

PHIL 3317. PHILOSOPHICAL LOGIC. 3 Hours.

Begins with predicate calculus and includes such topics as definite descriptions, identity, modal logic, second-order logic, set theory, philosophy of logic and mathematics, and philosophical applications of logic. Prerequisite: PHIL 2311 or consent of the instructor.

PHIL 3318. THE PHILOSOPHY OF SCIENCE AND TECHNOLOGY. 3 Hours.

The method and goals of scientific scholars and inquiry. The distinction between formal and empirical sciences, laws and theories, measurement, the role of observation and experiment, and probability. Formerly listed as PHIL 4315. Credit cannot be received for both PHIL 4315 and PHIL 3318.

PHIL 3319. BIOMEDICAL ETHICS. 3 Hours.

Major ethical problems which arise in modern medicine and in medical/biological research (euthanasia, abortion, patient-physician relations, allocations of medical resources, genetic research, etc.).

PHIL 3320. PHILOSOPHY OF LAW. 3 Hours.

Examination of the institution of law, legal concepts, legal reasoning, and the legal process. Topics may include the nature of law; the moral limits of the criminal law; legal rights; liberty, justice, and equality; punishment; responsibility; the private law (property, contract, and tort); constitutional law; and feminist jurisprudence.

PHIL 3321. PHILOSOPHY OF LANGUAGE. 3 Hours.

Topics to be investigated include the nature of language and communication; the distinction between natural and artificial language; the traditional division of the field into syntax, semantics, and pragmatics; and such specialized subtopics as meaning, reference, truth, and speech acts. Completion of PHIL 2311 is recommended, but not required.

PHIL 3324. BUSINESS ETHICS. 3 Hours.

Selected ethical issues in business, such as the nature and moral status of capitalism; corporate moral agency and responsibility; issues and challenges in the workplace (e.g., civil liberties, personnel policies, unionization, privacy, and safety); moral choices facing employees (e.g., loyalty, insider trading, and whistleblowing); job discrimination (e.g., affirmative action, comparable worth, and sexual harassment); consumer protection; environmental protection; and globalization.

PHIL 3330. SOCIAL AND POLITICAL PHILOSOPHY. 3 Hours.

Investigation of the basis (if any) of political obligation. Analysis of social and political concepts, such as equality, liberty, rights, and justice. Discussion of social and political theories, such as anarchism, contractarianism, Marxism, and conservatism.

PHIL 3340. TOPICS IN APPLIED ETHICS. 3 Hours.

Investigation of a single moral issue or a cluster of issues that arise in the context of a particular profession. Examples of the former are abortion, punishment, freedom of speech, the environment, and the moral status of animals. Examples of the latter are business ethics, legal ethics, engineering ethics, nursing ethics, and computer ethics. May be repeated for credit as content changes.

PHIL 3341. TOPICS IN BIOETHICS. 3 Hours.

Investigation of a single moral issue or a cluster of issues that arise in the context of the medical profession. Examples of possible topics are resource allocation, surrogate decision-making, the philosophy of mental illness, research ethics, reproductive ethics, and end of life care. May be repeated for credit as content changes. Prior completion of PHIL 3319 (Biomedical Ethics) is strongly recommended, but not required.

PHIL 3350. TOPICS IN ANCIENT GREEK PHILOSOPHY. 3 Hours.

An in-depth examination of a particular figure or topic in the field of ancient Greek philosophy. Works studied may include those of the Pre-Socratics, Plato, Aristotle, Hellenistic, and Neoplatonic philosophers.

PHIL 3390. HONORS COLLOQUIUM. 3 Hours.

An interdisciplinary course designed to meet the needs of advanced undergraduates in the Honors College.

PHIL 4191. UNDERGRADUATE CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering research of individual students or study in designated areas. May be repeated for credit.

PHIL 4192. CONFERENCE COURSE IN BIOETHICS. 1 Hour.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in bioethics. Requires permission of the department chair and the instructor.

PHIL 4291. UNDERGRADUATE CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering research of individual students or study in designated areas. May be repeated for credit.

PHIL 4292. CONFERENCE COURSE IN BIOETHICS. 2 Hours.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in bioethics. Requires permission of the department chair and the instructor.

PHIL 4318. PHILOSOPHY AND LITERATURE. 3 Hours.

The role of ideas in literature and an analysis of the actual contacts between philosophy and the dominant world views of the great writers of literature.

PHIL 4380. PHENOMENOLOGY. 3 Hours.

Phenomenology is a major philosophical movement based on the methodically controlled description of conscious experience, as uncovered at first introspectively. This course focuses on (1) the origin of the movement in common epistemological problems arising in philosophy, psychology, mathematics, and the natural sciences, (2) the development of the movement's method, and (3) a close study of some influential phenomenologists, including Husserl, Sartre, and Merleau-Ponty. Contemporary connections to the neuroscientific study of consciousness are also explored.

PHIL 4381. THEORIES OF INTERPRETATION. 3 Hours.

Philosophical hermeneutics-the theory or study of interpretation-dates back at least to Aristotle and grew in the 20th century from a focus on texts to an analysis of the interpretation of every human act and idea. This course traces the history of the problems of interpretation from Aristotle to the present.

PHIL 4383. PHILOSOPHY OF MIND. 3 Hours.

This course is a non-exhaustive survey of topics central to contemporary analytic philosophy of mind: the mind/body problem, functionalism, consciousness, intentionality, mental causation, and perception. Readings include work by figures such as Smart, Armstrong, Putnam, Block, Kripke, Chalmers, and Siegel. Evaluation will likely involve some subset of: a midterm examination, short papers, a more substantial research project, and a final examination, on each of which students will be assessed for conceptual clarity, communicative economy, and critical reasoning.

PHIL 4385. THEORY OF KNOWLEDGE. 3 Hours.

Problems which arise from attempts to give an account of human knowledge. Skepticism, perception, induction, or the nature of truth. Note: Although there are no prerequisites for this course, students who have had no previous philosophy courses may find the material difficult.

PHIL 4386. METAPHYSICS. 3 Hours.

Problems which arise from attempts to give an account of reality and its manifestations. Possibility and necessity, causality, the nature of events, mind-body, and universals. Note: Although there are no prerequisites for this course, students who have had no previous philosophy courses may find the material difficult.

PHIL 4387. TOPICS IN VALUE THEORY. 3 Hours.

In-depth treatment of an issue or topic within value theory, which is broadly construed to include moral philosophy (and its subfields, such as moral epistemology and moral psychology), social philosophy, political philosophy, philosophy of law, aesthetics, philosophy of religion, and feminist philosophy. May be repeated for credit with permission of the department.

PHIL 4388. TOPICS IN THE HISTORY OF PHILOSOPHY. 3 Hours.

In-depth treatment of a single important philosophical writer, a related group of writers, or an extended tradition. May be repeated for credit with permission of the department.

PHIL 4389. TOPICS IN PHILOSOPHY AND THE SOCIAL SCIENCES. 3 Hours.

In-depth treatment of one or more of the social sciences from a philosophical perspective: may include the philosophy of history, social philosophy, political philosophy, philosophy of the social sciences, or any specific subject therein. Credit may not be granted for PHIL 4311 or PHIL 4317 (no longer offered) and PHIL 4389. May be repeated for credit with permission of the department.

PHIL 4391. UNDERGRADUATE CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering research of individual students or study in designated areas. May be repeated for credit.

PHIL 4392. CONFERENCE COURSE IN BIOETHICS. 3 Hours.

This course is an independent study offering students an opportunity for in-depth study of a specific topic in bioethics. Requires permission of the department chair and the instructor.

PHIL 4394. SENIOR THESIS. 3 Hours.

During the senior year, the student completes a thesis under the direction of a faculty member in the major department. Required of all pre-professional track philosophy majors and of all philosophy majors who are members of the University Honors College.

PHIL 5391. CONFERENCE COURSE IN PHILOSOPHY. 3 Hours.

May be taken only with the permission of the instructor and Graduate Advisor.

PHIL 5392. TOPICS IN THE HISTORY OF PHILOSOPHY. 3 Hours.

Consideration in depth of the work of a single philosopher or a related philosophical school against the background of the development of philosophy. May be repeated for credit as the topic changes.

PHIL 5393. PHILOSOPHICAL PERSPECTIVES ON THE HUMANITIES. 3 Hours.

A philosophical inquiry into problems and issues of relevance in humanistic disciplines. May be repeated for credit as the topic changes.

PHIL 6389. SEMINAR IN PHILOSOPHICAL ANALYSIS. 3 Hours.

Seminar-style treatment of some major problem in contemporary philosophy. May be repeated for credit as the topic changes.

PHIL 6394. TOPICS IN SYSTEMATIC PHILOSOPHY. 3 Hours.

In-depth treatment of an issue or issues in metaphysics, epistemology, ethics, aesthetics or related subdisciplinary areas. May be repeated for credit as the topic changes.

Physical Education (PHED)

COURSES

PHED 0113. PHYS EDUC. 1 Hour.

Physics (PHYS)

COURSES

PHYS 1181. PROBLEMS IN MECHANICS. 1 Hour.

Primarily an independent study course involving problem-solving in general technical mechanics. The objective is to prepare the student whose background in physics is of a non-technical nature to do advanced study in curricula requiring technical physics. This course in combination with PHYS 1441 shall serve as an equivalent to PHYS 1443. Prerequisite: MATH 1426 and a grade of B or better in PHYS 1441. Department consent may be granted to take this course with Physics B AP score of 4 or 5.

PHYS 1182. PROBLEMS IN ELECTRICITY AND MAGNETISM. 1 Hour.

Primarily an independent study course involving problem-solving in general technical electricity and magnetism. The objective is to prepare the student whose background in physics is of a non-technical nature to do advanced study in curricula requiring technical physics. This course in combination with PHYS 1442 shall serve as an equivalent to PHYS 1444. Prerequisite: MATH 2425 and a grade of B or better in PHYS 1442. Department consent may be granted to take this course with Physics B AP score of 4 or 5.

PHYS 1188. SPECIAL PROBLEMS IN GENERAL PHYSICS. 1 Hour.

Primarily laboratory work and/or problem-solving in general technical physics. Prerequisite: PHYS 1441 or PHYS 1443 lecture credit equivalent or PHYS 1442 or PHYS 1444 lecture credit equivalent.

PHYS 1288. SPECIAL PROBLEMS IN GENERAL PHYSICS. 2 Hours.

Primarily laboratory work and/or problem-solving in general technical physics. Prerequisite: PHYS 1441 and PHYS 1442 lecture credit equivalent or PHYS 1443 and PHYS 1444 lecture credit equivalent.

PHYS 1300. INTRODUCTION TO MUSICAL ACOUSTICS. 3 Hours.

An introduction, for the music major, to the nature of periodic motion and its relation to music, characteristics of sound waves, sources of sound used in music, musical scales and temperament, mechanics of hearing, recording and reproduction of sound. May not be used to satisfy any of the requirements for a degree in physics.

PHYS 1301. PHYSICS FOR NON SPECIALISTS I. 3 Hours.

PHYS 1301 and 1302 constitute a one-year introductory course for liberal arts and business majors. How physics plays a role in everyday life; explanations of how things work. Helps develop analytical thinking. The first semester explains motion and forces and heat.

PHYS 1302. PHYSICS FOR NON SPECIALISTS II. 3 Hours.

Follows PHYS 1301 and explains sound, light, electricity and magnetism. Prerequisite: PHYS 1301 or permission from instructor.

PHYS 1351. ENERGY AND ENVIRONMENT. 3 Hours.

This course explores the fundamental laws of nature and natural processes related to energy production, transport, storage, and uses. The objective of this course is to provide students with an in-depth understanding of the Physics of Energy and its relation to the Earth Environment. The course is designed for non-science major students with two one-hour lectures (or one two-hour lecture) and one 2-hour laboratory per week.

PHYS 1441. GENERAL COLLEGE PHYSICS I. 4 Hours. (TCCN = PHYS 1401)

The first half of a one-year, non-calculus introductory physics course taken by pre-medical, pre-dental, biology and architectural majors and others. The study of mechanics, elasticity, fluids, heat and waves is supplemented by laboratory experiments. Familiarity with high school algebra and trigonometry is required.

PHYS 1442. GENERAL COLLEGE PHYSICS II. 4 Hours. (TCCN = PHYS 1402)

The second half of a one-year, non-calculus introductory physics course. Subject matter includes electricity and magnetism, light and optics, and modern physics. Prerequisite: PHYS 1441 or equivalent, or permission of instructor.

PHYS 1443. GENERAL TECHNICAL PHYSICS I. 4 Hours. (TCCN = PHYS 2425)

The first half of a one-year technical course. Required for many science and engineering majors, exceeds premedical requirement. The study of physical phenomena in the fields of mechanics, heat, and waves. Concurrent enrollment in MATH 1426 (per prerequisite) is not recommended if no prior background in calculus. Prerequisite: MATH 1426 or consent of instructor.

PHYS 1444. GENERAL TECHNICAL PHYSICS II. 4 Hours. (TCCN = PHYS 2426)

The second half of a one-year technical course. The study of physical phenomena including electricity, magnetism, circuit theory, light, and optics. Prerequisites: PHYS 1443 or equivalent and MATH 2425 or concurrent enrollment.

PHYS 2311. MATHEMATICAL METHODS OF PHYSICS. 3 Hours.

Harmonic oscillators, waves, vector description of particles and fields, coordinate transformations, eigenvalue problems, and systems of linear equations. Prerequisites: PHYS 1444 or equivalent and MATH 2425.

PHYS 2315. INTRODUCTORY ASTROPHYSICS. 3 Hours.

This course introduces Science and Engineering majors to astrophysics. Subject matter includes the solar system, stellar properties and evolution, the Milky Way galaxy, normal and active galaxies, and cosmology. Prerequisite: PHYS 1444 or permission of the instructor.

PHYS 2321. COMPUTATIONAL PHYSICS. 3 Hours.

Development of computational techniques, including simulation, through applications to physical problems. A survey of topics including the multi-body problem, celestial mechanics, scattering, chaos, percolation, fractals, random processes, Fourier techniques in wave phenomena, Monte Carlo methods, and image reconstruction techniques. Prerequisite: PHYS 1444 or equivalent.

PHYS 3183. MODERN PHYSICS LABORATORY. 1 Hour.

Supplements the topics covered in PHYS 3313. Prerequisite: PHYS 3313 or concurrent enrollment.

PHYS 3313. INTRODUCTION TO MODERN PHYSICS. 3 Hours.

A brief introduction to the theories of quantum mechanics and statistical mechanics followed by a survey of atomic physics, conductors, semiconductors and modern electronic devices, nuclear and sub-nuclear physics. Prerequisites: PHYS 1444 or equivalent and MATH 2425.

PHYS 3315. ASTROPHYSICS AND COSMOLOGY. 3 Hours.

Diverse concepts in theoretical physics are applied to a wide range of astrophysical problems. Topics include stellar properties, spectra, evolution, radiation transport, nuclear reactions, degenerate matter, orbital mechanics, galactic dynamics, introductory general relativity and cosmology. Prerequisite: PHYS 3313 and MATH 3318 or MATH 3319.

PHYS 3316. ASTROBIOLOGY I. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include properties of life, origin and evolution of life on Earth, terrestrial geology and habitability, environmental forcings, extremophiles, mass extinctions, meteorites, searches for life in the solar system. Offered as BIOL 3316, GEOL 3316 and PHYS 3316; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent.

PHYS 3321. INTERMEDIATE ELECTRICITY AND MAGNETISM. 3 Hours.

Vector algebra and vector calculus applied to electrostatics, magnetostatics, the study of dielectric materials, and boundary value problems. Prerequisite: PHYS 2311 and MATH 3318 or MATH 3319.

PHYS 3341. INTRODUCTION TO BIOLOGICAL PHYSICS. 3 Hours.

This course will cover four parts: Part I - History of Biological Physics and the general introduction of Cell biology; Part II - Physics of Biomaterials including polymer Physics; DNA & RNA; Protein Structures, Functions and Physics; Part III - Physics of life genetics including molecular motors, ATP functions, Photosynthesis and Physics of genetic regulations; and Part IV - Physics of biological detection including Physics of Radiation diagnosis; Optical Imaging; Magnetic Resonance Imaging and Ultrasound imaging. Prerequisite: PHYS 1442 or PHYS 1444 or equivalent.

PHYS 3342. INTRODUCTION TO NANO-BIO PHYSICS. 3 Hours.

The objective of this course is to provide students with an in-depth understanding of the physics of nanotechnology and its biological applications. The course is composed of two parts: nanoparticle physics and nano-bio physics. In the first part, the physics of nanotechnology will be introduced. The second part is the biological applications of nanotechnology, for which the focus will be on how to understand the physics of these applications. The understanding of the physical objectives for these applications will be helpful for the exploration of nano-biotechnology. Key advances from the recent literature will be reviewed and introduced to students as supplemental topics. Prerequisite: PHYS 1442 or PHYS 1444 or equivalent.

PHYS 3358. ASTROBIOLOGY II. 3 Hours.

This is an interdisciplinary course between astrophysics, biology and geology. Topics include basic properties of life, habitability of Earth, studies of possible life regarding Mars, Europa & Titan, space missions, exoplanets and exomoons, stellar habitable zones, multistellar systems, exoEarths, biomarkers, SETI, Fermi paradox, Drake equation, cosmology. Offered as BIOL 3358, GEOL 3358, and PHYS 3358; credit will be granted only once. Prerequisite: PHYS 1441 & PHYS 1442 or equivalent and PHYS 2315 or PHYS 3315, or permission from instructor. Prerequisites for Biology majors: PHYS 1441 & PHYS 1442 or equivalent. Note that Astrobiology I is strongly recommended to students to be taken prior to Astrobiology II, but is not a prerequisite.

PHYS 3360. PHYSICS OF THE HUMAN BODY. 3 Hours.

This course will explore the fundamental laws and natural processes related to the mechanics, fluid dynamics, optics, and biophysics of the human body. It is designed for kinesiology pre-health, biology and nursing students seeking to understand the foundations and biophysical principles of human life. Note that Kinesiology students seeking to apply to science based graduate programs are advised to take PHYS 1441 and PHYS 1442 so the prerequisite requirement of these courses will not preclude the students for whom PHYS 3360 is intended from taking the course. Prerequisite: PHYS 1441.

PHYS 3366. SPECIAL TOPICS IN PRE-COLLEGE PHYSICAL SCIENCE INSTRUCTION. 3 Hours.

A laboratory oriented curriculum for teaching physical science and/or physics is developed and experienced. The developed curriculum is particularly appropriate for pre-college instruction. May be repeated for credit as the subject matter changes, but not more than six hours credit may be accumulated. Prerequisite: junior standing, six hours of science, three hours of education, and consent of the instructor.

PHYS 3445. OPTICS. 4 Hours.

Fundamental principles of physical and geometric optics, absorption and scattering, Planck's quantum theory of radiation, diffraction, interference, light sources, and spectra. Prerequisites: PHYS 1444 or equivalent and MATH 2425.

PHYS 3446. NUCLEAR AND PARTICLE PHYSICS. 4 Hours.

The study of atomic nuclei and the fundamental constituents of matter. Topics include nuclear structure, radioactivity, nuclear reactions, fission, fusion, particles and their interactions, the standard model of particle physics, experimental methods, accelerators, and examples from current research topics. Prerequisite: PHYS 3313.

PHYS 3455. ELECTRONICS. 4 Hours.

A study of electronic components and quantum devices and their application to circuits and instrumentation. Prerequisites: PHYS 3313 and MATH 2425.

PHYS 4081. UNDERGRADUATE RESEARCH IN PHYSICS. 0 Hours.

Independent research conducted on a selected topic under the supervision of a member of the Physics faculty. This course may be repeated. This is a non-credit course so cannot be used to meet degree requirements. Prerequisite: Permission of instructor.

PHYS 4117. INDIVIDUAL LEARNING BY SEMINAR. 1 Hour.

Individual instruction on using the seminar as a model of learning current topics in physics. An individual report is required. Prerequisite: 18 hours of physics and senior standing.

PHYS 4171. ADVANCED OPTICS LABORATORY. 1 Hour.

Special laboratory projects in advanced optics. Prerequisite: PHYS 3445 or permission of the instructor.

PHYS 4181. SPECIAL PROBLEMS. 1 Hour.

Selected projects in research or teaching laboratories, which may be repeated in any order for a total credit not to exceed four hours, unless authorized by the undergraduate advisor. Prerequisite: Permission from instructor and Physics undergraduate advisor.

PHYS 4185. ADVANCED ELECTRICITY AND MAGNETISM LABORATORY. 1 Hour.

Supplements the topics covered in PHYS 3321 and PHYS 4324. Prerequisite: PHYS 4324 or concurrent enrollment.

PHYS 4191. SPECIAL TOPICS IN PHYSICS. 1 Hour.

Selected topics arranged on an individual basis, which may be repeated with permission from instructor and Physics undergraduate advisor. Prerequisite: as determined for topic or permission from instructor.

PHYS 4271. ADVANCED OPTICS LAB. 2 Hours.

Special laboratory projects in advanced optics. Prerequisite: PHYS 3445 or permission of the instructor.

PHYS 4281. SPECIAL PROBLEMS. 2 Hours.

Selected projects in research or teaching laboratories, which may be repeated in any order for a total credit not to exceed four hours, unless authorized by the undergraduate advisor. Prerequisite: permission from the instructor and the Physics undergraduate advisor.

PHYS 4291. SPECIAL TOPICS. 2 Hours.

Selected topics arranged on an individual basis, which may be repeated with permission from instructor and Physics undergraduate advisor. Prerequisite: as determined for topic or permission from instructor.

PHYS 4315. THERMODYNAMICS AND STATISTICAL MECHANICS. 3 Hours.

Topics in classical thermodynamics include the laws of thermodynamics, Gibbs' and Helmholtz's free energies, the Maxwell relations, heat capacities, entropy change calculations, phase and chemical changes. Statistical mechanics centers on the partition function and its applications, such as the entropy of an ideal gas, the Maxwell velocity distribution, the heat capacity of a solid, photon statistics, and blackbody radiation. Fermi-Dirac and Bose-Einstein statistics. Prerequisite: PHYS 3313 and MATH 2326 or permission of the instructor.

PHYS 4319. ADVANCED MECHANICS. 3 Hours.

Coupled oscillators, central forces, Lagrange's equations, Hamilton's canonical equations, the moment of inertia tensor, and the application of Euler's angles to rotational motion. Prerequisite: PHYS 2311, PHYS 3321, and MATH 3318 or MATH 3319, or permission of the instructor.

PHYS 4324. ADVANCED ELECTRICITY AND MAGNETISM. 3 Hours.

Electromagnetic phenomena based on Maxwell's equations and particle-field interactions. Prerequisite: PHYS 3321 or permission of the instructor.

PHYS 4325. SOLID STATE PHYSICS. 3 Hours.

Classification of crystalline solids and elastic and thermal properties, electric and magnetic properties, and electronic properties of solids. An introduction to current research problems. Prerequisite: PHYS 4315 or permission of the instructor.

PHYS 4326. INTRODUCTION TO QUANTUM MECHANICS. 3 Hours.

Schroedinger's equation and implications, the free particle, the one-electron atom, the potential barrier, and perturbation theory. Prerequisite: PHYS 3313, MATH 3318 or MATH 3319, or permission of the instructor.

PHYS 4327. INTRODUCTION TO QUANTUM MECHANICS II. 3 Hours.

This is a continuation of Introduction to Quantum Mechanics (PHYS 4326). The topics that will be covered will include: time-independent perturbation theory for non-degenerate states, degenerate perturbation theory, atoms with one or two electrons and molecules, Fermi and Bose gases, time-dependent perturbation theory, scattering theory, and introduction to relativistic quantum mechanics. Prerequisite: PHYS 4326 or permission from instructor.

PHYS 4343. RESEARCH METHODS - UTEACH. 3 Hours.

The purpose of this course is to present UTeach students with the tools scientists use to solve scientific problems. These tools enable scientists to develop new knowledge and insights, the most important of which are eventually presented in textbooks and taught in more conventional science classes. These tools include: design of experiments to answer scientific questions; use of statistics to interpret experimental results and deal with sampling errors; mathematical modeling of scientific phenomena; finding and reading articles in the current scientific literature; applying scientific arguments in matters of social importance; writing scientific papers; reviewing scientific papers; oral presentation of scientific work; use of probes and computers to gather and analyze data; ethical treatment of human subjects; laboratory safety. Research Methods is primarily a laboratory course, and most of these topics are developed in connection with 4 independent inquiries UTeach students design and carry out. Written inquiries will be evaluated as examples of scientific writing. Prerequisite: C or better in SCIE 1201 or SCIE 1334 or concurrent enrollment; junior or senior standing.

PHYS 4391. SPECIAL TOPICS. 3 Hours.

Selected topics arranged on an individual basis, which may be repeated with permission from instructor and Physics undergraduate advisor.

Prerequisite: as determined for topic or permission from instructor.

PHYS 4393. HONORS THESIS IN PHYSICS. 3 Hours.

Required of all students in the University Honors College. During the senior year the honors physics major will perform a research project under the direction of a Physics Department faculty member.

PHYS 5193. READINGS IN PHYSICS. 1 Hour.

Conference course. May be repeated for credit.

PHYS 5194. RESEARCH IN PHYSICS. 1 Hour.

Conference course with laboratory. May be repeated for credit.

PHYS 5294. RESEARCH IN PHYSICS. 2 Hours.

Conference course with laboratory. May be repeated for credit.

PHYS 5305. CHAOS AND NONLINEAR DYNAMICS. 3 Hours.

Introduction to basic principles and concepts of chaos theory and their applications in diverse fields of research. Topics include chaotic and non-chaotic systems, stability analysis and attractors, bifurcation theory, routes to chaos and universality in chaos, iterated maps, Lyapunov exponents, fractal dimensions, multifractals, hamiltonian chaos, quantum chaos, controlling chaos, self-organized systems, and theory of complexity.

PHYS 5306. CLASSICAL MECHANICS. 3 Hours.

General principles of analytical mechanics, the kinematics of rigid bodies, canonical transformation, Hamilton-Jacobi theory.

PHYS 5307. QUANTUM MECHANICS I. 3 Hours.

Matrix formulation, theory of radiation, angular momentum, perturbation methods.

PHYS 5308. QUANTUM MECHANICS II. 3 Hours.

Approximate methods, symmetry and unitary groups, scattering theory. Prerequisite: PHYS 5307.

PHYS 5309. ELECTROMAGNETIC THEORY I. 3 Hours.

Boundary value problems in electrostatics and magnetostatics, Maxwell's equations.

PHYS 5310. STATISTICAL MECHANICS. 3 Hours.

Fundamental principles of statistical mechanics, Liouville theorem, entropy, Fermi-Dirac distribution, Bose-Einstein distribution, Einstein condensation, density matrix, quantum statistical mechanics, kinetic methods, and transport theory.

PHYS 5311. MATHEMATICAL METHODS IN PHYSICS I. 3 Hours.

Algebraic and analytical methods used in modern physics. Algebra: matrices, groups, and tensors, with application to quantum mechanics, the solid state, and special relativity. Analysis: vector calculus, ordinary and partial differential equations, with applications to electromagnetic and seismic wave propagation.

PHYS 5312. MATHEMATICAL METHODS IN PHYSICS II. 3 Hours.

Continuation of PHYS 5311 with a selection from the following topics. Algebra: matrix representations of the symmetric and point groups of solid state physics, matrix representations of the continuous groups $O(3)$, $SU(2)$, $SU(3)$, $SL(2,C)$, general covariance. Analysis: further study of analytic functions, Cauchy's theorem, Green's function techniques, orthogonal functions, integral equations. Prerequisite: PHYS 5311.

PHYS 5313. ELECTROMAGNETIC THEORY II. 3 Hours.

Modern tensorial treatment of classical electrodynamics, force on and field of a moving charge, derivation and application of 4-vector potential, Maxwell's equations in tensor form, field momentum and radiation. Prerequisite: PHYS 5309.

PHYS 5314. ADVANCED OPTICS. 3 Hours.

Electromagnetic wave equations, theory of diffraction, radiation scattering and dispersion, coherence and laser optics. Additional advanced topics of current interest.

PHYS 5315. SOLID STATE I. 3 Hours.

Crystal structure, lattice vibration, thermal properties, and band theory of solids.

PHYS 5316. SOLID STATE II. 3 Hours.

Electrical and magnetic properties of crystalline solids, magnetic resonance, and optical phenomena. Prerequisite: PHYS 5315.

PHYS 5317. STATISTICAL MECHANICS II. 3 Hours.

Methods in applied statistical mechanics. Topics may include fluctuations and critical phenomena, the Ising model, the master equation, transport in solids, and chaos. Prerequisite: PHYS 5310.

PHYS 5319. MATHEMATICAL METHODS IN PHYSICS III. 3 Hours.

Numerical methods for applied physics; computer techniques, numerical differentiation, integration, interpolation, extrapolation; differential equations, integral equations, statistical analysis; scientific computer library; artificial intelligence programming.

PHYS 5320. QUANTUM MECHANICS III. 3 Hours.

Quantum theory of radiation; relativistic equations; elements of quantum field theory; symmetries and gauge theories. Applications in elementary particle physics and solid-state physics. Prerequisite: PHYS 5308 and PHYS 5312.

PHYS 5325. INTRODUCTION TO ELEMENTARY PARTICLES I. 3 Hours.

An overview of particles and forces. Particle detectors and accelerators. Invariance principles and conservation laws. Standard model. Electromagnetic, weak, strong, and unified interactions.

PHYS 5326. INTRODUCTION TO ELEMENTARY PARTICLE PHYSICS II. 3 Hours.

Systematics of the quark model; the fundamental interactions of elementary particles; spin and relativistic kinematics; Dirac Equation; the standard electroweak model. Prerequisite: PHYS 5325.

PHYS 5328. SURFACE PHYSICS. 3 Hours.

Experimental and theoretical methods for the study of solid surfaces. Geometric and electronic structure of metals and semiconductors. Surfaces as model systems of reduced dimensionality. Adsorption phenomena and film growth.

PHYS 5330. PHYSICS OF SEMICONDUCTOR PROCESSING AND CHARACTERIZATION. 3 Hours.

Selection from the following topics: physics of crystal growth, lattice defects, impurity diffusion, ion-implantation, thin film growth and plasma etching. Physics of characterization techniques utilizing resistivity, carrier mobility and lifetimes, electrons, x-rays, ions, Rutherford backscattering, neutron activation analysis, positron annihilation spectroscopy, deep-level transient spectroscopy.

PHYS 5381. MECHANICS & HEAT FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Topics include: 1) Newton's laws of motion, gravitation, and planetary motion; 2) the basic laws of thermal and statistical physics; 3) oscillatory motion including waves and sound. Replaceable experiments will be demonstrated throughout the course.

PHYS 5382. ELECTROMAGNETISM FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Topics include: 1) Static charges, current flow, electric and magnetic fields; 2) simple DC/AC electrical circuits including examples from household circuit and practical electronic devices; 3) light and optics including examples such as cameras, microscopes and telescopes. Replaceable experiments will be demonstrated throughout the course.

PHYS 5383. MODERN PHYSICS FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Topics include: 1) Introduction to special relativity and quantum theory; 2) light and radiation; 3) applications to modern electrical devices; 4) nuclear and particle physics.

PHYS 5385. PHYSICS LAB TECHNIQUES FOR TEACHERS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in fundamental physics (not available for M.S. or Ph.D. credit in Physics). Experiments demonstrating various topics are covered. Experiments include gravitational acceleration heat flow, harmonic motion, sound, electric magnetic fields, electric circuits, optic, x-rays and nuclear radiation.

PHYS 5391. SPECIAL TOPICS IN PHYSICS. 3 Hours.

Topics in physics, particularly from areas in which active research is being conducted, are assigned to individuals or small groups for intensive investigations. May be repeated for credit.

PHYS 5393. READINGS IN PHYSICS. 3 Hours.

Conference course. May be repeated for credit.

PHYS 5394. RESEARCH IN PHYSICS. 3 Hours.

Conference course with laboratory. May be repeated for credit.

PHYS 5398. THESIS. 3 Hours.**PHYS 5694. RESEARCH IN PHYSICS. 6 Hours.**

Conference course with laboratory. May be repeated for credit.

PHYS 5698. THESIS. 6 Hours.**PHYS 6301. METHODS OF APPLIED PHYSICS I--ELECTRONICS. 3 Hours.**

The analysis and design of electronic circuits for use in the laboratory. Transistors and integrated circuits in analog instrumentation. Digital logic. Information theory and signal processing.

PHYS 6302. METHODS OF APPLIED PHYSICS II--COMPUTERS IN PHYSICS. 3 Hours.

Applications of computers in physics. Acquisition and analysis of experimental data. Vector and parallel processing, image processing, simulation.

PHYS 6303. METHODS OF APPLIED PHYSICS III--SPECTROSCOPY. 3 Hours.

The principles (interactions, cross-sections, elastic and inelastic scattering, diffraction, coherence), the methodologies (sources, detectors, visualization), and applications (structure, dynamics, composition, excitations) of neutral and charged particle spectroscopies to condensed matter physics and materials science.

PHYS 6304. APPLIED PHYSICS INTERNSHIP. 3 Hours.

Applied physics and engineering research and training in industry or other science or engineering departments of U.T. Arlington or other institutions requiring applied physicists. Faculty supervision and submission of technical progress reports required.

PHYS 6391. SELECTED TOPICS IN APPLIED PHYSICS. 3 Hours.

Topics chosen from research areas in the Department of Physics or at one of the institutions or corporations participating in the traineeship program in applied physics; emphasis on industrial and engineering applications. May be repeated for credit.

PHYS 6399. DISSERTATION. 3 Hours.**PHYS 6604. APPLIED PHYSICS INTERNSHIP. 6 Hours.**

Applied physics and engineering research and training in industry or other science or engineering departments of U.T. Arlington or other institutions requiring applied physicists. Faculty supervision and submission of technical progress reports required.

PHYS 6699. DISSERTATION. 6 Hours.**PHYS 6904. APPLIED PHYSICS INTERNSHIP. 9 Hours.**

Applied physics and engineering research and training in industry or other science or engineering departments of U.T. Arlington or other institutions requiring applied physicists. Faculty supervision and submission of technical progress reports required.

PHYS 6999. DISSERTATION. 9 Hours.**PHYS 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.**

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Political Science (POLS)

COURSES

POLS 2311. GOVERNMENT OF THE UNITED STATES. 3 Hours. (TCCN = GOVT 2305)

(GOVT 2305). The constitution and government of the United States. The organization, procedures, and duties of the branches of the government, together with their accomplishments and defects.

POLS 2312. STATE AND LOCAL GOVERNMENT. 3 Hours. (TCCN = GOVT 2306)

(GOVT 2306). The principles and organization of American state, county, and municipal government, together with current problems and the constitution and government of Texas.

POLS 3301. INTRODUCTION TO GLOBAL ISSUES. 3 Hours.

Comparative perspectives on a broad range of cultural, linguistic, economic, political, and social issues confronting a globalized world today. Designed to draw attention to the multifaceted connections among nation-states, nongovernmental organizations, diverse ethnic, cultural, and religious groups, and populations around the world. Course taught as POLS 3301 and GLOBAL 2301. Credit will be granted in only one department.

POLS 3302. INTRODUCTION TO INTERNATIONAL RELATIONS. 3 Hours.

Introduction to the interplay between states, international organizations, multinational corporations, and popular or militant movements within the international system and to their continued search for wealth, power, and security.

POLS 3303. INTRODUCTION TO PUBLIC ADMINISTRATION. 3 Hours.

The scope and development of public administrative organizations; both the traditional and behavioral approaches to the treatment of administrative principles, decision making, and organizational environment.

POLS 3304. INTRODUCTION TO COMPARATIVE POLITICS. 3 Hours.

Cross-national and cross-cultural comparisons of political systems. Institutional structure, political process, dynamics of change, and ideology.

POLS 3305. GOVERNMENT IN URBAN AMERICA. 3 Hours.

Problems associated with the growth, diversity, and complexity of urban areas and governmental solutions. Urban regimes, neighborhood governments, electoral politics, and intergovernmental relations. Useful for students interested in urban management.

POLS 3306. LEGISLATIVE ORGANIZATION AND PROCEDURE. 3 Hours.

Internal and external influences on the U.S. Congress: rules, norms, committees, seniority, political parties, presidents, media, constituents and interest groups.

POLS 3307. COMPARATIVE STATE AND LOCAL POLITICS. 3 Hours.

Comparison of state and local political institutions and policy choices in the United States. Useful for students interested in state and local government policy innovations.

POLS 3308. POLITICS OF A TEXAS CITY: ARLINGTON CITY POLITICS. 3 Hours.

Describes the political processes over a period of fifty years from the immediate post-World War II years to the present. The outlines of Arlington city government, its structure, the changes, and personalities that have shaped it and held power. This course does not satisfy area distribution requirements.

POLS 3309. HEALTH POLITICS, POLICY, AND ADVOCACY. 3 Hours.

Explores health politics, policy, and advocacy in modern American politics in areas such as health care costs, the opioid epidemic, natural disasters, smoking and vaping, vaccines, and scooters. Considers how stakeholders such as patients, advocacy groups, hospitals, medical professionals, and insurance companies influence policy-making, and how health care policies shape patient care.

POLS 3310. RESEARCH METHODS AND POLITICAL ANALYSIS. 3 Hours.

How to study politics scientifically, through proper research design, quantitative and qualitative methods. Students are familiarized with a statistical package to analyze political data, which will fulfill the computer competency requirement. Prerequisites: POLS 2311, POLS 2312, Math 1301 or Math 1302, and Math 1308. Exceptions as approved by the Department.

POLS 3311. PUBLIC OPINION. 3 Hours.

Measurement of attitudes, public opinion and ideology, the learning and influencing of public opinion, and expression of public opinion in elections and mass political movements. The logic and practice of survey research.

POLS 3312. INTRODUCTION TO PUBLIC POLICY ANALYSIS. 3 Hours.

The American policymaking process from issue creation to program administration and evaluation. Policy models and methods of policy analysis. Oriented toward providing students with skills as a professional policy analyst.

POLS 3313. MODERN CRITICS OF SOCIETY AND POLITICS. 3 Hours.

Designed for both political science and other majors. Focus on writers like Banfield, Galbraith, Marcuse, Reich, Revel, Skinner, and Toffler.

POLS 3315. VIOLENCE & REPRESSION IN THE AMERICAS. 3 Hours.

Examination of extra-legal behavior in the Americas (particularly Latin America). Topics include human rights violations, repression, insurrection, terrorism, and revolution. Analysis of different causes and outcomes of such political participation. Prerequisite: POLS 2311 and POLS 2312.

POLS 3317. MEXICAN POLITICS AND U.S.-MEXICO RELATIONS. 3 Hours.

Current economic and political systems of Mexico and relevant issues in U.S.-Mexico relations. Trade, immigration, economic dependency, energy, contraband, and other topics. Offered as MAS 3317 and POLS 3317; credit will be given in only one department.

POLS 3319. CAUSES OF WAR. 3 Hours.

Introduces students to the causes of war including rationalist explanations, genetic and evolutionary impulses, psychological motivations, and group and structural incentives.

POLS 3327. AMERICAN POLITICAL PARTIES. 3 Hours.

The development and characteristics of the American political party system, including systematic goals, formal organizations, membership recruitment, ideological and issue orientations, electoral and participatory functions, and linkages in the political system.

POLS 3328. INTRODUCTION TO MIDDLE EAST POLITICS. 3 Hours.

The historical developments that have led to the current political, social, economic, and security order of the Middle East, as well as the contemporary challenges facing the region and its inhabitants. Prerequisites: POLS 2311 and POLS 2312.

POLS 3330. JUDICIAL BEHAVIOR AND THE JUDICIAL PROCESS. 3 Hours.

Decision making, role perception, recruitment and socialization of judges, and the relationship between attitudes and values of justices and their decisions. The judicial process and how courts relate to the larger political system and society. Especially recommended for pre-law majors.

POLS 3331. CONTEMPORARY ISSUES IN CIVIL LIBERTIES. 3 Hours.

The status and function of civil liberties in modern America emphasizing problem areas of Equal Employment Opportunity, invasion of privacy by government, obscenity and pornography, and corporate and industrial assaults on civil liberties.

POLS 3333. JURISPRUDENCE. 3 Hours.

An empirical and normative examination of the nature of law, legal reasoning, and modern legal systems, particularly in the U.S. Other topics: the origins of American legal concepts as they have evolved from earlier legal systems in the Western world and a comparative treatment of legal systems in the world today. Especially recommended for pre-law majors.

POLS 3336. STATE COURTS. 3 Hours.

An examination of state judicial institutions emphasizing the role of processes in determining judicial behavior and the composition of state courts. Examines the role of law and courts, judicial system structures, and judicial policy-making in state government. Prerequisite: POLS 2311 and POLS 2312.

POLS 3390. HONORS COLLOQUIUM. 3 Hours.

An interdisciplinary course designed to meet the needs of advanced undergraduates in the honors program.

POLS 4101. MOOT COURT. 1 Hour.

An understanding of legal debate from the perspective of student competitions, discussions of legal doctrines, and legal research methods. Statewide competitions required. This course does not satisfy area distribution requirements. May be repeated for total of 3 hours credit.

POLS 4102. POLITICAL SCIENCE SERVICE LEARNING. 1 Hour.

Students will engage in service learning placements to supplement political science course work with the goal of civic education and community involvement. Placements will be coordinated with the Center for Community Service Learning and students will be required to fulfill not only placement hours, but also additional reflection in writing in consultation with the faculty advisor. This course does not satisfy area distribution requirements.

POLS 4300. POLITICS IN POPULAR CULTURE. 3 Hours.

Use of film and video film, video television, novels, music, or other social media in the presentation of political ideas, opinions, and facts. Techniques, subject matter, and alternative forms of presentation. This course does not satisfy area distribution requirements.

POLS 4303. PUBLIC ADMINISTRATION AND THE POLITICAL PROCESS. 3 Hours.

The relationships of public administration at all levels with democratic institutions, including its interactions in the formulation and execution of public policies with the chief executive, the legislative and judicial branches, political parties, clientele groups, and the public at large.

POLS 4310. RESEARCH IN POLITICAL SCIENCE. 3 Hours.

Provides a hands-on research experience in political science suitable for students who are pursuing research-related careers or who aspire to attend graduate school. Students will gain exposure to best practices in data collection and political analysis. Prerequisite: previous or concurrent enrollment in POLS 3310 and permission of instructor.

POLS 4311. INTERNATIONAL RELATIONS AND POLITICAL PSYCHOLOGY. 3 Hours.

Examines psychological approaches to international politics. Topics may include personality and leadership traits, cognitive and emotional approaches, genetic characteristics and evolution, group decision-making, elite attitudes, public opinion, and social identity.

POLS 4312. INTERNATIONAL ORGANIZATIONS. 3 Hours.

This course introduces students to the institutions, decision-making, and activities of the world's leading multilateral organizations. Examples include the United Nations, NATO, the African Union, and the European Union. Students will focus on how organizations respond to contemporary global challenges such as civil wars, terrorism, human rights abuses, and economic crises. The course also teaches students how to apply theories of international relations to real-world policy problems.

POLS 4316. WOMEN IN THE POLITICAL PROCESS. 3 Hours.

This course introduces students to the unique experiences of women in the political process, the impact of these experiences on the political system, and theories of gender and politics. Offered as POLS 4316 and WOMS 4316; credit will be granted only once.

POLS 4317. ETHNIC GROUP POLITICS IN THE UNITED STATES. 3 Hours.

The influence of selected major ethnic groups with special attention given to organizational development, participation in political parties, leadership, ideology, immigration policy, current issues, and relations with the dominant culture and other ethnic groups. Offered as AAST 4317 and POLS 4317; credit will be granted in only one department.

POLS 4318. POLITICS OF AFRICAN AMERICANS. 3 Hours.

The influence of African-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Civil Rights movement, current issues, and relations with other ethnic groups. Offered as AAST 4318 and POLS 4318; credit will be granted in only one department.

POLS 4319. POLITICS OF MEXICAN AMERICANS. 3 Hours.

The influence of Mexican-American politics on United States government and policies with special attention given to organizational development, participation in political parties, leadership, ideology, the Chicano Movement, current issues, and relations with other ethnic groups. Offered as MAS 4319 and POLS 4319; credit will be given in only one department.

POLS 4320. CIVIC ENGAGEMENT, CIVIL SOCIETY, AND COMMUNITY. 3 Hours.

The study of civic engagement, leadership, and political participation. The relationship of community to public policy, political elites and disenfranchised groups. May employ service learning.

POLS 4321. INTEREST GROUPS AND POLITICAL ADVOCACY. 3 Hours.

Examines the role and importance of organized interests in American politics and evaluates group influence and lobbying.

POLS 4322. ISSUES IN POLITICAL THEORY. 3 Hours.

Each time this course is offered it will focus on one particular issue central to the study of political theory for example, authority, justice, citizenship, methodology of the social sciences. May be repeated for credit when content varies.

POLS 4323. FEMINIST POLITICAL THOUGHT. 3 Hours.

Issues raised by the feminist critique of political theory; the exclusion of women from the political sphere until the 20th century; Marxist, liberal, and radical feminist political thought; alternative feminist conceptions of the political. Offered as POLS 4323 and WOMS 4323; credit will be granted only once.

POLS 4324. ELECTORAL BEHAVIOR. 3 Hours.

Major theories of candidate strategy and voter choice, including rational behavior and empirical democratic theory. Introduction to voting behavior analysis in contemporary elections.

POLS 4326. ELECTION STRATEGY AND CAMPAIGN MANAGEMENT. 3 Hours.

Strategies relating to elections and various aspects of managing campaigns, including the techniques of demographic survey, voting behavior analysis, opinion survey, issue research, and candidate research.

POLS 4327. POLITICAL IDEAS OF THE ANCIENT WORLD. 3 Hours.

Principal theorists and schools of political thought prior to 1500, with emphasis upon those making significant contributions to the political heritage of Western Europe.

POLS 4328. MODERN POLITICAL IDEAS. 3 Hours.

The development of political thought from Machiavelli to Marx. Emphasis on the Renaissance, Classical Liberalism, French Radicalism and Marxism.

POLS 4329. CONTEMPORARY CONTROVERSIES IN POLITICAL THEORY. 3 Hours.

Examination of twentieth-century approaches to political thought and central controversies in the field. Topics may include: liberal, conservative, and socialist theories; critical theory; communitarianism; postmodernism; feminism; and identity politics.

POLS 4330. THE U.S. PRESIDENCY. 3 Hours.

The U.S. Presidency, including sources of power, changes in the office over time, and the relationship between the individual and the institution.

POLS 4331. U.S. CONSTITUTIONAL LAW: GOVERNMENT POWER. 3 Hours.

U.S. Supreme Court decisions regarding the structure of government in the United States. Focus on Congress, the President, Federalism, and the relation of the judicial process to these topics. Recommended for pre-law majors.

POLS 4332. U.S. CONSTITUTIONAL LAW: FUNDAMENTAL RIGHTS. 3 Hours.

U.S. Supreme Court decision making involving the Bill of Rights and other fundamental rights. Especially recommended for pre-law majors.

POLS 4333. PRESIDENTIAL LEADERSHIP IN DOMESTIC POLICY MAKING. 3 Hours.

Explores the policy process from the perspective of the U.S. president, examining the president's influence through the policy stages. Prerequisite: POLS 2311 and POLS 2312.

POLS 4336. CONTEMPORARY UNITED STATES FOREIGN POLICY. 3 Hours.

Theories and analytical structure for understanding United States foreign policy. Policy examined from theoretical, structural, regional, and topical perspectives.

POLS 4340. FEDERAL SOCIAL POLICY. 3 Hours.

This course examines public policies, including Social Security, Medicare, Medicaid, and various public assistance programs that emerged from the federal government's attempts to create a "safety net" for American citizens beginning in the 1930s, and from attempts to confront poverty during the 1960s. This course also considers the importance of federal "tax expenditures" in prompting private actors to provide services, such as employer-sponsored health insurance. The course also examines attempts to alter, roll back, or expand the federal role in social policy over recent decades.

POLS 4350. HEALTH POLITICS AND POLICY. 3 Hours.

Debates over the role of government in providing access to health care have been a prominent feature of American politics for the past century. This course examines the politics of health care debates in America as well as major features of federal health policy. Prerequisite: POLS 2311 and POLS 2312.

POLS 4360. THEORIES OF INTERNATIONAL RELATIONS. 3 Hours.

Evaluates major theories, methodologies, and approaches to international relations in order to understand contemporary world affairs.

POLS 4361. THE POLITICAL ENVIRONMENT OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The domestic political systems of Russia and the other former Soviet republics. The communist state in retrospect. Development of political actors, institutions, and parties. Offered as POLS 4361 and RUSS 4361; credit will be given in only one department. Taught in English; for Russian language credit, research will be done in Russian.

POLS 4362. RUSSIA AND THE SUCCESSOR STATES TODAY. 3 Hours.

The metamorphosis of the Communist Party and the current political philosophies of the post-Soviet states. Examination of attitudes and self-perceptions of citizens of these states in the post-period. Emphasis is on area studies and culture. The course will be taught in English, but for Russian language credit; research will be done in the Russian language. May be repeated for credit as topics change. Offered as POLS 4362 & RUSS 4362. Credit will be granted in only one department.

POLS 4365. FOREIGN POLICIES OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The foreign policies of Russia and other former Soviet republics. Development of their policymaking structures and the major issues confronting them. Emphasis on Russia and the superpower relationship, European security and cooperation, relations with developing states, and the interactions of the former Soviet republics. Also listed as RUSS 4365; credit will be given in only one department.

POLS 4369. THE ARAB-ISRAELI CONFLICT. 3 Hours.

Explores the origins, development, and continuation of the Arab-Israeli and Israeli-Palestinian conflicts through personal stories, national narratives, public images, and popular discourses.

POLS 4370. INTERNATIONAL RELATIONS OF THE MIDDLE EAST. 3 Hours.

This course will focus on the international interactions among actors in the Middle East. Topics to be covered include: theoretical and conceptual approaches to understanding regional politics; main conflicts in the region; contemporary challenges and issues; and a survey examination of the foreign policies of select countries.

POLS 4371. THE POLITICS AND FOREIGN POLICY OF ISRAEL. 3 Hours.

This course will examine the domestic politics and foreign policies of Israel. The course will be divided into two sections. The first section will focus on the domestic institutions and politics of Israel, while the second section will focus on Israel's foreign policies and the impact of domestic politics on them. Topics to be covered include: the rise of Zionism; the pre-state period in Palestine; efforts at state-building and institutional development; domestic politics (including institutions, parties, electoral system); divisions in Israeli society; and determinants and examples of foreign policy. Prerequisite: POLS 2311 and POLS 2312.

POLS 4372. HUMAN SECURITY, VIOLENCE, AND SCARCITY. 3 Hours.

This course explores patterns of violence, scarcity, and norms in world politics, particularly as they pertain to the emerging paradigm of human security. This approach calls into question conventional notions of national and international security by focusing on the security of people rather than states. It explores challenges to basic human needs and desires which undermine the ability to be safe, free, and secure -- such as infectious disease, genocide, environmental degradation, migration, and transnational crime. It also examines international responses to such problems.

POLS 4373. POLITICS OF INTERNATIONAL LAW. 3 Hours.

Examines the role of law in the international system including international treaties and agreements, states' compliance with international law, non-governmental actors, international courts. Topics include force, human rights, crimes against humanity, protection of the environment, and terrorism.

POLS 4389. THE POLITICS OF NATIONAL MEMORY. 3 Hours.

An examination of power in Washington, focusing on what lies outside the Executive and Legislative branches. Students visit and study significant institutions and monuments in the city as windows into complex political and social issues. Enrollment is restricted to designated Archer Fellows.

POLS 4390. POLICYMAKING IN WASHINGTON. 3 Hours.

An analysis of the central role of Congress in shaping public policy. Emphasis on real-world policymaking. Students play the role of legislative assistants to members of Congress and produce analyses of the public policy issues. Enrollment is restricted to designated Archer Fellows. Prerequisite: POLS 2311 and POLS 2312.

POLS 4392. SPECIAL TOPICS IN POLITICAL SCIENCE. 3 Hours.

May be repeated for credit as topics change.

POLS 4393. PREPARING FOR CAREERS IN POLITICAL SCIENCE. 3 Hours.

Supervised employment in a government or government-related organization with the student performing duties related to the academic curricula of political science. Students are required to submit a term paper, case study, or an approved academic project related to the work performed. Work is generally graded pass/fail. A maximum of six semester hours of credit in Political Science Internship may be used to satisfy a political science elective requirement for graduation. Students must be classified as juniors or seniors, be political science majors or minors, and have a minimum 3.0 GPA in their major and overall. Majors must have completed 21 hours of political science; minors must have completed 12 hours of political science. Contact the Department for a complete description of requirements. Departmental consent required before enrollment.

POLS 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department.

POLS 4395. CONFERENCE COURSE READINGS IN POLITICAL SCIENCE. 3 Hours.

Designed for the advanced undergraduate student who is capable of independent study. An in-depth examination of one area of political science not necessarily covered in regular course work. May be repeated for credit when the subject matter varies, but only with permission of the department. Only two such courses will be counted on a student's degree plan. Prerequisites: permission of the undergraduate advisor; appropriate previous coursework; written consent of the instructor. Students must be Political Science majors or minors, have a minimum of 60 credit hours/junior status, have a 3.0 grade point average, and have completed at least 9 hours of Political Science.

POLS 4691. ARCHER PROGRAM INTERNSHIP. 6 Hours.

One-semester work experience in Washington, DC carried out during the student's tenure of an Archer Fellowship. The internship is custom-designed with the assistance of the director of the Archer Program based on the student's academic and professional goals. Enrollment is restricted to designated Archer Fellows. Prerequisite: POLS 2311 and POLS 2312.

POLS 5197. MASTER'S COMPREHENSIVE EXAMINATION. 1 Hour.

Required of all non-thesis Master of Arts students in the semester of their graduation. Graded P/F/R.

POLS 5300. AMERICAN GOVERNMENT AND POLITICS. 3 Hours.

A survey of the major theories and subfields in the study of American politics. Readings comprise a representation of scholarship illustrating a variety of substantive and methodological approaches.

POLS 5301. JUDICIAL POLITICS AND THE U.S. SUPREME COURT. 3 Hours.

This course focuses on judicial decision-making and behavior. While the entire American court system will be considered, primary attention will be given to the U.S. Supreme Court and constitutional issues.

POLS 5302. BUREAUCRATIC LEADERSHIP: TRENDS IN PUBLIC ADMINISTRATION AND POLICY MANAGEMENT. 3 Hours.

Recent literature in organizational theory, government restructuring, and policy management problems.

POLS 5303. COMPARATIVE POLITICAL SYSTEMS. 3 Hours.

Theories, concepts, and methods that dominate modern comparative political analysis. The state of the discipline and controversies in the comparative method are evaluated.

POLS 5305. TOPICS IN POLITICAL THEORY. 3 Hours.

This course will cover both historical and contemporary topics central to the discipline of political theory. It will consider the major figures in the field as well as themes such as citizenship, democracy, freedom, and authority. May be repeated for credit as the topic changes.

POLS 5310. ANALYZING POLITICS: RESEARCH DESIGN AND METHODS. 3 Hours.

This course introduces students to the practice of analyzing politics. It begins with a foundation in research design, covering topics such as how to develop testable hypotheses, measure concepts, and identify causal relationships. The course then takes a hands-on review of a range of tools used by political scientists—from basic data analysis and statistics, to experiments, elite interviews, content analysis, surveys, and the study of networks.

POLS 5311. CAMPAIGNS AND ELECTIONS. 3 Hours.

Describes important trends in modern campaigns and elections practices, focusing on contemporary American elections, including campaign finance, voter turnout, campaign advertising, and voter choices. Class presentations, a short research paper, and journal article readings.

POLS 5312. AGENDAS, INFORMATION, AND DECISION-MAKING IN PUBLIC POLICY. 3 Hours.

This course examines the role of organized interests in American politics and policymaking. It explores topics such as group formation and organization, strategies of political advocacy, access to decision-makers, and influence in the policy process.

POLS 5315. PUBLIC OPINION. 3 Hours.

Describes the development of survey research and commonly-encountered problems in surveys. Focuses most heavily on the contemporary practice of public opinion research, particularly in the American setting. Class presentations, a short research paper, and journal article readings.

POLS 5316. PUBLIC LEADERSHIP: RACE, ETHNICITY, & GENDER. 3 Hours.

Study of leadership theories, skills and traits, with focus on the intersections of race, ethnicity, and gender on public leadership in the public arena.

POLS 5317. RACE AND ETHNICITY IN AMERICAN POLITICS. 3 Hours.

Explores the political behavior of racial and ethnic groups in the U.S. as well as the contemporary influence of race and ethnicity on American political institutions and public policy debates.

POLS 5318. WOMEN IN THE POLITICAL PROCESS. 3 Hours.

This course examines women and gender in the political process, exploring various theoretical and methodological approaches helpful in studying gender and politics.

POLS 5319. CONGRESSIONAL BEHAVIOR. 3 Hours.

This course addresses several major questions regarding the nature of Congress as an institution, the behaviors of its members, and the role Congress plays in shaping public policy and the general nature of a representative democracy. Students are expected to have the ability to comprehend readings that are heavily quantitative. Course requirements will include weekly writings, a research paper and exams.

POLS 5320. THE AMERICAN PRESIDENCY. 3 Hours.

An overview course on the U.S. Presidency, exploring the institution as well as its relationship to other branches and political actors.

POLS 5321. THE PRESIDENCY AND DOMESTIC POLICY. 3 Hours.

This course examines presidential and domestic policy making, exploring how the president makes policy, focusing on theories of presidential leadership, White House organization and presidential-congressional interactions.

POLS 5322. SEPARATION OF POWERS IN AMERICAN POLITICAL DEVELOPMENT. 3 Hours.

Theories behind institutional design and the historical development of the executive, legislative, and judicial branches in the United States. Emphasis is placed on interactions of these institutions of government and current separation of powers controversies.

POLS 5323. STATE COURT SYSTEMS. 3 Hours.

Examination of the major theories of judicial politics and public law applied to the state court level. Topics include attention to the institutional, strategic, and attitudinal perspectives of judicial behavior.

POLS 5324. PUBLIC POLICY: ISSUES AND ANALYSIS. 3 Hours.

This course examines the important role of analysis in the policy process. It provides an understanding of the major actors and institutions involved in policymaking, explores major theories of policy change, and equips students with the skills necessary to conduct effective public policy analysis.

POLS 5325. STATE POLITICS. 3 Hours.

This course surveys the substantial literature and research programs in the study of state politics and policy.

POLS 5326. STATE/LOCAL GOVERNMENT POLICYMAKING. 3 Hours.

Focus on policy problems. Emphasis is on trends in state policy, interstate policy innovation and diffusion, and the effects of federal programs on state policy choices.

POLS 5327. URBAN POLICYMAKING AND ADMINISTRATION. 3 Hours.

Focus on the influence of economic, political, institutional, and organizational factors on urban policymaking and administration. A variety of regime and power structure models facilitate the analysis of urban policymaking.

POLS 5328. PUBLIC POLICY AND MEXICAN AMERICAN COMMUNITIES. 3 Hours.

Focus on the public policy process and the limited role Mexican Americans have had in national and state (TX) policymaking. Select topic areas are utilized to focus on state actors, issues, allocation of resources, and the power structure for analytical purposes.

POLS 5329. PUBLIC BUDGETING. 3 Hours.

The concepts, processes, and policy impacts of taxation and public budgeting. Introduction to current research techniques, budgetary issues, and the relevant political economy literature.

POLS 5330. ENERGY AND THE ENVIRONMENT. 3 Hours.

Analysis of the politics, economics, and administration of energy and environmental policies in the United States.

POLS 5331. POLITICAL SYSTEMS OF EAST ASIA. 3 Hours.

Comparative analysis of the political institutions and processes of China and Japan, with emphasis on the aspects of political development.

POLS 5332. PARADIGMS AND PROBLEMS IN INTERNATIONAL RELATIONS. 3 Hours.

This course surveys the major theoretical approaches in the field of International Relations. Students will learn to apply these paradigms to contemporary global issues such as conflict, trade, nuclear proliferation, terrorism, and protection of human rights.

POLS 5333. IDENTITY AND POLITICS IN THE MIDDLE EAST. 3 Hours.

Deeper examination of processes of state building and political development; state-society relations; Arabism; authoritarianism and democratization; oil and economic issues; Islamist politics; the role of transnational ideas.

POLS 5334. VIOLENCE AND DEPRIVATION IN WORLD POLITICS. 3 Hours.

Focuses on theoretical frameworks, empirical analysis, and policy relevance of myriad threats to individuals and communal groups. Examples include: human rights, failed states, violence, health issues, slavery and migration, environmental security.

POLS 5335. LATIN AMERICAN POLITICS. 3 Hours.

Designed to give students knowledge of the political development of Latin America by first examining general topics and then analyzing events in specific countries. Utilizes themes and concepts that are universal to all Latin American nations, but also stresses the different paths to political development that have been taken in each of these countries.

POLS 5336. REPRESSION AND REVOLUTION IN LATIN AMERICAN. 3 Hours.

Examines issues of political repression and revolutionary participation in Latin America. Topics range from human rights violations to coups and revolutions.

POLS 5337. THE POLITICAL SYSTEM OF THE RUSSIAN FEDERATION. 3 Hours.

This course emphasizes the analytical means by which researchers approach the Russian Federation in the post-Soviet period. Russia is considered from institutional, cultural, rationalist, and economic perspectives to develop a comprehensive orientation about the nature and scope of Russian politics.

POLS 5338. AMERICAN FOREIGN POLICY. 3 Hours.

Evaluation of some of the primary theories and models used in explaining American Foreign Policy. The course attempts to bridge the gaps that exist between theory and reality through approaches such as realism, neo-realism, deterrence, and others.

POLS 5339. ISRAELI IDENTITY AND THE ARAB-ISRAELI CONFLICT. 3 Hours.

This course will explore the deeper threads of Israeli identity, and how these impact Israeli policy toward the Arab-Israeli conflict. Topics to be covered include: diverse and clashing identities (e.g., Jewish, democratic, Middle Eastern, Israeli); how identity clashes have played out in politics; outlines of Israeli foreign policy; specific policies toward the Palestinians.

POLS 5341. COGNITION, EMOTION, AND EVOLUTION IN INTERNATIONAL RELATIONS. 3 Hours.

This course focuses on psychological approaches to international relations and examines how these perspectives advance the study of world politics. Approaches to be studied include: behavioral traits, trust, risk, values, personality, leadership, group decision-making, emotions, and evolutionary dynamics. These will be applied to different policy areas, including U.S. foreign policy, the use of force, and international cooperation.

POLS 5342. INTERNATIONAL ORGANIZATIONS. 3 Hours.

This course describes the institutions, decision-making and activities of the world's leading international organizations to establish an understanding of the role of international organizations in managing contemporary global problems.

POLS 5368. Health Politics and Policy. 3 Hours.

Course will survey the political history of the health care debate in the United States as well as major features of federal health policy.

POLS 5369. SOCIAL POLICY. 3 Hours.

This course examines the role of the federal government relating to social policy as a central theme of contemporary American politics. Issues surrounding the federal government's attempt to create a social safety net and issues such as poverty will be confronted, as well as the central role of tax expenditures and attempts to roll back social policies.

POLS 5380. TOPICS IN U.S. POLITICS. 3 Hours.

This course will focus on the specific aspects of U.S. governing institutions, processes, and behavior. A single aspect of U.S. politics will be examined in a given semester. (May be repeated for credit when topics vary.).

POLS 5381. TOPICS IN COMPARATIVE POLITICS. 3 Hours.

This course will focus on the specific aspects of comparative politics. (May be repeated for credit when topics vary.).

POLS 5382. TOPICS IN PUBLIC LAW AND JURISPRUDENCE. 3 Hours.

The role of U.S. national and state courts in policy making, constitutional law, and the examination of the evolution and nature of law in the United States. (May be repeated for credit when topics vary.).

POLS 5383. TOPICS IN PUBLIC ADMINISTRATION AND POLICY MAKING. 3 Hours.

U.S. national policy making and program management, state and urban policy making and administration. (May be repeated for credit when topics vary.).

POLS 5384. TOPICS IN INTERNATIONAL RELATIONS. 3 Hours.

This course will focus on a specific issue-area of international relations and world politics. (May be repeated for credit when topics vary.).

POLS 5391. CONFERENCE COURSE IN POLITICAL SCIENCE. 3 Hours.

Research and reading in a specialized field under the direction of a member of the graduate faculty. Graded P/F/W.

POLS 5392. INSIDE WASHINGTON: POLICYMAKING FROM THE GROUND UP. 3 Hours.

This course provides students with an overview of the U.S. federal policymaking process and the various public/private stakeholders and institutions that participate in this process. Specifically, the course focuses on three key elements of federal policymaking: separation of powers and original constitutional intent, influencing federal policy, and creating effective advocacy strategies. Students will examine a sampling of the extensive literature on political theory/philosophy, political institutions, political behavior, public policy and public administration. Students will also meet regularly with practitioners, such as officials from Congress, the White House, executive branch agencies, think tanks, organized interest groups, media/communications, and lobbying firms.

POLS 5393. ARCHER CENTER WASHINGTON INTERNSHIP. 3 Hours.

This course consists of an internship in a governmental or non-governmental organization in Washington, D.C. The student is expected to work full-time (40 hours a week) at the internship, which may be paid or unpaid. Students are responsible for seeking and selecting their internships. The Archer Center does not guarantee any internship placements, but Archer Center faculty and staff will provide students with information about internship opportunities and advice about placements. The Archer Center faculty meet regularly with students to debrief and to integrate this practical training with other lessons in professional development.

POLS 5394. ARCHER CENTER INDEPENDENT STUDY AND RESEARCH. 3 Hours.

This course is tailored to each student's graduate program of study. An Archer Center faculty member will work independently with each student to develop a research project that is designed to advance the student's academic and research goals. The project will align with the requirements of the student's graduate degree.

POLS 5398. THESIS. 3 Hours.

Original research designed to augment existing studies of problems or topics related to one of the major fields of study.

POLS 5698. THESIS. 6 Hours.

Original research designed to augment existing studies of problems or topics related to one of the major fields of study. POLS 5398 graded R/F only; POLS 5698 graded P/F/R.

Portuguese (PORT)

COURSES

PORT 1441. BEGINNING PORTUGUESE I. 4 Hours. (TCCN = PORT 1411)

Multimedia immersion in the culture and language of Portuguese-speaking countries. Designed to enable students to understand and communicate effectively in Portuguese at the beginning level. No prerequisites.

PORT 1442. BEGINNING PORTUGUESE II. 4 Hours. (TCCN = PORT 1412)

Continuation of beginning Portuguese. Prerequisite: PORT 1441 with a grade of C or better.

PORT 2301. TOPICS IN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. PORT 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

PORT 2313. INTERMEDIATE PORTUGUESE I. 3 Hours. (TCCN = PORT 2311)

Continued immersion in the culture and language of Portuguese-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: PORT 1442 with a grade of C or better.

PORT 2314. INTERMEDIATE PORTUGUESE II. 3 Hours. (TCCN = PORT 2312)

Continuation of intermediate Portuguese. Prerequisite: PORT 2313 with a grade of C or better.

PORT 3303. PORTUGUESE CONVERSATION AND CULTURE. 3 Hours.

Practice in oral expression with an emphasis on developing conversational skills and cultural knowledge. Of special interest to students who wish to improve their skills in pronunciation, comprehension, and oral expression. Prerequisite: PORT 2314 with a grade of C or better. Credit will not be granted to native speakers of Portuguese. Heritage speakers of Portuguese need the consent of the instructor to register.

PORT 3304. PORTUGUESE CONVERSATION AND CULTURE II. 3 Hours.

Students continue to develop conversational skills and cultural knowledge. Emphasis on speaking, listening, building vocabulary, and providing practice in a broad range of communicative and cultural contexts. Credit will not be granted to native speakers of Portuguese. Heritage speakers of Portuguese need the consent of the instructor to register. Prerequisite: PORT 3303 with a grade of C or better.

PORT 3310. PORTUGUESE LOCALIZATION AND TRANSLATION. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Portuguese language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Prerequisite: PORT 2314 or the equivalent with a grade of B or better. May not be repeated for credit.

PORT 3311. PORTUGUESE LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Portuguese and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: PORT 3310 with a grade of B or better.

PORT 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Arabic. ARAB 3310 is strongly recommended before ARAB 3345.

PORT 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: consent of the department.

PORT 4334. CONTEMPORARY BRAZILIAN CULTURE. 3 Hours.

Examination of contemporary Brazilian culture, with a focus on current events relevant to the Portuguese-speaking world. Topics may include: language and culture, literature, film, business culture, and traditions. Students may take the course in English or in Portuguese.

PORT 4393. PORTUGUESE INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Portuguese, outside readings, and formal presentations. May be repeated once for credit if student undertakes a different internship. Prerequisite: Two PORT 3000 level courses and/or permission of the instructor.

Psychology (PSYC)

COURSES

PSYC 1315. INTRODUCTION TO PSYCHOLOGY. 3 Hours. (TCCN = PSYC 2301)

The fundamental methods and content of scientific psychology. Concentration on the understanding of basic principles.

PSYC 2300. STATISTICS IN PSYCHOLOGY. 3 Hours.

This course covers descriptive and inferential statistics used in psychological research and assessment. It includes measurement, characteristics of distributions; measures of central tendency and variability; transformed scores; correlation and regression; probability theory; and hypotheses testing and inference. PSYC 2300 and PSYC 3300 can be taken concurrently. Prerequisite: PSYC 1315, MATH 1302 (or equivalent).

PSYC 2317. BASIC CONCEPTS IN HUMAN SEXUALITY. 3 Hours. (TCCN = PSYC 2306)

The physiological, psychological, and sociological aspects of human sexuality. Offered as BIOL 2317, HEED 2317, PSYC 2317, and WOMS 2317. Credit will be granted for one of these courses only. Students seeking certification in Health Education must enroll in HEED 2317. Students seeking credit toward their science requirement must enroll in BIOL 2317. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, medical technology, psychology, or sociology.

PSYC 3131. PSYCHOLOGY SERVICE LEARNING. 1 Hour.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

PSYC 3200. EXPERIENCING RESEARCH IN PSYCHOLOGY. 2 Hours.

This is a practical, project-based course that focuses on laboratory and field experience in designing, conducting, and reporting psychology research. It includes all stages of the research process including the formulation of research hypotheses, review and evaluation of published literature, choice of research design and measurement variables, data collection and analysis, and presentation of results in oral and written reports. Prerequisite: PSYC 2300 and PSYC 3300.

PSYC 3231. PSYCHOLOGY COMMUNITY SERVICE LEARNING. 2 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

PSYC 3300. RESEARCH METHODS IN PSYCHOLOGY. 3 Hours.

This course covers experimental designs and research methodologies commonly used in the field of psychology. It includes strategies for identifying meaningful hypothesis, conducting literature reviews, implementing research practices, and interpreting and evaluating statistical conclusions and empirical research findings. Challenges related to sociocultural factors will also be analyzed. PSYC 2300 and PSYC 3300 can be taken concurrently.

PSYC 3301. PSYCHOLOGY OF HUMAN RELATIONS. 3 Hours.

Workplace applications of topics including person perception, social influence, group processes and dynamics, interpersonal relations, teamwork, leadership, workplace discrimination, diversity, stress, and burnout.

PSYC 3302. BUSINESS PSYCHOLOGY. 3 Hours.

A survey of the fields of industrial and organizational psychology, focusing on the application of psychological theory to understanding and solving problems in the workplace. Topics include recruitment, employee selection and training, the effects of attitudes, motivation, group dynamics and leadership, job satisfaction, productivity and morale.

PSYC 3303. DRUGS AND BEHAVIOR. 3 Hours.

A survey of the psychoactive agents, their therapeutic uses, and social abuses. Alcohol, nicotine, caffeine, narcotics, hallucinogens, stimulants, and tranquilizers. Offered as BIOL 3303, HEED 3303, and PSYC 3303; credit will be granted only once. May not be used for biology grade point calculation or biology credit toward a B.S. degree in biology, microbiology, or medical technology. Students seeking certification in health education must enroll in HEED 3303.

PSYC 3304. ANALYSIS & MANAGEMENT OF BEHAVIOR. 3 Hours.

Behavioral control techniques for remediation and prevention of problem behaviors and for optimization of normal behaviors in real life settings. Contrasting therapeutic approaches, the ethics of behavior control, and the impact of behaviorism on society. Prerequisite: PSYC 1315 or permission of the instructor.

PSYC 3305. PSYCHOLOGY OF EMPLOYEE TRAINING. 3 Hours.

An introduction to theories, research, and techniques related to training needs analysis, program design and delivery, and training evaluation in organizational settings.

PSYC 3306. PSYCHOLOGY OF CREATIVITY AND CREATIVE THINKING. 3 Hours.

Research and theory relevant to the traits, attitudes, and abilities which are related to creative functioning with emphasis on the conceptual-cognitive components of creative formation and problem solving. Methods of stimulating creative behavior in individuals and in groups. Relevant research findings provide the substance of the course. Prerequisite: PSYC 1315.

PSYC 3307. UNDERSTANDING PSYCHOLOGY THROUGH FILM. 3 Hours.

An exploration of psychological issues represented in film. Using an interdisciplinary approach, the medium of film will be used to discuss psychological mechanisms as well as psychotherapeutic processes. Human behaviors such as those involved in character and plot development, as well as the perspectives of filmmakers and movie-goers will be explored. Prerequisite: Six hours of behavioral science (i.e., psychology, sociology, anthropology, and others).

PSYC 3308. FORENSIC PSYCHOLOGY. 3 Hours.

Examines the legal system's basic assumptions and procedures in light of social scientific evidence pertaining to human behavior relevant to the rights of defendants, victims, children, and mental patients, including areas of clinical psychology in which psychologists act as expert witnesses and consultants.

PSYC 3310. DEVELOPMENTAL PSYCHOLOGY. 3 Hours.

Human development and growth from conception through old age, concerned with the physical, behavioral, and social aspects. Prerequisite: PSYC 1315.

PSYC 3311. ADULTHOOD AND AGING. 3 Hours.

Developmental changes in major psychological processes and abilities are related to health, sex, ethnicity, socioeconomic status, and lifestyle. Emphasis is on models of psychobiological changes with age and current empirical knowledge having implications for the preservation of intellectual function, mental health, and physical condition. Prerequisite: PSYC 1315.

PSYC 3312. SOCIAL & PERSONALITY DEVELOPMENT. 3 Hours.

A review of psychological theory and research on age trends and individual differences in personality and social development. Topics include emotional development, aggression, identity and achievement, attachment, gender role development, and familial and extrafamilial influences on development. Prerequisite: PSYC 1315.

PSYC 3313. CULTURAL PSYCHOLOGY. 3 Hours.

Theory and research regarding psychological issues related to gender and cultural diversity. These issues will be approached from different perspectives within psychology, including clinical, developmental, social, health, and cognitive psychology. Prerequisite: PSYC 1315. Offered as PSYC 3313 and WOMS 3313; credit will be granted only once.

PSYC 3314. PSYCHOLOGY OF PERSONALITY. 3 Hours.

A broad survey of major theories, assessment methods, and representative research in the field of personality. The theoretical approaches considered include the psychoanalytic, neo-Freudian, trait, biological, humanistic, behavioral social/learning, and cognitive approaches. Prerequisite: PSYC 1315.

PSYC 3315. SOCIAL PSYCHOLOGY. 3 Hours.

The theories and research dealing with individual behavior in the social environment. Social influence processes, interpersonal attraction, group behavior, aggression, conformity, and attitude formation and change. Prerequisite: PSYC 1315.

PSYC 3317. INTRODUCTION TO CLINICAL AND COUNSELING PSYCHOLOGY. 3 Hours.

The student is introduced to psychodiagnostic procedures and the basic approaches of counseling and psychotherapy. Prerequisite: PSYC 1315.

PSYC 3318. ABNORMAL PSYCHOLOGY. 3 Hours.

Major forms of psychopathology. Classification, etiology, and treatment of major disorders. Prerequisite: PSYC 1315.

PSYC 3319. PSYCHOLOGY OF ADOLESCENCE. 3 Hours.

A topical study of adolescent behavioral and psychological development with emphasis on theory, methods of inquiry, and practical implications. Prerequisite: PSYC 1315.

PSYC 3320. BEHAVIOR AND MOTIVATION. 3 Hours.

Theory and research involving relation of motivation and emotion to learning theory, social behavior, personality, and development. Prerequisite: PSYC 1315.

PSYC 3322. BRAIN AND BEHAVIOR. 3 Hours.

An introduction to the anatomical structures and physiological processes that determine behavior. Topics include the acquisition and processing of sensory information, the neural control of movement, and the biological bases of complex behaviors (such as learning, memory, sex, language, and addiction), as well as the basic functioning of the nervous system. Offered as BIOL 3322 and PSYC 3322. Credit will be granted only once. BIOL 3322 prerequisite: BIOL 1441, BIOL 1442. PSYC 3322 prerequisite: BIOL 1441 or PSYC 1315.

PSYC 3326. ANIMAL BEHAVIOR. 3 Hours.

A survey of research and theory comparing behavior at various phyletic levels. Offered as BIOL 3326 and PSYC 3326. Credit will be granted for only one of these courses. Prerequisite: BIOL 1441, BIOL 1442.

PSYC 3331. PSYCHOLOGY COMMUNITY SERVICE LEARNING. 3 Hours.

Service learning is a credit-bearing learning experience; therefore, credit is awarded for academic learning and not for service hours. Students engage in classroom activities, assignments, and discussions and in addition, integrate course content and learning outcomes with genuine community needs or issues. Collaborations with the community result in relationship-building and partnerships through intentional, structured service experiences. Students are required to analyze and evaluate these experiences by engaging in reflective activities, such as discussion and journaling. This process of structured service and learning in the community promote a sense of civic responsibility and commitment to others. Students commit to serve weekly time resulting in at least fifteen hours during one semester. This time is agreed upon by student, faculty, and community agency. Prerequisites: Permission of the Instructor.

PSYC 3334. COGNITIVE PROCESSES. 3 Hours.

Current theory and research in cognitive processes such as memory, information processing, concept formation, and problem solving. Prerequisite: PSYC 1315.

PSYC 3351. PRACTICUM IN APPLIED BEHAVIOR ANALYSIS. 3 Hours.

Students receive supervised experience in the application of behavior modification procedures to everyday behavior problems. Practicum students work off-campus in a community setting. The course provides an opportunity to develop skills in setting behavior objectives, analyzing contingencies of reinforcement, and designing, writing, and implementing practical behavior change programs. Prerequisite: PSYC 3304, PSYC 4310 and Permission of the Instructor.

PSYC 3356. EVOLUTIONARY PSYCHOLOGY. 3 Hours.

A consideration of how evolution has influenced social, cognitive and developmental processes in humans. Comparisons between humans and other species, and between different human cultures will be included. Topics such as mate selection, marriage and family practices, child rearing, social relations, language, thinking, neuropsychology, learning and related topics will be considered. Methods of gathering data and theory about evolutionary processes will be stressed. Prerequisite: PSYC 1315.

PSYC 3443. RESEARCH DESIGN & STATISTICS II. 4 Hours.

Theoretical and practical approaches to research methodology, statistical analyses and techniques of report research. Prerequisite: PSYC 2443.

PSYC 4081. VOLUNTEER RESEARCH IN PSYCHOLOGY. 0 Hours.

Volunteer research hours (0 credit hours) Participation in a group research project on a selected topic as designated by the directing professor. Maybe repeated. Intended for advanced undergraduate majors. Prerequisite: Instructor permission; other prerequisites may be implemented at the discretion of each individual laboratory research mentor.

PSYC 4161. READINGS IN PSYCHOLOGY. 1 Hour.

Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper as arranged. Prerequisite: permission of the instructor.

PSYC 4181. RESEARCH IN PSYCHOLOGY. 1 Hour.

Research problems arranged on an individual basis, to be conducted by the student, and written in publishable journal format. Prerequisite: permission of the instructor.

PSYC 4191. UNDERGRADUATE TEACHING EXPERIENCE. 1 Hour.

Teaching effectively requires mastering the content of your discipline, but also numerous other skills. This course will prepare undergraduate students to be challenging, inspiring, engaging teachers and/or communicators of psychological topics by providing hands-on experience as teaching assistants. Prerequisite: Students must complete Introduction to Psychology (PSYC 1315) and PSYC 4391 (Undergraduate Teaching Experience) before enrolling in this course. Students must have a minimum GPA of 3.5 and be a psychology major (other majors may be approved with instructor permission). Students must have earned a B or better in the class for which they will serve as a TA and instructor approval is required.

PSYC 4261. READINGS IN PSYCHOLOGY. 2 Hours.

Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper as arranged. Prerequisite: permission of the instructor.

PSYC 4281. RESEARCH IN PSYCHOLOGY. 2 Hours.

Research problems arranged on an individual basis, to be conducted by the student, and written in publishable journal format. Prerequisite: permission of the instructor.

PSYC 4291. UNDERGRADUATE TEACHING EXPERIENCE. 2 Hours.

Teaching effectively requires mastering the content of your discipline, but also numerous other skills. This course will prepare undergraduate students to be challenging, inspiring, engaging teachers and/or communicators of psychological topics by providing hands-on experience as teaching assistants. Prerequisite: Students must complete Introduction to Psychology (PSYC 1315) and PSYC 4391 (Undergraduate Teaching Experience) before enrolling in this course. Students must have a minimum GPA of 3.5 and be a psychology major (other majors may be approved with instructor permission). Students must have earned a B or better in the class for which they will serve as a TA and instructor approval is required.

PSYC 4301. PRINCIPLES OF NEUROSCIENCE. 3 Hours.

An in depth understanding of the mechanisms underlying the function of the nervous system. Topics include cellular mechanisms of neural communication, neuroanatomy and neurophysiology of sensory, motor, and autonomic systems, cellular mechanisms of learning and memory, and neuropathological conditions that contribute to neurological disorders. Course offered as BIOL 4301 and PSYC 4301. Credit will be granted only once. Prerequisite: PSYC 3322 (BIOL 3322) or permission of instructor.

PSYC 4309. NEUROPHARMACOLOGY. 3 Hours.

A survey of how drugs affect the nervous system. General topics will include cellular and molecular foundations of neuropharmacology, receptors and modulation of neural signaling. The specific role of neurotransmitter systems (i.e. acetylcholine, dopamine, norepinephrine, serotonin, and opiate) will be explored. Offered as BIOL 4309 and PSYC 4309; credit will be granted only once. Prerequisite: one or more of the following courses or permission of instructor: BIOL 1441 or PSYC 3322/BIOL 3322 or BIOL 3301.

PSYC 4310. BEHAVIOR THERAPY. 3 Hours.

Current theory and practice in the analysis and treatment of psychological disorders using problem solving techniques derived from the experimental analysis of behavior. Behavioral treatment strategies are reviewed for chronic disorders such as fears and phobias, obsessive-compulsive disorder, depression, and anxiety as well as childhood disorders such as language delay, autism, attention deficits, and hyperactivity. Prerequisite: PSYC 1315.

PSYC 4325. DEVELOPMENTAL PSYCHOBIOLOGY. 3 Hours.

The biological basis of behavioral development. A survey of the influences of maternal factors, genes, hormones, teratogens, early nutrition, and environmental change upon the maturation of the central nervous system. Basic concepts such as critical periods, the organization of behavioral systems, neural plasticity, and the ontogeny of consciousness. Also offered as BIOL 4325; credit will be granted only once. Students seeking credit toward the science requirement must enroll in BIOL 4325. Prerequisite: PSYC 3310 or PSYC 3322 or BIOL 3322 or BIOL 3346.

PSYC 4327. BEHAVIORAL GENETICS. 3 Hours.

Genetic influences on behavioral phenotypes. Research strategies, quantitative methods, and pharmacogenetic approaches to the brain; sociality and altruism; the personality, emotionality and intelligence; psychopathology; chromosomal abnormalities; forensic implications of genetic counseling. Offered as BIOL 4327 and PSYC 4327; credit will be granted only once. Students seeking credit toward the science requirement must enroll in BIOL 4327. Prerequisite: PSYC 1315 or BIOL 1441.

PSYC 4329. ANIMAL LEARNING AND COGNITION. 3 Hours.

A comprehensive survey of psychological, biological, and ethological perspectives on learning, memory, and cognition in animals. Prerequisite: C or better in PSYC 3300 or permission of instructor.

PSYC 4332. THEORIES OF HUMAN LEARNING AND MEMORY. 3 Hours.

A comprehensive survey of theories and research concerning basic learning and memory processes and their application to a variety of areas, e.g., eyewitness memory, false memory syndrome, autobiographical memory, memory decline in aging. Theoretical and background perspectives include associative mechanism, information processing approaches, and neurophysiological bases for encoding, storage, and retrieval. Prerequisite: PSYC 1315, and Junior Standing.

PSYC 4335. COGNITIVE DEVELOPMENT. 3 Hours.

Theories and phenomena concerning development of all aspects of human cognition across the life span. Prerequisite: C or better in PSYC 3300.

PSYC 4338. COGNITIVE NEUROSCIENCE. 3 Hours.

Theory and research on the relationship between the brain and human cognition. Normal functioning and comparisons between normal and disordered states (e.g., Alzheimer's disease, amnesia, localized brain injury, age changes). Prerequisite: PSYC 4332 or PSYC 3334.

PSYC 4339. PSYCHOLOGY OF JUDGMENT AND CHOICE. 3 Hours.

Research and theory on the errors of intuitive judgment and how formal decision methods improve choices. Prerequisite: C or better in PSYC 2300.

PSYC 4350. SPORT PSYCHOLOGY. 3 Hours.

The course will provide an overview of the growing field of Sport Psychology, which involves applying psychological science to sports. Topics such as maximizing sports performance, elite performance and personality, motivation techniques in sports, leadership skills in sports, etc., will be covered.

PSYC 4355. THE HISTORY OF PSYCHOLOGY. 3 Hours.

The evolution of psychology as a science, up to and including contemporary developments. Prerequisite: nine hours of psychology.

PSYC 4357. HEALTH PSYCHOLOGY. 3 Hours.

This course provides a broad introduction to health psychology and its interface with the medical world. The course provides a balanced presentation of the important issues in the field, as well as specific content topics that are especially relevant today to better understand health and illness. Offered as BIOL 4357, HEED 4357, and PSYC 4357. Students seeking science requirement credit must enroll in BIOL 4357; students seeking Certification in Health must enroll in HEED 4357. Prerequisite: PSYC 1315 or BIOL 1333 or BIOL 1441 or BIOL 2457; junior standing recommended.

PSYC 4359. SELECTED TOPICS IN PSYCHOLOGY. 3 Hours.

Topics pertinent to the field of psychology. Topic, format, and prerequisites to be determined by the instructor. May be repeated for credit as different topics are offered. Prerequisite: to be determined by the instructor.

PSYC 4361. READINGS IN PSYCHOLOGY. 3 Hours.

Topics arranged on an individual basis. Performance may be assessed by oral exam, written test, or review paper as arranged. Prerequisite: permission of the instructor.

PSYC 4381. RESEARCH IN PSYCHOLOGY. 3 Hours.

Research problems arranged on an individual basis, to be conducted by the student, and written in publishable journal format. Prerequisite: permission of the instructor.

PSYC 4391. FOUNDATIONS OF UNDERGRADUATE TEACHING EXPERIENCE. 3 Hours.

Teaching effectively requires mastering the content of your discipline, but also numerous other skills. This course will prepare undergraduate students to be challenging, inspiring, engaging teachers and/or communicators of psychological topics by covering important professional issues, including: planning a syllabus, structuring a lecture, navigating class discussions, communicating effectively with different types of classes, responding to student input, dealing with classroom incivilities, responding to student assignments, using technology, and responding to student work. This course will also assist students through the process of teaching as learning through addressing cognitive theories underlying the learning process. Prerequisite: Students must complete Introduction to Psychology (PSYC 1315) before enrolling in this course. Students must have a minimum GPA of 3.5 and be a psychology major (other majors may be approved with instructor permission). Students must have earned a B or better in the class for which they will serve as a TA and instructor approval is required.

PSYC 4398. HONORS THESIS. 3 Hours.

Students may take this course only at the invitation of the department. Consists of a research project of a type and level which would be publishable in one of the psychological journals. Particular emphasis is placed on independent work by the student. Prerequisite: departmental invitation.

PSYC 4410. ADVANCED TOPICS IN DEVELOPMENTAL PSYCHOLOGY. 4 Hours.

This course will cover current topics in Developmental Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Developmental Psychology. Completion of the course is essential for students who are interested in pursuing a career in Developmental Psychology research. Prerequisites: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3310. Junior standing recommended.

PSYC 4411. ADVANCED TOPICS IN PERSONALITY. 4 Hours.

This course will cover current topics in Personality using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Personality. Completion of the course is essential for students who are interested in pursuing a career in Personality research. Prerequisites: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3314. Junior standing recommended.

PSYC 4412. ADVANCED TOPICS IN SOCIAL PSYCHOLOGY. 4 Hours.

This course will cover current topics in Social Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Social Psychology. Completion of the course is essential for students who are interested in pursuing a career in Social Psychology research. Prerequisites: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3315. Junior standing recommended.

PSYC 4415. INTERNSHIP IN PSYCHOLOGY. 4 Hours.

Provides the student with an opportunity to apply academic experience to practical situations by serving for a specified number of hours as participant-observer in an off-campus activity. The activity will be reflected in the title on the transcript. Internships must be arranged with an internship supervisor and/or faculty member in the semester prior to enrolling for this course. Prerequisite: C or better in PSYC 2300 and PSYC 3300.

PSYC 4420. EXPERIMENTAL ANALYSIS OF BEHAVIOR. 4 Hours.

A laboratory course examining basic principles of behavior control and analysis with single animals and automated testing apparatus. Emphasis is placed on individualized, self-paced instruction and creative experimentation. Prerequisite: C or better in either PSYC 3304 or PSYC 4310. C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3304.

PSYC 4421. ADVANCED TOPICS IN NEUROSCIENCE. 4 Hours.

This course will cover current topics in Neuroscience using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Neuroscience. Completion of the course is essential for students who are interested in pursuing a career in Neuroscience research. Prerequisites: C or better in BIOL 3322 or PSYC 3322 required.

PSYC 4430. ADVANCED TOPICS IN CLINICAL COUNSELING. 4 Hours.

This course will cover current topics in Clinical and Counseling using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Clinical and Counseling. Completion of the course is essential for students who are interested in pursuing a career in Clinical and Counseling research. Prerequisite: PSYC 3317; PSYC 3318; C or better in PSYC 2300, PSYC 3200, and PSYC 3300; junior standing recommended.

PSYC 4431. ADVANCED TOPICS IN COGNITIVE SCIENCE. 4 Hours.

This course will cover current topics in Cognitive Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Cognitive Psychology. Completion of the course is essential for students who are interested in pursuing a career in Cognitive Psychology research. May be repeated for credit as specific topics vary. Prerequisite: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 3334. Junior standing recommended.

PSYC 4432. ADVANCED TOPICS IN HEALTH. 4 Hours.

This course will cover current topics in Health Psychology using an interactive, participatory format that includes a lecture portion and a laboratory section. The course will focus on specific content topics that are especially relevant today to better understand and use advanced concepts in Health Psychology. Completion of the course is essential for students who are interested in pursuing a career in Health Psychology research. May be repeated for credit as specific topics vary. Prerequisite: C or better in PSYC 2300, PSYC 3200, PSYC 3300, and PSYC 4357. Junior standing recommended.

PSYC 5110. PROFESSIONAL DEVELOPMENT. 1 Hour.

The philosophy and methods of conducting a university class for undergraduates are examined. Specific tips and suggestions for managing course materials, lectures, audiovisual aids, grading, etc. will be presented. The role of the university instructor as a researcher as well as a teacher will be elaborated. Specific topics will include the ethics and regulation of research, service as a journal referee, corresponding with peers, participating in a research team, manuscript preparation, presentation at professional conferences, and submitting material for publication. Prerequisite: admission to the graduate program in psychology or permission of the instructor. Graded F, P. Prerequisite: Admission to the graduate program in psychology or permission of the instructor.

PSYC 5127. INDUSTRIAL AND ORGANIZATIONAL INTERNSHIP. 1 Hour.

This course is preparation for and supervision of internship activities in an organization or organizations in an area related to area of interest or training. No credit will be given for previous experience or activities. Course may be repeated for credit. Prerequisite: Consent of instructor.

PSYC 5151. READINGS IN PSYCHOLOGY. 1 Hour.

Independent readings under the supervision of an individual faculty member. Students wishing to conduct research should sign up for PSYC 5191, PSYC 5291, or PSYC 5391. May be repeated for credit with consent of the Graduate Advisor. Graded A/B/C/D/F/I/P/W. Prerequisite: consent of the instructor.

PSYC 5191. RESEARCH IN PSYCHOLOGY. 1 Hour.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 5227. INDUSTRIAL AND ORGANIZATIONAL INTERNSHIP. 2 Hours.

This course is preparation for and supervision of internship activities in an organization or organizations in an area related to area of interest or training. No credit will be given for previous experience or activities. Course may be repeated for credit. Prerequisite: Consent of instructor.

PSYC 5251. READINGS IN PSYCHOLOGY. 2 Hours.

Independent readings under the supervision of an individual faculty member. Students wishing to conduct research should sign up for PSYC 5191, PSYC 5291, or PSYC 5391. May be repeated for credit with consent of the Graduate Advisor. Graded A/B/C/D/F/I/P/W. Prerequisite: consent of the instructor.

PSYC 5291. RESEARCH IN PSYCHOLOGY. 2 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 5301. BRAIN & BEHAVIOR. 3 Hours.

A comprehensive survey of physiological processes and structures underlying human and animal behavior.

PSYC 5307. RESEARCH METHODS. 3 Hours.

This course considers basic and advanced aspects of methodology used in psychological research, including experimental design, methodologies that combine disciplinary approaches (e.g., biomedical, behavioral, and field and laboratory approaches).

PSYC 5309. HEALTH PSYCHOLOGY. 3 Hours.

A survey of current theory and research in health psychology, including basic research in health and behavior, biobehavioral contributions to illness and disability, and fundamental relationships among the brain, bodily function, and behavior that may affect health and well-being. It will also include clinical and translational topics including patient interventions in medically-ill populations, pain management, and disease prevention.

PSYC 5310. MATHEMATICAL MODELS IN PSYCHOLOGY. 3 Hours.

Elementary probability theory, matrix algebra, and theory of linear difference equations applied to theoretical problems in learning, signal detection, decision processes, and social interactions.

PSYC 5313. COGNITIVE PSYCHOLOGY. 3 Hours.

Surveys current experimental and clinical research and theory relating the brain and cognition. Emphasizes selected areas i.e., perception, attention, memory, language, and thinking.

PSYC 5314. COGNITIVE DEVELOPMENT. 3 Hours.

A survey of current theories of cognitive development. Recent research within topic areas, such as physical reasoning, spatial cognition, memory, and symbol use, will be used to evaluate the theories presented.

PSYC 5315. BEHAVIOR ANALYSIS. 3 Hours.

Overview of operant theory with an emphasis upon contemporary problems. Basic concepts that are covered include: reinforcement and stimulus control, punishment, compound schedules, response topography, and chaining. Other topics include complex human operants, verbal behavior, behavior modification, and contingency management.

PSYC 5321. PERSONALITY PSYCHOLOGY. 3 Hours.

A survey of contemporary topics in personality psychology, including personality assessment, strategies for studying personality, temporal stability and cross-situational consistency in behavior, and personality influence on social behavior.

PSYC 5322. SOCIAL PSYCHOLOGY. 3 Hours.

A survey of contemporary topics in social psychology, including interpersonal attraction, altruism and aggression, attribution and social cognition, social influence, group dynamics, and social motivation.

PSYC 5323. GROUP PROCESSES. 3 Hours.

Survey of the major topics in group dynamics. Among the issues covered will be performance, motivation, goal setting, decision-making, creativity, social influence, memory, leadership, teamwork, and collective behavior.

PSYC 5324. APPLIED RESEARCH DESIGN. 3 Hours.

Basic aspects of organizational research methods will be covered including: research ethics, the scientific method, inductive and deductive reasoning, research questions, hypotheses, study designs, manipulation of variables, and various measures and methods used in organizational research. The history of Industrial and Organizational research will also be covered.

PSYC 5325. ORGANIZATIONAL BEHAVIOR. 3 Hours.

Survey of theory and research related to human behavior in organizations. Topics include job performance, motivation, job satisfaction, organizational commitment, work stress, organizational justice, leadership, groups and teams, and organizational theory.

PSYC 5326. EMPLOYEE SELECTION. 3 Hours.

Principles and techniques of employee selection, placement, and classification will be examined. Job analysis and competency modeling will be covered with a focus on the legal aspects of selection and promotion. The use of various methods and measures of job relevant individual differences will be examined within the context of predicting performance criteria.

PSYC 5327. INDUSTRIAL AND ORGANIZATIONAL INTERNSHIP. 3 Hours.

This course is preparation for and supervision of internship activities in an organization or organizations in an area related to area of interest or training. No credit will be given for previous experience or activities. Course may be repeated for credit. Prerequisite: consent of instructor.

PSYC 5328. EMPLOYEE ATTITUDES AND BEHAVIORS. 3 Hours.

Theory and research concerning the determinants, consequences, and measurement of job satisfaction and related constructs such as involvement, commitment and work motivation will be covered. Attitudes, opinions, and beliefs will be examined in relation to the behavioral intentions of individuals at work. Organizational interventions designed to improve and enhance employee motivation, attitudes and behaviors will be evaluated.

PSYC 5329. PERFORMANCE MANAGEMENT SYSTEMS. 3 Hours.

Principles and techniques of the performance appraisal and feedback process will be covered. Different sources of performance information will be evaluated. Mentoring and procedures for communicating performance evaluation information and improving job performance via development and training will be examined. Theories and techniques used to design, conduct, and evaluate training programs will be evaluated.

PSYC 5330. ADVANCE EMPLOYEE TRAINING AND DEVELOPMENT. 3 Hours.

Theoretical advancements, empirical research findings, and practical applications of psychological concepts related to employee training and development. This course focuses on the entirety of the employee training process, including topics and issues related to training needs analysis, program design and implementation, and the evaluation of training effectiveness.

PSYC 5331. PERCEPTION AND ATTENTION. 3 Hours.

Survey of methods and findings dealing with perception; emphasis will be upon behavioral rather than physiological considerations; particular topics include signal detection theory, form and pattern recognition, and attentional mechanisms.

PSYC 5333. BEHAVIORAL NEUROSCIENCE. 3 Hours.

A survey of biological and physical processes underlying behavior. Emphasis on neural, hormonal, and genetic determinants of behavior. Topics include regulatory behaviors, reward and nociceptive systems, differentiation and sociosexual behaviors, limbic and cortical functions.

PSYC 5334. HUMAN PHYSIOLOGY. 3 Hours.

This course will provide a comprehensive review of the human physiology that is categorized in 15 sections and 84 chapters. Some of them will be covered by different courses, such as Neuroscience, Immunology, and Endocrinology. Students are expected to learn how the human body works and what the underlying mechanisms that control the physiological responses are. In case of damage to these systems, what will happen to the body as a whole and what will be the impact on behaviors?.

PSYC 5337. ANIMAL COGNITION AND BEHAVIOR. 3 Hours.

A survey of theory and data on how animals learn and represent the world and the evolutionary processes that influence their individual and social behavior.

PSYC 5341. DECISION MAKING. 3 Hours.

Factors that influence categorical and numerical judgments, choices, and preference decisions. Comparison of human decision behavior with various quantitative theories.

PSYC 5342. LEADERSHIP IN ORGANIZATIONS. 3 Hours.

This course focuses on leadership theory and the applicability to modern organizations. Various approach to studying and understanding leadership, as well as the evolution of leadership theory over time will be discussion. Discussed approaches will include trait, situational, skill, contextual, style, cultural, and emerging theories of leadership. Additionally, this course will focus on designing effective leadership development programs.

PSYC 5343. ELECTRONIC HUMAN RESOURCE MANAGEMENT. 3 Hours.

A survey of theory and research related to the use of technology in organizational employment practices, including topics such as web-based recruitment, technology-based interviewing, online testing, cybervetting, e-training, e-performance monitoring, virtual teams, cyberdeviance, and telework.

PSYC 5345. HUMAN LEARNING AND MEMORY. 3 Hours.

Survey of current approaches to the study of human learning and memory.

PSYC 5348. EXPOSURE TO CONTEMPORARY PC MICROCOMPUTERS. 3 Hours.

Operating systems, ASCII editors, word processors, spreadsheets, graphics, data bases, programming languages, programming psychological experiments, statistical programming, using networks, the Internet, e-mail, Gopher, FTP, and Telnet.

PSYC 5351. READINGS IN PSYCHOLOGY. 3 Hours.

Independent readings under the supervision of an individual faculty member. Students wishing to conduct research should sign up for PSYC 5191, PSYC 5291, or PSYC 5391. May be repeated for credit with consent of the Graduate Advisor. Graded P/F/R. Prerequisite: consent of the instructor.

PSYC 5389. CONTEMPORARY PROBLEMS IN PSYCHOLOGY. 3 Hours.

Topics vary. May be repeated for credit with consent of Graduate Advisor.

PSYC 5391. RESEARCH IN PSYCHOLOGY. 3 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 5405. ADVANCED STATISTICS I. 4 Hours.

Basic descriptive and inferential statistics used in psychological research.

PSYC 5407. EXPERIMENTAL DESIGN. 4 Hours.

Statistical aspects of complex experimental designs used in psychological research. Prerequisite: PSYC 5405.

PSYC 5600. ADVANCED RESEARCH. 6 Hours.

Supervised research. May be repeated for credit. Graded P/F/R. Prerequisite: permission of instructor.

PSYC 5698. THESIS. 6 Hours.

Graded P/F/R. Can only be taken up to 4 times. Prerequisite: 12 hours of advanced psychology and an approved thesis proposal.

PSYC 6191. RESEARCH IN PSYCHOLOGY. 1 Hour.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 6291. RESEARCH IN PSYCHOLOGY. 2 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 6300. SEMINAR IN PSYCHOLOGY. 3 Hours.

Offered each semester. Topics vary. May be repeated for credit. Prerequisite: consent of instructor.

PSYC 6312. ANIMAL LEARNING. 3 Hours.

Survey of contemporary topics in animal learning.

PSYC 6316. HISTORY AND SYSTEMS. 3 Hours.

Consideration of the origins of psychology in the development of Western thought. Early conceptualization of problems and their modification with changes in evidence is emphasized.

PSYC 6318. SOCIAL AND PERSONALITY DEVELOPMENT. 3 Hours.

Theory and research on social and emotional development with an emphasis on the interaction between individual needs and abilities and societal expectations and demands.

PSYC 6320. NEUROPHARMACOLOGY. 3 Hours.

Survey of the basis of behavioral pharmacology including mechanisms and theories of drug actions, techniques and strategies of research, common psychoactive drugs, and the uses of drugs in clinical practice.

PSYC 6335. ANIMAL BEHAVIOR. 3 Hours.

Phylogenetic approach to some basic problems in behavior, with special emphasis on unlearned behavior.

PSYC 6336. COMPARATIVE PSYCHOLOGY. 3 Hours.

Theory and data about all aspects of behavior stressing similarities and differences across species.

PSYC 6338. NEURAL AND COGNITIVE MODELING. 3 Hours.

Principles of neural network and dynamical systems modeling; application of these principles to the simulation of cognitive processes in both brains and machines; models of associative learning, pattern recognition and classification, and individual and group behavior. Prerequisite: consent of instructor.

PSYC 6346. EVOLUTIONARY PSYCHOLOGY. 3 Hours.

Evolutionary processes influence behavior and thinking of humans and nonhuman species. Sociosexual behavior, aggression, cognition, and information processing from an evolutionary perspective will be among the topics covered.

PSYC 6347. ENVIRONMENTAL PSYCHOLOGY. 3 Hours.

Survey of the current literature on the impact of various features of the physical environment on human behavior. Topics covered include crowding, privacy, territoriality, personal space, noise, the natural environment, residential, educational and work environments, urban and community design, and pollution and resource management. Designed to be of interest to graduate students in architecture, urban affairs, environmental science and engineering, geology, sociology, as well as those in psychology.

PSYC 6349. PSYCHOMETRIC THEORY. 3 Hours.

Introduction to test construction. Topics include reliability theory, test validation, and item analysis. Prerequisite: C or better in PSYC 5405 and PSYC 5407.

PSYC 6355. MULTIVARIATE ANALYSIS. 3 Hours.

Application of general linear model to special cases such as factor analysis, multiple regression, and discriminant analysis. PSYC 5344 recommended.

PSYC 6391. RESEARCH IN PSYCHOLOGY. 3 Hours.

Independent research under the supervision of an individual faculty member; may be repeated for credit with consent of Graduate Advisor. Graded Pass/Fail. Prerequisite: consent of the instructor.

PSYC 6399. DISSERTATION. 3 Hours.

Graded R/F. Prerequisite: approved dissertation proposal.

PSYC 6699. DISSERTATION. 6 Hours.

Graded R/F/P/W. Prerequisite: approved dissertation proposal.

PSYC 6999. DISSERTATION. 9 Hours.

Graded P/F/R. Prerequisite: approved dissertation proposal.

PSYC 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Public Affairs and Public Planning (PAPP)

COURSES

PAPP 4307. URBAN GEOGRAPHY. 3 Hours.

Emphasizes real aspects associated with urban physical environments and social, behavioral and financial processes that shape these environments.

PAPP 5160. URBAN MANAGEMENT/PLANNING INTERNSHIP. 1 Hour.

Intended to enhance readiness for professional work through exposure to planning practice in a one semester log internship (100 hrs in the spring or fall semester or 75 hrs in the summer). Integrates work experience and coursework through journaling and reflective practice. Requirements: (1) student secures an internship from a planning related employer and approval from the student's major professor prior to enrolling in the course; (2) the intern must provide performance evaluation by the job supervisor and the intern's evaluation of the internship experience. Enrollment open to students with no previous formal planning experience. Credit not available for previous internship or planning experience. P/F grade.

PAPP 5300. FOUNDATION OF URBAN THEORY. 3 Hours.

Social theories that explain the life cycle of urban communities as they develop, expand, and are sustained or decay are presented and contrasted. Special consideration is given to role of social policy. Topics such as poverty, race, neighborhoods, and environment are addressed.

PAPP 5301. FOUNDATIONS OF URBAN POLITICS AND ECONOMICS. 3 Hours.

Examines the major political and economic institutions and processes in urban communities and their effect on urban policy.

PAPP 5302. FOUNDATIONS OF URBAN RESEARCH AND ANALYSIS. 3 Hours.

An introduction to research methodologies, both quantitative and qualitative, and statistical techniques useful in the analysis of urban trends and administrative programs.

PAPP 5303. THE METROPLEX: SURVEY OF URBAN AFFAIRS, PLANNING, ADMINISTRATION. 3 Hours.

The Metroplex provides an ideal laboratory for study with more than 100 cities and other governmental units, thousands of neighborhoods and business enterprises, major concentration of minorities and dozens of ethnic groups. An in-depth orientation on urban dynamics utilizing senior faculty members, governmental and community leaders, and current research reports and studies.

PAPP 5304. URBAN POLITICS. 3 Hours.

Examination of the city as a political system, including the impact of urbanization and fragmentation on policies; input dimensions, including voting patterns and interest group development; decision-making structures, especially types of community power structures and the impact of the reform movement on structural processes. Also offered as POLS 5305; credit will be granted only once.

PAPP 5305. THEORIES OF URBAN SOCIETY. 3 Hours.

Several theoretical perspectives of the community and community organization examined. Special emphasis given to theories from human ecology, organization and stratification, and social welfare.

PAPP 5306. THE URBAN ECONOMY. 3 Hours.

Internal dynamics of the growth and development of the urban system and its relation to the national economy. National and urban economic policy, urban growth and land use, market imperfections, urban financial issues, and the environmental implications of urban growth studied through lecture, game simulation and policy debates.

PAPP 5307. URBAN GEOGRAPHY. 3 Hours.

Emphasizes real aspects associated with urban physical environments and social, behavioral and financial processes that shape these environments.

PAPP 5308. URBAN HISTORY. 3 Hours.

Extensive reading primarily in the history of the urbanization and metropolitanization of the people of the United States. Historical methods as exemplified in the works of leading historians and analyzed; examples of the scholarship of selected historians and treatises on selected cities, regions, and urban institutions studied.

PAPP 5309. LOCAL POLITICS IN THE INTERGOVERNMENTAL SETTING. 3 Hours.

Critical analysis of the implications of federalism, and the changing nature of intergovernmental relations on state and local management, administration, planning, and policy making.

PAPP 5310. URBAN POLICY AND THE LAW. 3 Hours.

Critical analysis of federal government and selected state and local government policies and programs designed to influence the course of change and the future development of cities and urban areas. The role of "private" governments in affecting policy explored.

PAPP 5311. PUBLIC POLICY FORMATION AND ANALYSIS. 3 Hours.

The course covers the policy process, policy formulation and provides an introduction to the tools and techniques of policy analysis, using multiple theoretical and analytical perspectives. The primary focus is on U.S. policy, with an emphasis on state and local policy issues. The course aims to provide students with a foundation in the theory, process, and tools of policy analysis, so that they are able to think critically about applied public policy problems and the role of policy analysts. Students will also gain practical skills in the development and presentation of policy analysis and recommendations.

PAPP 5312. ECONOMIC POLICY. 3 Hours.

Examines structure of the U.S. economic system and its impact on welfare of consumers, workers, and industry; public policy efforts to provide for management of critical economic variables are evaluated for effectiveness and equity as they impact different interest groups.

PAPP 5313. COMMUNITY DEVELOPMENT. 3 Hours.

Focuses on current problems of community development and neighborhood revitalization. Housing, community assets, the roles of community development corporations and social capital in cities, and community economic development will be analyzed. Federal, state, and local policies, with grassroots initiatives evaluated for effectiveness on promoting alternatives for community building and organizing. Also offered as PLAN 5324; credit will be granted only once.

PAPP 5314. HEALTH POLICY. 3 Hours.

Current health policy and programs, examination of historical development, economic and legal aspects, interest groups and health constituencies.

PAPP 5315. URBAN EDUCATION POLICY. 3 Hours.

Examines current education policy and programs, including public school districts, charter schools, and vouchers; economic and political aspects; role of adult education programs in improving human capital.

PAPP 5316. HUMAN SERVICES. 3 Hours.

Social welfare institutions: private and public; needs assessment, resource allocation, procedures, city/state/federal/private policy review; highlights of current system demands and changes. Offered as PLAN 5316 and PAPP 5344; credit will be granted only once.

PAPP 5317. ENVIRONMENTAL POLICY. 3 Hours.

Focuses on the physical environmental dimensions of urbanization including such factors as pollution, waste disposal, and land use; stresses the role of economic, social, and political institutions as these affect environmental quality of the city. Offered as PLAN 5342 and PAPP 5317; credit will be granted only once.

PAPP 5318. SOCIAL WELFARE POLICY. 3 Hours.

Examines recent welfare reform measures (federal, state, and local levels), the political issues behind them, and their influence on urban life. A central topic will be the impact of a changing society on social welfare policy needs, including analyses of labor force participation and family structure.

PAPP 5319. URBAN PROBLEMS. 3 Hours.

Specific urban problems examined in depth, traced to their historical origins to see how they or similar problems have been dealt with in other times and places. Students will then propose possible solutions to the problems in their contemporary form. Offered as PLAN 5347 and PAPP 5319.

PAPP 5320. PUBLIC AND NON-PROFIT ORGANIZATION THEORY. 3 Hours.

Historical evolution of administrative theory including classical, sociological and social-psychological dimensions; decision-making theory; implications of public interest theory for public and non-profit management; basic concepts of organization development and impact on public administration paradigms; new public administration; and future of public and nonprofit urban organization. Also offered as CRCJ 5309 and POLS 5303; credit will be granted only once.

PAPP 5321. URBAN MANAGEMENT. 3 Hours.

Focuses through lectures, readings, and exercises on major administrative process: personnel and policy development and analysis; management styles and key contemporary management problems explored through presentations by prominent local practitioners.

PAPP 5322. POLITICS AND POLICY IN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Development of theory of bureaucracy; bureaucracy as social issue; ethics and morality in public and non-profit bureaucracy; mobilization of special interest support; power differentials in urban agencies; policy process in bureaucracy; new bureaucratic structures and processes for urban policy making.

PAPP 5323. MANAGING CHANGE IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Current theories and concepts of public and non-profit organizational change with particular emphasis on organization development and action research; theoretical roots of contemporary change literature traced through readings and discussion of classical organization theory, public administration including New Public Administration decision making, public interest, phenomenology, learning theory and general systems. Prerequisite: Basic organizational theory course or permission of instructor.

PAPP 5324. URBAN PUBLIC FINANCE. 3 Hours.

Local urban governments increasingly rely less and less on support from the state and federal governments. Many local governments rely heavily on a limited number of taxes and fees to finance services. This course explores the variety of revenue sources and fiscal problems of cities and local governments in metropolitan areas. This includes the topics of tax burden and tax equity. The second half of the course focuses on the unique challenges of financing the diversity of activities that cities in particular support, e.g. housing, transportation, economic and community development and human services. Offered as PAPP 5324 and PLAN 5329; credit will be granted only once.

PAPP 5325. ADMINISTRATIVE LAW. 3 Hours.

Examines scope and role of administrative regulation of and by governmental agencies; explores constitutional principles which limit administrative power and administrative law which governs classical areas of conflict between administrative agencies and their constituencies; rule-making, judicial review and informal regulatory processes of importance to public officials.

PAPP 5326. PUBLIC BUDGETING. 3 Hours.

This course introduces students to the principles and practices used by federal, state, and local governments to acquire and spend revenues within the context of American democracy, capitalism, federalism, and economics. The primary objective of this course is to provide students with the practical skills and theoretical knowledge to enable them to be effective participants in the budgeting process and critical consumers and producers of research relevant to public budgeting. Offered as PLAN 5328 and PAPP 5326. Credit will be granted only once.

PAPP 5327. COMPARATIVE ADMINISTRATION AND POLICY. 3 Hours.

Extensive, multidisciplinary exposure to concepts and models of administration in developed and modernizing countries; role of the military, bureaucracy and traditional elites in development; practices and concepts of strategies for effective change.

PAPP 5328. SMALL CITY MANAGEMENT. 3 Hours.

This course will focus on problems peculiar to small cities, including administrative law; personnel, planning; public works, public safety; human services; budget and finance; public relations and parks and recreation.

PAPP 5329. FINANCIAL MANAGEMENT IN THE PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Overview of the principles of finance as they apply to the public and non-profit services, financial reporting for state and local governments and non-profit organizations and evaluation.

PAPP 5330. COMMUNITY AND NEIGHBORHOOD ORGANIZATION. 3 Hours.

Structure and processes in the analysis and development of community and neighborhood organizations; special emphasis given to poverty and minority communities and neighborhoods.

PAPP 5331. LAND USE PLANNING AND THE LAW. 3 Hours.

Explores the law of land use in the context of the American legal, economic, and political systems. Examines leading court decisions and precedents for their background, content, and applicability to contemporary land use. Offered as PLAN 5316 and PAPP 5331. Credit will be granted only once.

PAPP 5332. PUBLIC CAPITAL BUDGETING. 3 Hours.

Examines governmental capital budgeting processes with a focus on understanding the significance of capital improvement planning, public facility investment, and project evaluation to sound infrastructure financing and regional economic growth. Governments purchase or construct long-lasting physical assets or facilities financed mostly through borrowing. This course aims to understand the rationale for public capital budgeting and debt instruments used to finance capital investment in the political context of public budgeting in America.

PAPP 5333. GOVERNMENTAL AND NONPROFIT ACCOUNTING. 3 Hours.

This course is designed as an introduction to governmental and nonprofit accounting. The course reviews major fund accounting principles, accounting for budgetary, revenue, and expenditure funds, accounting for general capital assets and long-term liabilities, accounting for fiduciary and proprietary funds, auditing practices, and financial reporting unique to government and non-profit organizations.

PAPP 5334. MANAGEMENT OF ECONOMIC DEVELOPMENT. 3 Hours.

This course focuses on the knowledge, organization, politics, issues, techniques and processes of local economic development. Emphasis is placed on contemporary issues and trends in the rich, dynamic laboratory of local economic development in Texas. Learning objectives include: 1) comprehension of basic techniques and issues such as strategic planning, leadership strategies, financial options and evaluation; 2) increased knowledge of the positive potential of thoughtful economic development for local environmental, infrastructure, and revenue challenges; and 3) enhanced professional development through individual and classroom exposure to successful practitioners.

PAPP 5341. PROFESSIONAL REPORT WRITING. 3 Hours.

The course aims to build professional writing skills. It reviews memo and report writing including grammatical construction, identifying and writing for a targeted audience, and writing in a clear, concise, and professional style. Also offered as PLAN 5335; credit will be granted for only one.

PAPP 5342. INTERMEDIATE DATA ANALYSIS. 3 Hours.

An intermediate level examination of statistical and research techniques appropriate to urban and social analysis. Presuming a basic understanding of descriptive and inferential statistics, the course covers multivariate regression, including error analysis and non-linear models, path analysis, ANOVA, logit and probit models, and techniques for data reduction (e.g., factor analysis). Offered as PAPP 5342 and PLAN 5317; credit will be granted only once. Prerequisite: PAPP 5302.

PAPP 5343. APPLIED URBAN ANALYSIS. 3 Hours.

Group and individual projects to develop research studies or strategies, data reports for local government, agency or citizen group; techniques appropriate to task utilized. P/F only.

PAPP 5344. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PLAN 5346 and PAPP 5344; credit will be given only once.

PAPP 5345. EVALUATION RESEARCH. 3 Hours.

Methodological issues in evaluating public programs; identification of variables, indicators and analyses formats presented. Prerequisite: PAPP 5302.

PAPP 5346. BIG DATA AND PUBLIC POLICY ANALYSIS. 3 Hours.

An examination of the data competencies and quantitative techniques necessary for policy analysis, with a special emphasis on big data and policy analysis. Increasingly, the rise and aggregation of what is commonly referred to as "big data" has raised many questions about the potential of this data for informing public policy as well as the tools and techniques appropriate for analysis. This course focuses on questions as to what constitutes big data, what sources of big data have relevance for public policy analysis, and concerns related to generalizability, reliability and validity. The course presumes a basic understanding of the basic statistical and research techniques taught in PAPP 5302 and PAPP 5342 (or equivalents from other departments). It builds on this foundation to analyze the tools and techniques appropriate for big data analysis in the field of public policy. The purpose of the course is to prepare students to understand what constitutes big data and evaluate the potential and limitations of its use in policy analysis. Students will be responsible for analyzing a source of big data, evaluating its research potential, and communicating the results of the analysis in a professional manner.

PAPP 5347. DEMOGRAPHIC METHODS. 3 Hours.

Examination of sources of data-census, vital statistics, special surveys, reports, special studies; techniques of analysis with particular emphasis on growth and projection models, interpretation of findings as a major policy area in urban analysis.

PAPP 5348. COST BENEFIT ANALYSIS. 3 Hours.

Reviews theory of cost-benefit and cost-effective analyses; explores the research, measurement and methodological requirements for the assessments of costs and benefits. It is recommended that students have completed at least one graduate course in research and one graduate class in public finance.

PAPP 5349. RESEARCH DESIGN IN PUBLIC POLICY. 3 Hours.

Application of research issues, writing, and communication skills in public policy. Designed to assist students in preparing their research for master's thesis or project report. Also offered as PLAN 5380. Credit can only be granted once.

PAPP 5350. INTRODUCTION TO PUBLIC ADMINISTRATION. 3 Hours.

This is a graduate level introductory course designed to give students an understanding of public administration as a field of academic inquiry and professional practice within the context of American federalism, democratic values, institutional dynamics, and bureaucratic politics. In addition to contextually defining public administration, the course addresses government reform, intergovernmental relations, public ethics, organizational dynamics and behavior, personnel issues, budgeting, and e-governance.

PAPP 5351. HUMAN RESOURCE MANAGEMENT IN GOVERNMENT AND NON-PROFITS. 3 Hours.

The purpose of this course is to familiarize students with key functions of government and non-profit personnel systems, discuss various theoretical approaches and techniques, and understand the major legal requirements of public and non-profit personnel management. The course examines the structure, role, and evolution of the Civil Service, current personnel policies, and personnel management tasks such as examination, recruitment, position classification, and collective bargaining.

PAPP 5352. CONFLICT RESOLUTION IN THE PUBLIC AND NONPROFIT MANAGEMENT. 3 Hours.

Labor management at all levels of government and non-profits, ability to work together to solve problems. Emphasis on collective and interest based bargaining, mediation, labor management partnership. Simulation exercises teach dynamics of bargaining, negotiation, problem solving, and small group dynamics.

PAPP 5353. REFORM AND INNOVATION IN URBAN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Designed to acquaint students with urban governance and non-profit reform and innovation. Course will explore how reformed government differs from traditional bureaucracy by contrasting it with entrepreneurial government and other innovations. Examines some of the areas most in need of reform, including service delivery, organizational capacity, and fiscal decentralization.

PAPP 5354. NONPROFIT MANAGEMENT AND SOCIAL ENTREPRENEURSHIP. 3 Hours.

This course prepares students to be entrepreneurs, innovators and change leaders by using social entrepreneurship perspective to examine leadership and management practices of nonprofit organizations. Through hands-on experiential training, developing skills in needs assessment, and formulating interventions for social change, students develop a blueprint of a nonprofit organization that takes an innovative approach for sustainable solutions of social problems.

PAPP 5355. NONPROFIT ORGANIZATIONS IN PUBLIC POLICY. 3 Hours.

This course examines non-profits as community institutions with an outward focus: the political, economic, and inter-organizational environment, fund-raising and financial management, community relations and needs assessment, the role of the volunteers, boards and community leaders, marketing, and legal and government issues.

PAPP 5356. ENTREPRENEURSHIP IN PUBLIC AND NON-PROFIT MANAGEMENT. 3 Hours.

Public and non-profit entrepreneurship involves the use of public powers, and partnerships with individuals, firms and other organizations, to achieve public purposes. The focus will be on creative management techniques and methods employed in managing the public and non-profit sectors.

PAPP 5357. STRATEGIC MGT AND PLANNING IN PUBLIC AND NON-PROFIT SERVICES. 3 Hours.

Readings and case studies of strategic planning and management in the public and non-profit sectors; application of principles to an actual situation, involving stakeholder identification, environmental scanning, and formulation of mission statements, goals, and strategies. Offered as PLAN 5312 and PAPP 5357. Credit will be granted only once.

PAPP 5358. ETHICS IN THE PUBLIC SERVICE. 3 Hours.

This course examines public service theoretical ethics literature to provide a basis for each student to both reflect upon and expand their comprehension of the values and processes of ethical decision making. Beyond theoretical works, it addresses the application and evaluation of theory against the professional, workaday reality of case studies, ethical codes and other relevant materials. Three major learning objectives are: 1) achievement of a solid understanding of the dominant theoretical perspectives in the public service ethics literature; 2) competency in the development of guidelines and procedures that encourage ethical behavior, and 3) enhancement of the reach and resiliency of each member's personal commitment to public service ethics.

PAPP 5359. ORGANIZATIONAL DIAGNOSIS. 3 Hours.

This class deals with tools and techniques necessary to manage public organizations. The learning objectives include ability to conduct an organizational diagnostic; and familiarity with group procedures and facilitation techniques involved in organizational change.

PAPP 5360. PUBLIC AND NON-PROFIT MANAGEMENT INTERNSHIP. 3 Hours.

Designed to integrate work experience and coursework through a series of brief work-related assignments; presentations by local planning and management practitioners and class discussions and exercises. Enrollment is open to both pre-entry and in-career students. Formal internship placements with agency mentors will be arranged. P/F only.

PAPP 5361. INTERNATIONAL ORGANIZATIONS. 3 Hours.

The course focuses on the rise of governmental and nongovernmental organizations in geopolitics, international development, and environmental management. It analyzes their institutional histories, their organizational structures and cultures, and their role as institutional policy actors in the global diffusion of policy initiatives and managerial knowledge and practices.

PAPP 5362. URBAN DIVERSITY. 3 Hours.

Examines the growing spatial and social diversity of cities; how physical as well as socioeconomic urban structures have fostered race, class, and gender inequalities; how urban policies have addressed and can address these issues. Offered as PLAN 5362 and PAPP 5362.

PAPP 5363. CIVIL RIGHTS AND URBAN MINORITIES. 3 Hours.

Examines the changes in and growth of the civil rights of minorities in the United States from the close of the Civil War to the present. This is accomplished through the study of court decisions, legislation, and the civil rights movement in the 1950s and 1960s, as seen through the eyes of contemporary writers, including William Faulkner, Alice Walker, and Alex Haley.

PAPP 5364. URBAN POLITICAL ECONOMY. 3 Hours.

Examines the theoretical bases of economic paradigms and the different economic policies that logically flow from them. Comparison is made between the orthodox, or neoclassical, model of economics and alternative heterodox models, including comparing the growth and development of the urban system, land use patterns, and economic policy debates. Consideration will be given to how and why the neoclassical model remains the dominant model for economic policy in Western, capitalist countries.

PAPP 5365. FOUNDATIONS OF ENVIRONMENTAL POLICY. 3 Hours.

Explores how environmental controversy is rooted in conflict between a number of schools of environmental policy thought with divergent perspectives on issues such as how to define progress, how to balance the needs of economy and ecosystem, how to cope with environmental complexity, and what role science should play in environmental affairs. Also offered as PLAN 5343; credit will be granted only once.

PAPP 5366. US IMMIGRATION POLICIES AND PLANNING FOR IMMIGRANTS. 3 Hours.

A seminar course where weekly readings would include: perspectives on international migration theory; the evolution of US immigration policy and national security; theories and urban issues related to immigrant assimilation and incorporation; urban ethnic economies and ethnic enclaves; segregation and housing of immigrants; globalization and immigrant labor networks; governance issues with providing education and other public services to immigrants and their children; and social work issues regarding generational conflict in immigrant families.

PAPP 5367. STRATEGIC PUBLIC AND NONPROFIT HUMAN RESOURCES MANAGEMENT. 3 Hours.

This course is designed to acquaint students with the theory and practice of strategically developing, utilizing, and aligning human resources so that maximum contribution from each member of an organization is used toward the attainment of strategic long-range goals and objectives. Topics include HR strategy, diversity, leadership, selection, training and development, compensation, classification, performance appraisal, and future practices for public and non-profit organizations.

PAPP 5368. PRACTICAL EMPLOYMENT FOR PUBLIC AND NONPROFIT MANAGERS. 3 Hours.

The course examines the rights and obligations of employers and employees. It does this by examining the legal background pertinent to public and nonprofit management. Topics addressed include employee selection, promotion and discipline, anti-discrimination legislation, gender and family issues legislation, environmental, safety and health issues, whistleblower legislation, immigration law, worker's compensation, labor law, and drug and alcohol issues.

PAPP 5390. TOPICS IN URBAN THEORY. 3 Hours.

Different topics explored on an intensive basis, especially recent theoretical approaches. May be repeated for credit as topic changes.

PAPP 5391. TOPICS IN URBAN POLICY. 3 Hours.

Different topics and approaches in analysis of urban problems. May be repeated for credit as topic changes.

PAPP 5392. TOPICS IN URBAN MANAGEMENT. 3 Hours.

Selected topics on current management problems including small city management, community-neighborhood relations, citizen involvement programs and techniques, personal and professional effectiveness as a total person, intergovernmental strategies and styles, public-private sector collaboration and co-planning, privatization, and other alternatives to economic service delivery. May be repeated as topic changes.

PAPP 5394. SPECIAL TOPICS IN URBAN RESEARCH. 3 Hours.

Different topics each semester concentrate on a variety of methodological techniques and research strategies, such as demographic research and survey techniques. May be repeated for credit as topic changes.

PAPP 5395. CONFERENCE COURSE IN URBAN AFFAIRS. 3 Hours.

Reading and research in a specialized area of urban affairs under the direction of a member of the graduate faculty.

PAPP 5396. PROJECT REPORT. 3 Hours.

Student prepares report focusing on specific policy or professional issue, utilizing appropriate research techniques; subject area and design of project report with consent of instructor. Graded P/F/R only.

PAPP 5397. RESEARCH REPORT. 3 Hours.

Student prepares report comparable to a journal article focusing on research issue, utilizing appropriate theory and research techniques; subject area and design of research report with consent of instructor. Graded P/F/R only. Prerequisite: PAPP 5342.

PAPP 5398. THESIS. 3 Hours.

A thesis conforming to University and departmental requirements may be prepared by graduate students in urban affairs. Graded F, R.

PAPP 5399. PUBLIC ADMINISTRATION CAPSTONE. 3 Hours.

This integrative applied research course assesses the student's ability to analyze, synthesize, and formulate cogent recommendations to solve a real public sector problem. Students will write the capstone paper using concepts drawn from the MPA core curriculum, their chosen emphasis track, and the student's professional public work experience. Students are required to successfully defend their capstone paper before a Public Administration Forum consisting of CAPPA faculty, students, and other interested parties. Prerequisite: Completion of all other course work required for the MPA degree, including core courses and emphasis area courses, unless an exception is approved by the MPA advisor.

PAPP 5698. THESIS. 6 Hours.

A thesis conforming to University and departmental requirements may be prepared by graduate students in urban affairs. Graded P/F/R.

PAPP 6301. THEORETICAL FOUNDATIONS AND PH.D. WORKSHOP. 3 Hours.

Explores the development and function of theoretical models and frameworks. Examines the major theories from the social sciences designed for framing urban planning or administration issues and public policy. Designed to assist doctoral students in preparing their dissertation research. Opportunities to present work in progress, share ideas, and interact with faculty. Also offered as PLAN 6301; credit will be granted only once. Prerequisite: PLAN 5346; and PLAN 5317 or PAPP 5342.

PAPP 6305. ADVANCED THEORIES OF URBAN SOCIETY. 3 Hours.

Advanced theoretical perspectives of the community and community organization are examined. Special emphasis given to theories from human ecology, organization and stratification, and social welfare.

PAPP 6306. SEMINAR IN PUBLIC ADMINISTRATION. 3 Hours.

Final course in the public administration field, focuses on review and integration of the theories and principles of public administration.

PAPP 6307. THE URBAN ECONOMY. 3 Hours.

Students explore theories that explain local, state, national and international economies in a predominantly urbanized country and world. The course provides an understanding of agglomeration economies that are the foundation of urban genesis, growth and stability or decline. Individual topic areas include transportation, housing, environment, education and employment. An overarching theme is understanding human behavior and decisions in the urban context drawing on the economic theories new urban economics, new economic geography, new institutional economics and others. Offered as PAPP 6307 and PLAN 6307; credit will only be granted for one.

PAPP 6309. INTERGOVERNMENTAL RELATIONS IN THE ADMINISTRATION AND PUBLIC POLICY. 3 Hours.

The course explores the constitutional, political and fiscal relationships among the federal, state and local levels of government. How the relationships impact the administration of urban public policy is of primary focus.

PAPP 6310. MONETARY AND FISCAL POLICY: THE FEDERAL ROLE. 3 Hours.

Examination of the role of the federal government in maintaining economic stability, ensuring full employment and controlling inflation; exploration of liberal interventionist, conservative and radical theories of state economic management to assess the various policy alternatives and the importance of interest groups.

PAPP 6311. ADVANCED PUBLIC POLICY FORMATION AND ANALYSIS. 3 Hours.

The course covers policy process, policy formulation and policy analysis, using multiple theoretical and analytical perspectives. The primary focus is on U.S. policy, with an emphasis on state and local policy issues. The course aims to provide students with advanced knowledge in the theory, process, and tools of policy analysis essential in critiquing and researching public policy. Students will also gain advanced skills in the development and presentation of policy analysis and recommendations.

PAPP 6314. SEMINAR IN POLICY PROCESSES. 3 Hours.

The course focuses on the political, economic, and sociological institutions in the policy process, including various theoretical approaches, and application of these multidisciplinary perspectives in the analysis of specific policy issues.

PAPP 6315. PUBLIC ADMINISTRATION THEORY. 3 Hours.

This course is designed to critically examine public administration theory through the lenses of various governance models that have been proposed beginning with Weber's "ideal"; bureaucratic model through Osborne and Gaebler's market model to Fox and Miller's postmodern discourse model. The course begins by examining each governance model's stated or implied assumptions (about man, government, state, etc.) Second, the course considers the political philosophy and conceptual pillars on which the models are theoretically founded. Finally, the course examines the ideas of what constitutes a state as it might be relevant to a particular model and public administration.

PAPP 6316. SEMINAR IN PUBLIC ADMINISTRATION. 3 Hours.

Final course in the public administration field, focuses on review and integration of the theories that explain the structure, growth and change of public administration.

PAPP 6320. ADVANCED ORGANIZATION THEORY. 3 Hours.

The purpose of this advanced seminar is to examine the role of public agencies as organs of the State. It focuses on federal, urban, and nonprofit organizations. Learning objectives include understanding of interpretive, critical, and postmodern critiques of State's institutions; and application of power, knowledge, and gender lenses to the analysis of organizational practices, culture, and policy actions. Prerequisite: PAPP 5320 or PAPP 5323.

PAPP 6326. PUBLIC BUDGETING & FINANCE. 3 Hours.

The primary objective of this seminar is to provide students with the theoretical underpinnings of budgeting and financial management in the public sector. Students will engage in in-depth discussions of public budgeting and financial management topics drawn from economics, decision-making models, urban politics, federalism, and others to be able to have a sound understanding of how fiscal decisions affect public administration and policy.

PAPP 6340. RESEARCH DESIGN. 3 Hours.

Advanced course especially for Ph.D. students; covers logic of research design and problems of structure. Emphasis on empirical and quantitative studies.

PAPP 6344. QUALITATIVE METHODS. 3 Hours.

The study of qualitative research and analysis methods. Offered as PAPP 6344 and PLAN 6347; credit will be given only once.

PAPP 6346. ADVANCED DATA ANALYSIS IN URBAN AND PUBLIC AFFAIRS. 3 Hours.

An introduction to selected advanced techniques related to planning analysis. Subjects include advanced applied regression analysis, multivariate logit analysis, and multinomial logistic regression. Applications of projection techniques, land use and transportation models, and methods of regional analysis. Offered as PLAN 6346 and PAPP 6346. Credit will be given only once.

PAPP 6349. DECISION MAKING AND PUBLIC POLICY ANALYSIS. 3 Hours.

This course explores the theoretical, practical, and topical connections between public policy and public administration through a decision-making lens. The objectives of the course are to enable students to identify, critique, and connect the theoretical and meta-theoretical assumptions of decision-making models to models of public policy analysis and public administration. Course objectives will be pursued through readings, seminar discussions, and research-based assignments that focus on the intersection between decision-making, public policy, and public administration.

PAPP 6399. DISSERTATION. 3 Hours.

Graded F/R only.

PAPP 6699. DISSERTATION. 6 Hours.

Graded F/R/P/W only.

PAPP 6999. DISSERTATION. 9 Hours.

Graded P/F/R.

PAPP 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Public Relations (PREL)

COURSES

PREL 2338. INTRODUCTION TO PUBLIC RELATIONS. 3 Hours. (TCCN = COMM 2330)

Principles and methods of building goodwill and obtaining publicity; process of influencing public opinion; analysis of media; implementation of public relations programs.

PREL 3320. STRATEGIC SOCIAL MEDIA COMMUNICATION. 3 Hours.

Developing strategy and content for social media, engaging in audience analysis, understanding the unique attributes of various platforms, and communicating ethically and effectively across those platforms. Credit will not be given for both PCOM 3320 and PREL 3320.

PREL 3339. PUBLIC RELATIONS METHODS I. 3 Hours.

The theory and practice of selecting the appropriate mass media channels to reach and influence specialized groups with introductory practice in public relations writing. Prerequisite: A grade of C or higher (2.0/4.0 scale) in the following courses: PREL 2338, COMM 2311, and MATH 1308, and 60 or more hours earned.

PREL 3340. PUBLIC RELATIONS METHODS II. 3 Hours.

The theory and advanced practice of selecting the appropriate mass media channels to reach and influence specialized groups with strategic public relations writing. Prerequisite: PREL 3339 with a grade of C or higher (2.0/4.0 scale).

PREL 3355. PUBLIC RELATIONS CASE STUDIES. 3 Hours.

The use of case studies to study the techniques of goal-setting and strategy-selection as applied in actual programs and under varying information conditions. Prerequisite: PREL 2338 with a grade of C or higher (2.0/4.0 scale), JOUR 2346, 60 or more hours earned and MATH 1308, Elementary Statistical Analysis, with a course grade of C or higher (2.0/4.0 scale).

PREL 4316. PUBLIC RELATIONS CAMPAIGNS. 3 Hours.

The study of advanced public relations campaign strategies based on research techniques; campaign development, implementation and assessment. Prerequisite: PREL 3339 and PREL 3340 with a grade of C (2.0/4.0) or better. COMM 3315, COMM 3303, and ECON 2305, and completion or concurrent enrollment in PREL 4320.

PREL 4320. PUBLIC RELATIONS MANAGEMENT CASE STUDIES. 3 Hours.

The use of case studies to study public relations management decision-making in areas of operation, personnel, content, promotion, finance, and governmental regulations. Prerequisite: COMM 3315, A grade of C (2.0/4.0) or better in PREL 3340.

PREL 4391. CONFERENCE COURSE. 3 Hours.

Topic assigned on an individual basis, covering individual research or study in the designated areas. May be repeated when topic changes, for a maximum of six credit hours. Prerequisite: 60 or more hours earned and permission of the department.

PREL 4393. SPECIAL TOPICS. 3 Hours.

Special studies in public relations. Topic varies from semester to semester. May be repeated when topic changes for a maximum of six credit hours. Prerequisite: 60 or more hours earned, and permission of the department.

PREL 4395. PROFESSIONAL INTERNSHIP. 3 Hours.

Individual research in public relations while working with business and industry. Individual conference to be arranged. Prerequisite: 60 or more hours earned and permission of the department.

Real Estate (REAE)

COURSES

REAE 3325. REAL ESTATE FUNDAMENTALS. 3 Hours.

A foundation for study and research in specialized areas such as real estate financing, real estate investment and counseling, real estate management, real estate development, and property appraising. Formerly BUSA 3325; credit will be granted only once. Prerequisite: MATH 1315 or MATH 1316 or any other Calculus (or permission of instructor) and junior standing.

REAE 4191. STUDIES IN REAL ESTATE. 1 Hour.

Advanced studies, on an individual basis, in the various fields of real estate. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

REAE 4291. STUDIES IN REAL ESTATE. 2 Hours.

Advanced studies, on an individual basis, in the various fields of real estate. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

REAE 4314. REAL ESTATE DEVELOPMENT. 3 Hours.

The land conversion process including feasibility analysis, site selection, design, construction, and financial analysis. Land use controls, planning, and environmental constraints are also examined. Formerly REAE 4311; credit will be granted only once. Prerequisite: junior standing.

REAE 4319. REAL ESTATE FINANCE. 3 Hours.

Problems associated with real property financing. In-depth study of financial intermediaries who supply funds for real property investment. May be included as a part of the finance concentration. Formerly BUSA 4319; credit will be granted only once. Prerequisite: REAE 3325 (FINA 3313 may be substituted for non-real estate majors).

REAE 4321. REAL ESTATE INVESTMENT. 3 Hours.

The determination of financial feasibility for proposed real estate investments, the effect of income taxes and various financing patterns on the equity investment, and the criteria for proper decision making to maximize benefits for equity investors. Formerly REAE 4310; credit will be granted only once. Prerequisite: REAE 3325 (FINA 3313 may be substituted for non-real estate majors).

REAE 4331. SEMINAR IN REAL ESTATE. 3 Hours.

Readings and discussion of special topics in real estate. Prerequisite: Junior or senior standing and consent of instructor. May be repeated for credit with consent of department chair.

REAE 4334. REAL ESTATE APPRAISAL. 3 Hours.

Theory and methods of residential and income property appraisal. Market analysis, highest-and-best-use analysis, capitalization techniques, and market, cost, and income approaches to valuation and reconciliation of value indicators. Prerequisite: REAE 3325 (FINA 3313 may be substituted for non-real estate majors).

REAE 4391. STUDIES IN REAL ESTATE. 3 Hours.

Advanced studies, on an individual basis, in the various fields of real estate. Prerequisite: 90 credit hours and permission of instructor. May be repeated for credit with consent of department chair.

REAE 4393. REAL ESTATE INTERNSHIP. 3 Hours.

Practical training in real estate. Analysis of theory applied to real life situations. May be used as an advanced business elective only; graded on a pass/fail basis. No credit will be given for previous experience or activities. May not be repeated for credit. Prerequisite: Junior standing and consent of department internship advisor.

REAE 5182. INDEPENDENT STUDIES IN REAL ESTATE. 1 Hour.

Extensive analysis of a real estate topic. Prerequisite: departmental permission.

REAE 5199. GRAD REAL ESTATE INTERNSHIP. 1 Hour.

Practical training in real estate. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

REAE 5299. GRAD REAL ESTATE INTERNSHIP. 2 Hours.

Practical training in real estate. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

REAE 5301. SUSTAINABLE ISSUES IN THE BUILT ENVIRONMENT. 3 Hours.

A survey-based course that analyzes current and historical sustainability issues. The global and political nature of this evolving discipline is emphasized. Additionally, a macro view of the components currently embodied in the practice of sustainability will be examined and discussed.

REAE 5302. SUSTAINABLE STRATEGIES IN THE BUILT ENVIRONMENT. 3 Hours.

Business strategies that emphasize quantitative methods, asset allocation, socially responsible investing, and evaluation research.

REAE 5303. SUSTAINABLE POLICIES IN THE BUILT ENVIRONMENT. 3 Hours.

Governmental, regulatory, internal reporting, and policy development related to sustainability. Grant writing will also be explored.

REAE 5304. SUSTAINABLE PROJECTS IN THE BUILT ENVIRONMENT. 3 Hours.

A field-based study of buildings, developments, organizations, and companies that exemplify sustainable practices. Course will include elements of social networking and communication strategies.

REAE 5311. REAL ESTATE ANALYSIS. 3 Hours.

Survey of real estate finance, investment, valuation/market analysis, and urban development, including financial, physical, and social aspects of the real estate development process.

REAE 5312. INTERNATIONAL PROPERTY MARKETS. 3 Hours.

Property markets are characterized by significant institutional differences that affect the nature and performance of national markets. Analysis of socio-economic and cultural factors influencing the operation of international markets.

REAE 5313. GIS & PROPERTY ANALYSIS. 3 Hours.

The increasing availability of geographically referenced property data offers significant potential for real estate research and modeling. Covers fundamentals of Geographic Information Systems (GIS) (Concepts, principles, and functions) and essential skills for applying GIS to real estate industry problems.

REAE 5314. SEMINAR IN REAL ESTATE DEVELOPMENT. 3 Hours.

Topics relating to site selection, design, market analysis, financial feasibility, and management in the real estate development process.

REAE 5315. REAL ESTATE TRENDS & ISSUES. 3 Hours.

Analysis of specialized topics associated with emerging trends and issues in the real estate industry using current literature and case studies.

REAE 5316. ADAPTIVE REUSE & REDEVELOPMENT OF COMMERCIAL INVESTMENT REAL ESTATE. 3 Hours.

The tools and techniques associated with the market and financial feasibility analysis of adaptively reusing and redeveloping existing properties into economically viable commercial investment real estate.

REAE 5317. REAL ESTATE CONSTRUCTION MANAGEMENT. 3 Hours.

Topics relating to construction management for commercial investment real estate.

REAE 5318. SUSTAINABLE DEVELOPMENT. 3 Hours.

Sustainability perspectives about values, rights, property and what constitutes an optimum human environment; sustainability principles and case studies emphasizing on-the-ground, incentive-based commercial investment real estate development that balances economic growth with environmental quality. Projects will include those in urban areas as well as those in rural areas focusing on agricultural elements.

REAE 5319. SEMINAR IN REAL ESTATE FINANCE. 3 Hours.

Study of real property financing methods; analysis of cost of borrowing, sources of funds, and mortgage terms; emphasis on construction and permanent financing of commercial and industrial properties.

REAE 5320. TEXAS REAL ESTATE STUDY TOUR. 3 Hours.

A field-based study of Texas real estate markets, focusing on projects in Austin, San Antonio, Houston, and Dallas-Fort Worth.

REAE 5321. SEMINAR IN REAL ESTATE INVESTMENT. 3 Hours.

Introduction to analytical techniques, sources of financing, and other factors related to real estate investment. Stresses current developments and topics.

REAE 5322. COMMERCIAL LEASE ANALYSIS. 3 Hours.

Application of critical occupancy decisions such as comparative lease analysis, lease vs. purchase analysis, lease buyout analysis, and sale-leaseback analysis to optimize user space decisions.

REAE 5323. REAL ESTATE PROJECT STUDIO. 3 Hours.

Studio based course focused on a commercial real estate project.

REAE 5324. REAL ESTATE ECONOMICS. 3 Hours.

A review of the nature of urban areas and the development of the urban economics as an economic discipline. Emphasis will be on identifying location patterns in urban areas, policy issues, real estate and urban housing options, government issues in urban areas, and urban social problems. Students will utilize data analytics and projective techniques in developing projects based on current local urban real estate issues and opportunities.

REAE 5327. ADVANCED REAL ESTATE MARKET ANALYSIS. 3 Hours.

Study of advanced market analysis techniques and methods, including trend analysis and demand forecasting. Emphasis is on the application of these methods to commercial property markets.

REAE 5334. SEMINAR IN REAL ESTATE APPRAISAL. 3 Hours.

Market, cost, and income approaches with stress on income forecasting and capitalization.

REAE 5337. REAL PROPERTY LAW. 3 Hours.

Legal property theory underlying real estate transactions and relationships including estates and interests in land, conveyances, and mortgages.

REAE 5350. QUANTITATIVE METHODS FOR REAL ESTATE. 3 Hours.

Study of advanced statistical, modeling, and econometric techniques as applied to real estate markets. Emphasis on the integration of these techniques with traditional real estate analysis.

REAE 5382. INDEPENDENT STUDIES IN REAL ESTATE. 3 Hours.

Extensive analysis of a real estate topic. Prerequisite: departmental permission.

REAE 5392. SELECTED TOPICS IN REAL ESTATE. 3 Hours.

In-depth study of selected topics in real estate. May be repeated when topics vary. Prerequisite: REAE 5311.

REAE 5398. THESIS. 3 Hours.

Prerequisite: departmental permission.

REAE 5399. GRAD REAL ESTATE INTERNSHIP. 3 Hours.

Practical training in real estate. Analysis of theory applied to real life situations. Course counts as an elective and has a pass/fail grade. No credit will be given for previous experience or activities. Prerequisite: Minimum nine graduate semester hours completed.

REAE 5698. THESIS. 6 Hours.

Prerequisite: departmental permission.

REAE 6390. SEMINAR IN SPECIAL TOPICS IN REAL ESTATE. 3 Hours.

Doctoral level coverage of advanced topics in real estate. May be repeated for credit when topics vary. Prerequisite: REAE 5311.

REAE 6392. RESEARCH IN REAL ESTATE. 3 Hours.

Independent study of advanced topics in real estate under the direction of graduate faculty. May be repeated for credit when topics vary. Prerequisite: REAE 5311.

Resource and Energy Engineering (REE)

COURSES

REE 1301. INTRODUCTION TO RESOURCE & ENERGY ENGINEERING. 3 Hours.

Provides a review and discussion of the history of energy usage, the relation between energy usage and quality of life, the societal impact of energy use, and the environmental constraints on energy usage. Emphasis is placed on the role that engineering disciplines play in solving energy problem. The full impact that the various energy alternatives have on economic and environmental issues will be reviewed in order to provide a rational basis for energy choices now and in the future.

REE 1306. THE CHEMISTRY OF FUELS. 3 Hours.

Design of energy systems including generation, delivery, conversion and efficiency. Topics include efficiencies of both new and established energy generation and conversion methods; electricity generation by fossil fuels, nuclear, solar, wind and hydropower; and alternative energy technologies. Energy systems are evaluated quantitatively by modeling and by introducing the principles of fluid mechanics, thermodynamics and heat transfer. Prerequisite: CHEM 1465.

REE 2301. THERMAL ENGINEERING. 3 Hours.

Basic concepts and definitions, properties of pure substances, work and heat, first law of thermodynamics, second law of thermodynamics, entropy, and introduction to conductive, convective, and radiative transfer. Prerequisite: CHEM 1465 (or concurrent enrollment) or CHEM 1441 and CHEM 1442 (or concurrent enrollment); MATH 2425 (or HONR-SC 2425) and PHYS 1444; or student group.

REE 3301. PRINCIPLES OF ENERGY ENGINEERING. 3 Hours.

Design of energy systems including generation, delivery, conversion and efficiency. Topics include efficiencies of both new and established energy generation and conversion methods; electricity generation by fossil fuels, nuclear, solar, wind and hydropower; and alternative energy technologies. Energy systems are evaluated quantitatively by modeling and by introducing the principles of fluid mechanics, thermodynamics and heat transfer.

REE 3302. SUSTAINABLE ENERGY SYSTEMS. 3 Hours.

This course presents the production and consumption of energy from a systems perspective. Sustainability is examined by studying global and regional environmental impacts, economics, energy efficiency, consumption patterns and energy policy. First, the physics of energy and energy accounting methods are introduced. Next, the current energy system that encompasses resource extraction, conversion processes and end-uses are covered. Responses to current challenges such as declining fossil fuels and climate change are then explored.

REE 3303. PETROLEUM & GAS ENGINEERING. 3 Hours.

The course provides the student with a basic knowledge and understanding of the oil and gas engineering and industry, including its history, technical aspects, business model, and impact on society and the environment. The primary emphasis is on operations in exploration, production, transportation, refining, and marketing. At the end of the course, the student should be able to speak in a general way on all aspects of the industry and be familiar with common industry terminology. Prerequisite: PHYS 1443, PHYS 1444, GEOL 3340.

REE 4301. ENERGY SYSTEMS MODELING. 3 Hours.

Mathematical methods to model and optimize effective management of dynamic energy systems. Topics include concepts in probability and statistics, spatial statistics (geo-statistics and machine learning), Monte Carlo simulations, global and local sensitivity analyses, surrogate models, and computational alternatives to Monte Carlo simulates. Prerequisite: IE 3301.

REE 4302. SMART GRID. 3 Hours.

Fundamentals of smart electric power grid including definition, design criteria, and technology. Application of data collection, processing, and communications to the power grid. Seeks to motivate development of the smart grid, evaluating options for adding sensing, communications, computation, intelligence, control, and automation to various parts of the electric system. Topics include automation in existing power systems; generation; transmission; distribution; and smart grid definition. Prerequisite: EE 2204.

REE 4303. MANAGEMENT OF ENERGY PROJECTS. 3 Hours.

This project course is intended to provide students with an industry-relevant experience. Students will apply their engineering knowledge and skills to solve problems in the production, processing, storage, distribution, and utilization of energy. A faculty member will follow the progress and serve as an advisor to the project. Each project must have a clearly defined problem or need; must show a solution methodology; and must be value-added to the sponsor. Prerequisite: Must be a senior in the REE Professional Program.

REE 4304. ENERGY STORAGE TECHNOLOGIES. 3 Hours.

Explores the various energy storage technologies, their working, and their practical applications. Focuses on the state-of-the-art review of current and most recent technologies. Offers students an opportunity to explore various innovations in the field of energy storage that can be helpful for fulfilling our current energy storage needs. Covers many different energy storage systems such as mechanical, chemical, electrochemical, thermal, and thermochemical. Prerequisite: REE 2301, EE 2240, MSE 3300.

REE 4305. ENERGY GOVERNANCE. 3 Hours.

Introduces contemporary energy markets, government policies, and regulations. Explores energy as a strategic resource influenced by economics, market conditions and environmental constraints. Explores the relationship between nonrenewable and renewable energy sources and how different regions adapt and address local needs and concerns. Evaluates the impact of government policies on energy usage and alternative energy development efforts. Prerequisite: IE 2308.

REE 4310. CAPSTONE DESIGN. 3 Hours.

Students will apply knowledge gained in the program to an application oriented capstone project. Activities will demonstrate technical skills in energy system knowledge, identifying opportunities, analysis for quantifiable savings, engineering economics, report writing, and presentation. Prerequisite: Must be a senior in the REE Professional Program.

Russian (RUSS)

COURSES

RUSS 1441. BEGINNING RUSSIAN I. 4 Hours. (TCCN = RUSS 1411)

Multimedia immersion in the culture and language of Russian-speaking countries. Designed to enable students to understand and communicate effectively in Russian at the beginning level. No prerequisites.

RUSS 1442. BEGINNING RUSSIAN II. 4 Hours. (TCCN = RUSS 1412)

Continuation of beginning Russian. Prerequisite: RUSS 1441 with a grade of C or better.

RUSS 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

RUSS 2301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. RUSS 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

RUSS 2310. RUSSIAN CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Russian-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

RUSS 2313. INTERMEDIATE RUSSIAN I. 3 Hours. (TCCN = RUSS 2311)

Continued immersion in the culture and language of Russian-speaking countries. Application of strategies and technology in mastering listening, speaking, reading, and writing at the intermediate level. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 2314. INTERMEDIATE RUSSIAN II. 3 Hours. (TCCN = RUSS 2312)

Continuation of intermediate Russian. Prerequisite: RUSS 2313 with a grade of C or better.

RUSS 2315. INTRODUCTION TO RUSSIAN LANGUAGE AND CULTURE. 3 Hours.

A fully online course devoted to immersion in Russian culture through print and digital media as well as conversation and collaboration with native speakers of Russian. Students will gain broad exposure to social and historical contexts of Russian culture as well as reading ability of the Russian Cyrillic alphabet, and practice in basic reading, writing and speaking skills in Russian. No prerequisites. Prior knowledge of Russian is useful but not required. Credit will not be granted to native or heritage speakers of Russian.

RUSS 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

RUSS 3301. TOPICS IN RUSSIAN LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Russian authors during the period from the beginning of Russian literature until the 1917 Revolution, focusing on the interrelationship of various literary movements and philosophies. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3301 and RUSS 3301; credit will be granted in only one department. Prerequisites: ENGL 3301-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

RUSS 3304. TOPICS IN RUSSIAN LANGUAGE STUDY. 3 Hours.

Study of Modern Russian with a focus on pronunciation, word formation, and syntax. Students develop advanced listening, reading, speaking, and writing skills through cultural analysis. Cultural topics come from linguistics, literature, music, film, visual and performing arts, sports, and science. Repeatable for credit when the topic changes.

RUSS 3305. TOPICS IN RUSSIAN POETRY. 3 Hours.

Literary analysis of selected works of Russian poetry in the original Russian. Topics will come from different periods of Russian literary and cultural history. Students develop reading, writing, and language skills at an advanced level. Repeatable for credit when the topic changes.

RUSS 3306. TOPICS IN SOVIET AND POST-SOVIET LITERATURE IN TRANSLATION. 3 Hours.

Covers the works of major Soviet and post-Soviet authors from 1917 to the present against the background of unfolding social and political development in the USSR and post-USSR. Students receiving credit in Russian will complete a research project using the Russian language. May be repeated for credit as topics and periods vary. Offered as ENGL 3306 and RUSS 3306; credit will be granted in only one department. Prerequisites: ENGL 3306-English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

RUSS 3310. LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to cultural and linguistic issues in the translation of Russian language texts. Students will explore current technologies used in various real-world translation contexts and how to adapt texts, products, and services to the locale for which they are intended. May be repeated once. Prerequisite: RUSS 2314 with a grade of B or better.

RUSS 3311. LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of cultural and linguistic issues in the translation of Russian and English language texts. Systematic development of advanced skills in localization and computer-aided translation and in using TMX/TBX (international standards for translation memory and terminology exchange) tools. Translation practice, individually and in translation teams, with increasingly longer and more specialized texts. Prepares localization and translation specialists for real-world careers in the language-services industry. May not be repeated for credit. Prerequisite: RUSS 3310 with a grade of B or better.

RUSS 3314. POLITICAL SYSTEMS OF EASTERN AND CENTRAL EUROPE. 3 Hours.

POLS 3314 or RUSS 3314. Examination of the political institutions and processes of the former communist systems of Eastern Europe and the Baltics, as well as selected Central European states. Credit will be given in only one department. Students receiving credit in Russian will complete projects using the Russian language.

RUSS 3333. CONVERSATION AND TOPICS IN RUSSIAN CULTURE. 3 Hours.

Intermediate practice in spoken Russian using print and media resources on a range of cultural topics. Students actively master the discourse of the source media through dialogue, debate, and short presentations in Russian. May be repeated as topic varies. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 3343. RUSSIAN PHONETICS. 3 Hours.

Introduction to the articulatory phonetics of Russian. Of special interest to students who wish to improve their pronunciation, comprehension, and oral expression. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. Exclusively for students pursuing a minor in Localization and Translation-Russian. RUSS 4334 or RUSS 3310 is strongly recommended before RUSS 3345.

RUSS 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Russian. Prerequisite: RUSS 3310 or RUSS 4334.

RUSS 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Russian. Prerequisite: RUSS 3310, RUSS 4334, RUSS 3311 or RUSS 4335.

RUSS 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission.

RUSS 3393. RUSSIAN INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of the instructor.

RUSS 4301. SELECTED AUTHORS AND TOPICS. 3 Hours.

Detailed reading and analysis of selected Russian writers such as Alexander Pushkin, Nikolai Gogol, Fyodor Dostoevsky, Leo Tolstoy, Ivan Turgenev and Anton Chekhov. Their works are compared in the light of urgent social, political, literary and philosophical questions of their day. May be repeated as topic varies. No prerequisites. Students majoring in Russian read some texts in the original. Taught in English. Satisfies the core curriculum requirement for literature.

RUSS 4302. RUSSIAN AND SOVIET CINEMA. 3 Hours.

A survey of Russian and Soviet cinema from their beginnings to the present. Special attention is paid to film theory and formal analysis, the ideological uses of film art, and cinema as a medium of cultural dissent and witness to social change. No prerequisites. May also be offered as ENGL 3300; credit will be granted in only one department. Taught in English.

RUSS 4303. PROPAGANDA AND IDEOLOGY IN SOVIET ART AND LITERATURE. 3 Hours.

An examination of the purpose, value and influence of the arts in revolutionary Russia with the aid of diverse source documents and artistic media. Focus is on the symbols, stories, rituals and ideologies that defined the Russian experience of 'building socialism' in the early decades of the Soviet Union. No prerequisites. Students majoring in Russian read some texts in the original. Taught in English. Satisfies the core curriculum requirement for literature.

RUSS 4304. BANNED AND CENSORED WORKS OF RUSSIAN LITERATURE. 3 Hours.

An examination of selected works of Russian literature that were censored, banned or otherwise prohibited, from tsarist Russia through the Soviet period. The role of censorship in Russian cultural life, and the great works of literature that flourished in spite of it. No prerequisites. Students majoring in Russian read some texts in the original. Taught in English. Satisfies the core curriculum requirement for literature.

RUSS 4334. THE CULTURE OF BUSINESS. 3 Hours.

The relationship of culture, language, and meaning to issues affecting business and e-commerce in the Russian-speaking world, with emphasis on intercultural communication in an international business environment. Web-based media segments about international business in Russia, Europe, and North America are used as an aid in the acquisition of pertinent cultural knowledge, as well as vocabulary and other linguistic knowledge. Prerequisite: RUSS 2314 with a grade of C or better.

RUSS 4335. BUSINESS RUSSIAN. 3 Hours.

Students learn to function in business environments, with emphasis on the skills needed for conducting e-commerce. Web-based media segments from Russia, Europe, and North America are used to reinforce vocabulary and other linguistic knowledge. Prerequisite: RUSS 4334 with a grade of C or better.

RUSS 4338. TOPICS IN INTERCULTURAL COMMUNICATION AND COLLABORATION. 3 Hours.

This course is devoted to intercultural communication and collaboration. Through telecollaboration with native speakers of Russian, students will gain active practice in listening comprehension and spoken and written Russian. Active learning tasks employing multimedia in collaboration with language partners will contribute to a broadening of knowledge in the social and historical contexts of Russian culture and media, increased ability to express ideas in everyday contexts in spoken and written Russian, and advancement of strategies for autonomous learning. May be repeated for credit as topic changes. Prerequisite: RUSS 1442 with a grade of C or better.

RUSS 4342. TOPICS IN SIMULTANEOUS INTERPRETING: THEORY AND PRACTICE. 3 Hours.

This fully online course focuses on the theory and practice of simultaneous interpreting through active translation and interpreting tasks. Through telecollaboration with native speakers of Russian, students will gain active practice in listening comprehension and spoken and written Russian. A major focus is on translation and simultaneous interpreting in a variety of professional contexts including health and legal settings, politics and media, and business negotiations. Active learning projects will involve role-play, simultaneous interpreting tasks, and creating audio/visual presentations. Prerequisite: RUSS 2314 or equivalent.

RUSS 4361. THE POLITICAL ENVIRONMENT OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The domestic political systems of Russia and the other former Soviet republics. The communist state in retrospect. Development of political actors, institutions, and parties. Offered as POLS 4361 and RUSS 4361; credit will be given in only one department. Taught in English; for Russian language credit, research will be done in Russian.

RUSS 4362. RUSSIA AND THE SUCCESSOR STATES TODAY. 3 Hours.

The metamorphosis of the Communist Party and the current political philosophies of the post-Soviet states. Examination of attitudes and self-perceptions of citizens of these states in the post-period. Emphasis is on area studies and culture. The course will be taught in English, but for Russian language credit; research will be done in the Russian language. May be repeated for credit as topics change. Offered as POLS 4362 & RUSS 4362. Credit will be granted in only one department.

RUSS 4365. FOREIGN POLICIES OF RUSSIA AND THE SUCCESSOR STATES. 3 Hours.

The foreign policies of Russia and other former Soviet republics. Development of their policymaking structures and the major issues confronting them. Emphasis on Russia and the superpower relationship, European security and cooperation, relations with developing states, and the interactions of the former Soviet republics. Also listed as RUSS 4365; credit will be given in only one department.

RUSS 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper or a translation on a research topic; consultation with instructor on a regular basis. May be repeated for credit.

RUSS 4393. RUSSIAN INTERNSHIP. 3 Hours.

This course is a combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Russian, outside readings, and formal presentations. Prerequisite: Two RUSS 3000 level courses and permission of the instructor.

RUSS 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit.

School of Urban and Public Affairs (SUPA)

COURSES

SUPA 5300. FOUNDATIONS OF URBAN PLANNING AND SOCIOLOGY. 3 Hours.

How urban communities develop as human settlements, their life cycles, expansion, and decay. Special consideration is given to social policy. Topics such as poverty, race, neighborhoods, and environment.

SUPA 5301. FOUNDATIONS OF URBAN POLITICS AND ECONOMICS. 3 Hours.

Examines the major political and economic institutions and processes in urban communities and their effect on urban policy.

Science (General) (SCIE)

COURSES

SCIE 1201. STEP 1: INQUIRY APPROACHES TO TEACHING. 2 Hours.

STEP 1 allows students to explore teaching as a career. Following an introduction to the theory and practice behind excellent inquiry-based science and mathematics instruction, students observe two and teach three lessons in elementary classrooms to obtain firsthand experience in planning and implementation. A grade of C or better is required for this course to apply towards a UTeach degree.

SCIE 1202. STEP 2: INQUIRY-BASED LESSON DESIGN. 2 Hours.

In STEP 2, students continue developing the lesson planning skills learned in STEP 1 as they become familiar with exemplary middle school science curricula. After observing a lesson being taught in a local school district classroom, students work alone or in pairs to plan and teach three inquiry-based lessons to sixth, seventh, or eighth graders. Prerequisite: C or better in SCIE 1101 or SCIE 1201.

SCIE 1334. STEP 1 & 2 COMBO: INQUIRY APPROACHES TO TEACHING & LESSON DESIGN. 3 Hours.

STEP 1 & 2 Combo allows students to explore teaching as a career. Following an introduction to the theory and practice behind excellent inquiry-based science and mathematics instruction, students observe two lessons being taught in a local school district. Students will then work alone or in pairs to plan and teach four inquiry-based lessons to elementary and middle school students. This course is for students completing the UTeach program in two years or less. A grade of C or better is required for this course to apply towards a UTeach degree.

SCIE 1350. INTRODUCTION TO DATA SCIENCE. 3 Hours.

A survey of contemporary approaches to data-driven discovery. This course will be the required entry point for students majoring in Data Science and is designed to be accessible to all others interested in the modern data revolution. The course includes discussions of ethical principles involving privacy, data security, and broader societal implications.

SCIE 2301. FOUNDATIONS OF SCIENCE. 3 Hours.

An integrated presentation of the methodology and fundamental concepts in the physical, biological and behavioral sciences with special emphasis on their social, cultural and historical context. Topics will be organized around a selected theme, such as origins, the environment or science and society. The primary goal is to prepare students to participate in modern society. This course does not require previous background in the sciences.

SCIE 2392. SPECIAL TOPICS IN SCIENCE. 3 Hours.

Topics as selected by the instructor. May be repeated for credit as the topic varies. Prerequisite: permission of the department.

SCIE 3301. PHYSICAL SCIENCE - PHYSICS. 3 Hours.

This integrated study of physics and chemistry includes force and motion, waves, thermodynamics energy transformations, and quantum physics. This course is designed to meet the needs of students seeking to become elementary or middle school science teachers.

SCIE 3302. PHYSICAL SCIENCE - CHEMISTRY. 3 Hours.

This physical science includes atomic structure, chemical bonding, the periodic table, nomenclature, kinetic theory, gas laws, chemical equations, and solutions. This course is designed to meet the needs of students seeking to become elementary or middle school science teachers.

SCIE 3303. GEOLOGY, METEOROLOGY, AND OCEANOGRAPHY. 3 Hours.

This integrated study of the earth emphasizes interactions among plate tectonics, the atmosphere, the oceans, the biosphere, and human activity. Topics include formation, composition, and shaping of the earth, including plate tectonics, the rock cycle, natural energy resources, characteristics of oceans, characteristics of the atmosphere, climate, and weather. This course is designed to meet the needs of students seeking to become elementary or middle school science teachers.

SCIE 3304. ASTRONOMY. 3 Hours.

Topics include the evolution of the universe, properties of light and the life cycle of stars, galaxies, and apparent motions and characteristics of the solar system. This course is designed to meet the needs of students seeking to become elementary or middle school science teachers.

SCIE 3305. ENVIRONMENTAL SYSTEMS. 3 Hours.

Topics include interrelationships among biotic and abiotic factors within habitats, ecosystems, and biomes and the energy flow through environmental systems. This course is designed to meet the needs of students seeking to become elementary or middle school science teachers.

SCIE 4101. SPECIAL TOPICS IN COMPOSITE SCIENCE. 1 Hour.

This special seminar will focus on contemporary issues on integrated science topics, including reflections on science teaching experiences and contemporary critical issues in science education. Prerequisite: permission of instructor.

SCIE 4107. CLINICAL TEACHING SEMINAR. 1 Hour.

Restricted to students in the UTeach Arlington program. Discussions include clinical teaching experiences, contemporary critical issues in education, and preparation for the state certification exams. Prerequisite: C or better in EDUC 4333; concurrent enrollment in SCIE 4607; in good standing with UTeach program.

SCIE 4192. SELECTED TOPICS IN SCIENCE. 1 Hour.

(Variable credit 1-3 hours as arranged). Topics in science not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for credit as different topics are offered.

SCIE 4301. ISSUES IN AMERICAN HEALTHCARE. 3 Hours.

Survey of current issues in American healthcare to include medical ethics, holistic medicine, nutrition, wellness, and the economics of healthcare. This course is the capstone course required for a College of Science interdisciplinary minor in Health Studies. This course is only open to students completing a minor in Health Studies within the College of Science.

SCIE 4302. TEACHING AND LEARNING: SCIENTIFIC INQUIRY. 3 Hours.

Scientific inquiry refers to the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work. This course explores inquiry as it refers to the activities of students in which they develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world.

SCIE 4303. CLINICAL MEDICINE AND THE HUMAN EXPERIENCE. 3 Hours.

This will be a medical survey course describing the human experience through the lens of different medical specialties and patient perspective rather than current medical therapies. Example: in our cardiology discussion will examine the patient's perspective on having a heart attack rather than the medications for treatment.

SCIE 4304. DIAGNOSIS OF HUMAN DISEASE. 3 Hours.

This clinical medicine course will examine a variety of diagnostic tools, such as laboratory, radiologic, and scanning techniques used to screen, diagnose, and monitor a wide variety of health and disease states.

SCIE 4325. WOMEN IN SCIENCE. 3 Hours.

Explores the role of women in science. Emphasis on gender and science, the history of women in science, gender equity in the classroom, strategies for the retention of women scientists, the current culture/climate for women in science, and contemporary women in science. Offered as EDUC 4325, SCIE 4325, and WOMS 4325. Credit will be granted only once.

SCIE 4607. CLINICAL TEACHING FOR SECONDARY GRADES. 6 Hours.

Closely supervised field experience in a cooperating school. Experience includes carrying out the duties of a secondary teacher. Consent of the UTeach Arlington advisor is required. Prerequisite: C or better in EDUC 4333; concurrent enrollment in SCIE 4107; in good standing with UTeach program.

SCIE 5192. SELECTED TOPICS IN SCIENCE. 1 Hour.

Topics in science not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for credit as different topics are offered.

SCIE 5292. SELECTED TOPICS IN SCIENCE. 2 Hours.

Topics in science not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for credit as different topics are offered.

SCIE 5301. CONTEMPORARY SCIENCE. 3 Hours.

This class will review modern topical areas in contemporary science from a broadly multidisciplinary view. Readings from popular and scientific journals will be combined with lectures from different disciplines, to review the newest science innovations. Materials presented will familiarize students with current research, major breakthroughs in various fields, and the foundational science behind the discoveries. Topics covered should enrich K-12 science curricula and help teachers to address student questions about breaking science news. This class is intended for M.A. in Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in the College of Science.

SCIE 5302. CAPSTONE SCIENCE SEMINAR. 3 Hours.

The Capstone Science Seminar is an intensive research and discussion class that will focus on new studies in science education and practice. Students in the M.A. in Science program should take this class in the last semester of study. This class will include a research project relevant to science education, and formal presentation of the research. This class is intended for M.A. in Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in the College of Science.

SCIE 5303. TEACHING AND LEARNING: SCIENTIFIC INQUIRY. 3 Hours.

Scientific inquiry refers to the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work. This course explores inquiry as it refers to the activities of students in which they develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world.

SCIE 5304. SPECIAL TOPICS IN SCIENCE I. 3 Hours.

Seminar on significant research in science. Topics are selected with the assistance of the instructor and may include both pure and applied science.

SCIE 5305. SPECIAL TOPICS IN SCIENCE II. 3 Hours.

Seminar on significant research in science. Topics are selected with the assistance of the instructor may include both pure and applied science.

SCIE 5307. INTEGRATED PHYSICS AND CHEMISTRY: CHEMISTRY. 3 Hours.

This integrated study of physics and chemistry fundamental chemical principles including atomic structure, chemical bonding, the periodic table, nomenclature, kinetic theory, gas laws, chemical equations, and solutions.

SCIE 5308. INTEGRATED PHYSICS AND CHEMISTRY: PHYSICS. 3 Hours.

This integrated study of physics and chemistry includes force and motion, waves and thermodynamics, energy transformations, quantum physics, and atomic structure.

SCIE 5321. MECHANICS, HEAT, & WAVE MOTION. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in the teaching of fundamental physics. Topics include: 1) Newton's laws of motion, gravitation, and planetary motion; 2) the basic laws of thermal and statistical physics; 3) oscillatory motion including wave and sound. Replicable experiments will be demonstrated throughout the course. This class is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for M.S. or Ph.D. degrees in the College of Science. Prerequisite: Trigonometry.

SCIE 5322. ELECTRICITY, MAGNETISM, CIRCUITS, & OPTICS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in the teaching of fundamental physics. Topics include: 1) Static charges, current flows, electric and magnetic fields; 2) simple DC/AC electrical circuits including examples from household circuit and practical electronic devices; 3) light and optics including examples such as camera, microscopes and telescopes. Replicable experiments will be demonstrated throughout the course. This class is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for M.S. or Ph.D. degrees in the College of Science. Prerequisite: SCIE 5321.

SCIE 5323. MODERN PHYSICS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in the teaching of fundamental physics. Topics include: 1) introduction to special relativity and quantum theory; 2) light and radiation; 3) applications to modern electronic devices; 4) nuclear particle physics. This class is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for M.S. or Ph.D. degrees in the College of Science. Prerequisite: SCIE 5321, SCIE 5322.

SCIE 5329. LABORATORY TECHNIQUES IN PHYSICS. 3 Hours.

This course is intended for students who wish to achieve a higher level of knowledge and effectiveness in the teaching of fundamental physics. Experiments demonstrating various topics are covered. Experiments include gravitational acceleration, heat flow, harmonic motion, sound, electric, magnetic fields, electric circuits, optics, x-rays and nuclear radiation. This class is intended for M.A. in Interdisciplinary Science majors and may not be taken for credit for M.S. or Ph.D. degrees in the College of Science. Prerequisite: SCIE 5321, SCIE 5322.

SCIE 5330. EARTH SYSTEMS, PART I. 3 Hours.

A review of Earth materials and their chemistry. Earth structure and geologic time, followed by a detailed discussion of the plate tectonic system, the hydrologic system, and their interaction in weathering and erosion, sedimentation, and landscape development. Laboratory demonstrations will include identification of earth materials, estimating plate motions, location of earthquake epicenters, flood frequency, and groundwater discharge. These classes are intended for M.A. in Interdisciplinary Science majors and may not be taken for credit for the M.S. or Ph.D. degrees in Geology or any other College of Science discipline.

SCIE 5331. EARTH SYSTEMS, PART II. 3 Hours.

A detailed discussion of the atmosphere system, oceanic systems, biologic systems, and their history. A summary discussion of the interaction of Earth Systems for an understanding of processes that have formed and continue to form the Planet Earth. Laboratory demonstrations will include weather forecasting, ocean currents, sea level change, and fossil identification. This class is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Geology or any other College of Science discipline. Prerequisite: SCIE 5330 and admission into the M.A. in Interdisciplinary Science program.

SCIE 5332. EARTH RESOURCES & THE ENVIRONMENT. 3 Hours.

A detailed discussion of resources that support life: atmosphere, water, soil, minerals and materials, and energy; the use of those resources and the effect on the environment and global change; and the relation between population, resource distribution and availability, and environmental pollution. These classes are intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Geology or any other College of Science discipline. Prerequisite: SCIE 5330, SCIE 5331, and admission into the M.A. in Interdisciplinary Science Program.

SCIE 5335. LABORATORY METHODS & TECHNIQUES. 3 Hours.

Methods and techniques used to identify minerals, rocks and fossils; maps and mapping of geological data; recognition of landslides; flood frequency and erosion processes of river and streams; location of earthquakes. These classes are intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Geology or any other College of Science discipline. Prerequisite: SCIE 5330, SCIE 5331 and admission into the M.A. in Interdisciplinary Science Program.

SCIE 5355. PRINCIPLES OF CHEMISTRY. 3 Hours.

The fundamentals of atomic structure, chemical bonding, the periodic table, nomenclature, gas laws, chemical equations, and solutions. The course will be supplemented with laboratory demonstrations devoted to chemical problem-solving, library and Internet resources, chemical ethics, etc. This course is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Chemistry or any other College of Science discipline.

SCIE 5356. PRINCIPLES OF CHEMISTRY II. 3 Hours.

Study of advanced atomic structure and bonding concepts, acid-base theory, kinetics and equilibria, thermodynamics, electrochemistry, and the chemistry of some elements. The course will be supplemented with laboratory demonstrations devoted to chemical problem solving, library and internet resources, chemical ethics etc. This course is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for M.S. or Ph.D. degrees in Chemistry or any other College of Science discipline. Prerequisite: SCIE 5355.

SCIE 5357. INTRODUCTORY ORGANIC & BIOCHEMISTRY. 3 Hours.

Survey of organic and biochemistry with emphasis on application to the human body. Organic functional groups and nomenclature, organic reactions, carbohydrates, lipids, proteins, enzymes, metabolism, and nucleic acids. This course is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for M.S. or Ph.D. degrees in Chemistry or any other College of Science discipline. Prerequisite: SCIE 5355, SCIE 5356.

SCIE 5358. LABORATORY PROBLEMS IN CHEMISTRY. 3 Hours.

Experiments related to fundamental principles covered in SCIE 5355 (formerly CHEM) and SCIE 5356. Volumetric and gravimetric determinations and qualitative analysis. This course is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Chemistry or any other College of Science discipline. Prerequisite: SCIE 5355, SCIE 5356.

SCIE 5371. CELL AND MOLECULAR BIOLOGY. 3 Hours.

The course focuses on the chemical and molecular basis of life, including metabolism, cell structure and function and genetics. This class is intended for M.A. in Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Biology or any other College of Science discipline.

SCIE 5372. STRUCTURE & FUNCTION OF ORGANISMS. 3 Hours.

The study of structure and function of plants and animals. Topics to be covered include structure at the level of the cell, tissue, organ and individual, growth, transport/circulation/gas exchange, nutrition, reproduction, development, endocrinology, and animal neural regulation. This class is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Biology or any other College of Science discipline. Prerequisite: SCIE 5371.

SCIE 5373. EVOLUTION, ECOLOGY, AND BIODIVERSITY. 3 Hours.

Reviews three significant aspects of organismal biology and presents current hypotheses concerning the origin and diversification of life on Earth. The ecological and behavioral interactions between organisms and their biotic/abiotic environments are considered from an evolutionary perspective. This class is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Biology or any other College of Science discipline. Prerequisite: SCIE 5371, SCIE 5372.

SCIE 5374. LABORATORY PROBLEMS IN BIOLOGY. 3 Hours.

Laboratory experiments related to fundamental principles covered in SCIE 5371 (formerly BIOL) and SCIE 5372. This course will utilize labs designed by Master Biology Teachers. These will be supplemented by labs published by the National Association of Biology Teachers, and various biology publishers. This class is intended for M.A. in Interdisciplinary Science majors, and may not be taken for credit for the M.S. or Ph.D. degrees in Biology or any other College of Science discipline. Prerequisite: SCIE 5371, SCIE 5372.

SCIE 5380. MENTORED RESEARCH. 3 Hours.

Research under the direction of a College of Science faculty member. No more than six credit hours of SCIE 5380 may be taken for a letter grade. Prerequisite: written permission of the instructor.

SCIE 5392. SELECTED TOPICS IN SCIENCE. 3 Hours.

Topics in science not treated in the regular curriculum. Topic, format, and prerequisites to be determined by the instructor. May be repeated for credit as different topics are offered.

Science Education (SCED)

COURSES

SCED 5351. PHYSICAL SCIENCE - PROPERTIES AND CHANGES IN MATTER. 3 Hours.

This course provides an in depth study of the properties and changes in matter and how to teach these concepts to students in grades K-12 science. Students study matter by engaging in inquiry and field/laboratory investigations using scientific processes, critical thinking, and problem solving. The course will help students learn to teach these physical science concepts to K-12 students using inquiry models.

SCED 5352. PHYSICAL SCIENCE - FORCE & ENERGY. 3 Hours.

In this course, students gain scientific knowledge about characteristics and interactions among matter, force, and energy with interdisciplinary and everyday life connections. Topics experienced through laboratory/field based investigations include: gravity, work, friction, acceleration, volume, length, distance, light, forms of energy, electricity, heat, and simple machines. The course will help students learn to teach these physical science concepts to K-12 students using inquiry models.

SCED 5353. EARTH SCIENCE - STRUCTURES, MOVEMENT, & CHANGES IN EARTH & SPACE. 3 Hours.

Through laboratory investigations, students gain knowledge of the various constructive and destructive forces that shape and alter the Earth's surfaces such as plate tectonics, volcanoes, earthquakes, erosion, weathering and deposition, as well as conservation of resources. The course will include studies of rock identification, and the rock cycle, as well as geologic time and the fossil record. The course includes study of earth, moon and planetary characteristics and motions. The course will enable students to teach these earth science concepts to K-12 students using inquiry models.

SCED 5354. EARTH SCIENCE - WATER PROPERTIES, DISTRIBUTION, THE WATER CYCLE, & WEATHER. 3 Hours.

Students gain understanding of the importance of water including the topics of cohesion, adhesion, surface tension, and capillary action. Water distribution on Earth is analyzed using maps and charts, with connections to geographic and climatic characteristics of the various regions. Water, as a major factor in weather, along with other meteorological variables such as air pressure, humidity, dew point, and cloud formation will be studied and weather patterns will be tracked over time using technology and maps. The course will provide students with the knowledge and skills required to teach these earth science concepts to K-12 students using inquiry models.

SCED 5355. LIFE SCIENCE - UNITY & DIVERSITY OF LIFE & LIFE PROCESSES. 3 Hours.

This course will explore living organisms and classification of organisms. The course will focus on the unity of life including the cell and cell components and the life functions, as well as the diversity of life including a look at pathogenic agents including bacteria and viruses. The course will analyze the structure and function of DNA and genetics. The course will include comparative anatomy and physiology studies of organisms. Students will learn how to teach these life science concepts to K-12 students using inquiry models.

SCED 5356. LIFE SCIENCE - CYCLES IN NATURE, ADAPTATIONS, AND ENVIRONMENTAL SCIENCE. 3 Hours.

This course analyzes life, biochemical, and geochemical cycles within the natural world and how they impact ecological systems and environment. Students conduct laboratory and field investigations to examine and recognize various plant and animal adaptations. Science topics include camouflage, mimicry, body coverings, mouthparts, habitats. Math-science integrations include estimations, relationships, graphing, and number sense. Inquiry models will be used to help students learn to teach these life science concepts to K-12 students.

Service Learning (SVLN)

COURSES

SVLN 2311. SEMINAR IN SERVICE LEARNING. 3 Hours.

Introduction to the history and practice of community service learning (CSL). Readings will include general accounts of active learning, the institutional history of CSL in higher education, and a comparative study of CSL programs across the country. Students will design and implement a CSL project based on their major, and in conjunction with an area nonprofit organization. Evaluation will be based on written work on both the readings and the CSL project.

Social Work (SOCW)

COURSES

SOCW 1231. SOCIAL WORK PROFESSIONALISM. 2 Hours.

Equips students with skills and resources to prepare for academic and professional success. Empowers diverse students to identify their individual needs, reflect on opportunities for growth, determine what resources and self-care strategies are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. This course is reserved exclusively for students planning to major in Social Work (e.g., BSW-Intended status) who are freshmen; this will be taken concurrently with UNIV 1131. This course or SOCW 3300 is required for admission to the BSW major.

SOCW 1350. SPECIAL ISSUES IN SOCIAL WORK. 3 Hours.

Relevant social work topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration. We sometimes transfer in 1000 level courses and need a generic 1000 level for allocation.

SOCW 2302. LIFE SPAN DEVELOPMENT AND HUMAN BEHAVIOR. 3 Hours.

This course explores, within the context of a strengths and empowerment based perspective, the bio-psycho-social development of persons from birth to death. It is strongly recommended that this course be taken before SOCW 3301. This course is required for Social Work Field Instruction and Seminar I (SOCW 4951). This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences. For students seeking the BSW major who are Field of Study complete in Social Work, this course is not required.

SOCW 2325. INTRODUCTION TO STATISTICS FOR SOCIAL WORK AND THE SOCIAL SCIENCES. 3 Hours.

This course is designed to enhance students' skills as research consumers and in performing research and statistical analyses in social work and the social sciences. Included in the course are descriptive statistical procedures including measures of central tendency, variability, shape and distribution along with associations between two variables. In addition, inferential statistics are covered including estimation and hypothesis testing.

SOCW 2350. SPECIAL ISSUES IN SOCIAL WORK. 3 Hours.

Relevant social work topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration.

SOCW 2361. INTRODUCTION TO SOCIAL WORK. 3 Hours.

An overview of the social work profession, its fields of practice, methods of social intervention, its historical context, and its relationship to the social welfare system. This course is open to all students and satisfies the requirement for Social and Behavioral Sciences in the core curriculum. This course is required for the Bachelor of Social Work (BSW) program.

SOCW 3300. SOCIAL WORK PROFESSIONALISM AND STUDENT SUCCESS. 3 Hours.

Equips students with skills and resources to prepare for academic and professional success. Empowers diverse students to identify their individual needs, reflect on opportunities for growth, determine what resources and self-care strategies are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. This course is reserved exclusively for students planning to major in Social Work (e.g., BSW-Intended status) who have transferred from another institution; this fulfills the university requirement for UNIV 1101. This course or SOCW 1231 is required for admission to the BSW major. Co-requisite: SOCW 2361.

SOCW 3301. THEORIES OF HUMAN BEHAVIOR. 3 Hours.

This course explores, within the context of a strengths and empowerment perspective, theories of human behavior. For social work majors, it is strongly recommended that SOCW 2302 be taken before this course. Offered as AAST 3301 and SOCW 3301; credit will be granted in only one department. This course is required for Social Work Field Instruction and Seminar I (SOCW 4951).

SOCW 3303. SOCIAL WELFARE POLICY AND SERVICES. 3 Hours.

Examines how social goals are met by social welfare institutions. Conceptual schemes are developed for analyzing the structure of social welfare institutions and evaluating social welfare sub-systems. The social work profession is also examined in the context of the evolution and function of the contemporary American social welfare system. This course is required for Social Work Field Instruction and Seminar II (SOCW 4952).

SOCW 3305. SOCIAL WORK PRACTICE I. 3 Hours.

Critical evaluation of the value base of the social work profession and basic practice concepts including interviewing, communication and problem solving skills at the individual, family, and group levels in diverse settings. This course is required for admission to the Bachelor of Social Work (BSW) program.

SOCW 3306. SOCIAL WORK PRACTICE III: MACRO PRACTICE. 3 Hours.

Examines generalist community and administrative practice roles and includes the perspectives of historical inequities and social injustice and the impact on communities and diverse groups, strengths, empowerment, evidence-based practice, and global practice along with the values of social justice, diversity, and participation. Specific attention is given to assessing community assets and needs. Prerequisite: SOCW 1231, SOCW 3300, SOCW 2361, SOCW 3305, SOCW 3307, and MATH 1308 or other equivalent statistics course approved by the BSW Director.

SOCW 3307. DIVERSE POPULATIONS. 3 Hours.

Introduction to theoretical, practical, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior. This course is required for admission to the Bachelor of Social Work (BSW) program. Offered as AAST 3317, SOCW 3307 and MAS 3319; credit will be granted in only one department.

SOCW 3308. SOCIAL WORK RESEARCH METHODS. 3 Hours.

This course is designed to provide students with the fundamental skills to understand, use, and conduct research to advance the knowledge base of the social work profession and assess the effectiveness of social work interventions in generalist social work practice. The course addresses elements of the research process, quantitative and qualitative methods, research ethics, and approaches to data analysis. Particular attention will be given to the role of research with populations-at-risk, social and economic justice, and cultural diversity. Prerequisite: SOCW 1231, SOCW 3300, SOCW 2361, SOCW 3305, SOCW 3307, and MATH 1308 or other equivalent statistics course approved by the BSW Director.

SOCW 3309. SOCIAL WORK PRACTICE II. 3 Hours.

Theories and methodologies of social work assessment, case management, and other generalist intervention at the individual, family, and group levels in diverse settings through the lens of intersectionality of race, gender, sexuality, age educational level and other aspects of identity. Prerequisite: SOCW 1231, SOCW 3300, SOCW 2361, SOCW 3305, SOCW 3307, and MATH 1308 or other equivalent statistics course approved by the Director of Undergraduate Programs.

SOCW 3310. ENVIRONMENTAL JUSTICE & GREEN SOCIAL WORK. 3 Hours.

This course examines how a variety of vulnerable or marginalized populations are impacted by environmental injustices, and explores ways that social service professionals can solve environmental justice issues on the micro, mezzo and macro level. Students will explore how issues such as climate change, extreme weather events and environmental toxins intersect with health, mental health, children & youth, older adults, indigenous populations, food deserts, climate-forced migration, international conflict, environmental racism, and more and examine solutions including ecotherapy, climate policy, and community organizing. This course is also offered at the Master's level as SOCW 5310. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 3312. DISABILITY & SOCIAL WORK. 3 Hours.

Examines major themes in disability and social work. Topics include basic understandings of disability, lived experiences of people with disabilities, legal and policy perspectives, working with adults and children with a variety of disabilities, history of disability policy and disability rights, disability advocacy, and resources in the community, among others. Offered as DS 3312 and SOCW 3312; credit will only be granted in one department.

SOCW 3314. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

SOCW 3315. INTRODUCTION TO SUBSTANCE USE DISORDERS. 3 Hours.

This is an entry-level course that provides foundation-level social work students with the fundamental concepts of Substance Use Disorders (SUD) and the addictive process. Students will examine the prevalence and characteristics of substance use disorders and the impact of such disorders on the individual, family, and the community. Theories of addiction and application of these theories will be examined. Students will develop conceptual knowledge and self-awareness concerning the etiology of addiction, assessment strategies, and wellness strategies for facilitating optimal development and preventing SUD. The course will cover the prevalence of SUD varies among ethnic and cultural groups, between men and women, across the life span, and through different socio-economic levels. This course is taught as SOCW 3315 and SUT 3315. Credit will be granted only once.

SOCW 3318. SCREENING, ASSESSMENT, & ENGAGEMENT. 3 Hours.

Introduces screening and diagnostic instruments and techniques appropriate for determining whether a substance use disorder might exist. Explores the therapeutic alliance and practice engagement techniques taking into account intersections of race, gender, sexuality, age, educational level, and other aspects of identity. Students learn to assess suicide risk and a client's readiness for change. Students learn to diagnose substance use disorders and recognize intoxication, withdrawal, substance, and medication induced disorders. Offered as SUT 3318 and SOCW 3318. Credit will be granted only once. Prerequisite: Prerequisite OR Corequisite: SUT 3315 or SOCW 3315.

SOCW 3319. TREATMENT PLANNING, COLLABORATION & REFERRAL. 3 Hours.

This course addresses the clinical application of the biopsychosocial assessment in the development of a treatment plan. Potential treatment issues will be identified and a client-specific problem list will be developed. Individualized treatment goals will be established in collaboration with diverse clients. Client objectives and clinical interventions will also be developed. This course explores dynamics of the therapeutic alliance, and clinician-client collaboration within the context of a strengths and empowerment-based perspective. The student will gain insight into and an appreciation of collaboration, consultation, and referral throughout the continuum of care. Offered as SUT 3319 and SOCW 3319. Credit will be granted only once. Prerequisite: SOCW 3318 or SUT 3318.

SOCW 3320. U.S. IMMIGRATION POLICY AND THE AMERICAN DREAM. 3 Hours.

Focus on American identity through the examination of immigration to the United States, past and present, and the evolution of U.S. immigration policy. Topics include U.S. attitudes and policy responses to European, Asian, and Latin American immigration and to the incorporation of the descendants of African slaves and Native Americans. Emphasis on the decline of the melting pot idea and the incorporation of recent immigrants. Offered as MAS 3320, AAST 3319, and SOCW 3320. Credit will be granted only once.

SOCW 3321. SUBSTANCE USE TREATMENT. 3 Hours.

This course is the culmination of the fundamentals of substance use disorders, treatment planning, collaboration and referral, and substance use treatment. Students will learn and acquire the special skills necessary to assist individuals, families, and groups through the sequela of substance use and addiction. Focus on cognitive-behavioral therapy, motivational interviewing, 12-step programs, nutrition and exercise, meditation, and other alternative treatment options. Students will study treatment modalities that consider the social, cultural, and economic influences that shape the client's world view and substance use experience. Offered as SUT 3321 and SOCW 3321. Credit will be granted only once. Prerequisite: Prerequisite or corequisite: SUT 3319 or SOCW 3319.

SOCW 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: Permission of the Director.

SOCW 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: Permission of the Director.

SOCW 4310. SOCIAL WORK WITH CHILDREN AND FAMILIES. 3 Hours.

A critical examination of social policies, research, and practices impacting at-risk children and families in child welfare, child mental health, and school settings. Emphasis is placed on the role of the social work practitioner in enhancing the well-being of children and families in contemporary society. Prerequisite: SOCW 3301, and SOCW 3309. BSW majors only.

SOCW 4314. INTIMATE PARTNER VIOLENCE. 3 Hours.

This course covers interdisciplinary theoretical frameworks for understanding and addressing intimate partner violence in diverse relationships, including critical feminism, psychological, and sociological models, as well as prevention and intervention practices that reflect a stance of cultural and critical humility. This course is also offered at the Master's level as SOCW 5314. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 4335. AGING IN AMERICAN SOCIETY. 3 Hours.

This course presents the major theories of aging, in the United States and across cultures, and explores the diverse factors of aging through the lens of intersectionality taking into account intersections of race, gender, sexuality, educational level and other aspects of identity. It includes various perspectives including psychological, biological, sociological, and spiritual. Theories are integrated into practice thus providing students a sound foundation for social work practice with diverse older adults. Students develop skills for completing multi-dimensional assessments, and effective social work interventions with and on behalf of older adults. This is offered at the MSW level as SOCW 5335. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 2302, SOCW 3301, and SOCW 3307.

SOCW 4344. HEALTH INSURANCE AND ACCESS TO CARE. 3 Hours.

Explores the history and underlying philosophy of managed care in health and social services, reviews interdisciplinary approaches and principles for understanding and critiquing health care systems, and covers current trends and practice issues. Assesses the potential for conflict between social work values and managed care systems. Builds skills for advancing health equity through administrative roles in managed care settings. This is offered at the MSW level as SOCW 5344. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 4350. SPECIAL ISSUES IN SOCIAL WORK. 3 Hours.

Relevant social work topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration. Prerequisite: Permission of the Director.

SOCW 4364. PERSONAL RELATIONSHIPS. 3 Hours.

Explores theoretical and empirical data on diverse personal relationships at the follow stages of relationship: initiation, maintenance, and termination. Identifies areas for intervention. Also offered as SOCW 5364 in the MSW program. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 3301, SOCW 2302, and SOCW 3307. Co-requisite: Social Work Practice II (SOCW 3309 [formerly 3304]).

SOCW 4366. SEMINAR IN WOMEN'S ISSUES. 3 Hours.

Explores women's issues in human behavior theory, practice theory, and policy. Using an intersectional lens, the historical, political, and socioeconomic forces that maintain sexism among diverse groups are discussed. Environmental influences are examined in relation to social justice, social work values, knowledge, and skills. This course is also offered as SOCW 5366 in the MSW program. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 3301, and SOCW 3307. Co-requisite: Social Work Practice II (SOCW 3309).

SOCW 4370. SOCIAL WORK IN THE SCHOOLS. 3 Hours.

The purpose of this course is to provide an overview of the various social work-related theoretical perspectives, models, and programs for intervention with diverse children and their families in the school setting. This includes skills in assessment, prevention, and intervention in providing services to students that are marginalized for numerous reasons including race, gender, skin color, religion, immigrant status, disability, sexual orientation, and socioeconomic status among other factors. Students will learn to use intervention skills that address each level of the ecosystem's perspective in schools. This is offered at the Master's level as SOCW 5370. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Prerequisite: SOCW 3309.

SOCW 4371. INEQUITIES AND INCARCERATION. 3 Hours.

This course surveys mass incarceration in the U.S. criminal justice system as a racialized and classist system of control. First, this course will contextualize the US criminal justice system, both historically and through global comparisons. Then students will be introduced to four broad content areas: entering the criminal justice system (school-to-prison pipeline and policing), who is detained (demographics and common mental health and substance use issues) and what they experience in detention (including covid-19 in jails and prisons), experiences and problems encountered when returning citizens reenter society, and trends in criminal justice reform advocacy (including problem-solving courts and advocacy efforts such as Black Lives Matter). Finally, the course considers the social work grand challenge of smart decarceration as a path towards reform specific to social workers. Also offered as SOCW 5371 in the MSW program. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in designated areas. Prerequisite: Permission of the Director.

SOCW 4951. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR I. 9 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. For additional information and requirements, see the Field website. Prerequisite: SOCW 2302, SOCW 3301, SOCW 3303, SOCW 3305, SOCW 3306, SOCW 3308, SOCW 3309, and 1 Social Work Elective.

SOCW 4952. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR II. 9 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. For additional information and requirements, see the Field website. Prerequisite: SOCW 4951 and 3 social work electives. BSW Majors Only.

SOCW 4955. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 1. 9 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Must be taken concurrently with SOCW 4956. For additional information and requirements, see the Field website. Prerequisite: Core curriculum and all social work required courses except Field Internship (SOCW 4955 and 4956), and a minimum of 102 total credit hours.

SOCW 4956. SOCIAL WORK FIELD INSTRUCTION AND SEMINAR BLOCK PART 2. 9 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. For additional information and requirements, see the Field website. Must be taken concurrently with SOCW 4955. Prerequisite: Core curriculum and all social work required courses except Field Internship (SOCW 4955 and 4956), and a minimum of 102 total credit hours.

SOCW 5281. FOUNDATION FIELD SPLIT II. 2 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5681 and SOCW 5307.

SOCW 5285. FOUNDATION FIELD BLOCK II. 2 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5307. Co-requisite: SOCW 5685. Please note if co-requisite is dropped, this course will be dropped as well.

SOCW 5301. HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT I. 3 Hours.

Exploration of behavioral and social science knowledge of human behavior and development of diverse persons through the life course. Examines major systems in society: individual, group, family, and community; and the diversity of ethnicity, race, class, sexual orientation, and culture.

SOCW 5303. FOUNDATIONS OF SOCIAL POLICY AND SERVICES. 3 Hours.

Examines how social goals of diverse populations are met by social welfare institutions. Conceptual schemes are developed for analyzing the structure of social welfare institutions and evaluating social welfare sub-systems. The social work profession also is examined in the context of the evolution and function of the contemporary American social welfare system.

SOCW 5304. GENERALIST MICRO PRACTICE. 3 Hours.

This foundation level course introduces graduate students to both theory and methods for social work practice with diverse individuals, families, and small groups. It emphasizes a generalist perspective, beginning interviewing and relationship skills, problem assessment, goal setting, and contracting. Special attention is given to the common roles assumed by social workers (e.g. facilitator, broker, advocate) as well as development of self-reflection skills in relationship to the dynamics of intersectionality of those served.

SOCW 5306. GENERALIST MACRO PRACTICE. 3 Hours.

Examines generalist community and administrative practice roles and includes the perspectives of historical inequities and social injustice and the impact on communities and diverse groups, strengths, empowerment, evidence-based practice, and global practice along with the values of social justice, diversity, and participation. Specific attention is given to assessing community assets and needs.

SOCW 5307. DIVERSE POPULATIONS. 3 Hours.

Introduction to theory, practice, and policy issues related to diverse populations. Historical, political, and socioeconomic forces are examined that maintain discriminatory and oppressive values, attitudes, and behaviors in society and in all levels of organizational behavior.

SOCW 5308. RESEARCH AND EVALUATION METHODS IN SOCIAL WORK I. 3 Hours.

This course is designed to provide students with an understanding of and ability to use the evidence-informed practice process to identify, analyze and apply evidence-informed interventions. Students will be able to comprehend both quantitative and qualitative research and to synthesize strengths and weaknesses of the social work literature. Students will be able to synthesize and evaluate research in terms of its content, quality, and applicability to clients. Students will understand scientific and ethical approaches to building knowledge to apply to and evaluate the impact of interventions on clients or clients' presenting problems.

SOCW 5310. ENVIRONMENTAL JUSTICE & GREEN SOCIAL WORK. 3 Hours.

This course examines how a variety of vulnerable or marginalized populations are impacted by environmental injustices, and explores ways that social service professionals can solve environmental justice issues on the micro, mezzo and macro level. Students will explore how issues such as climate change, extreme weather events and environmental toxins intersect with health, mental health, children & youth, older adults, indigenous populations, food deserts, climate-forced migration, international conflict, environmental racism, and more and examine solutions including ecotherapy, climate policy, and community organizing. This course is also offered at the undergraduate level as SOCW 3310. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level.

SOCW 5311. ADVANCED MICRO PRACTICE. 3 Hours.

Builds on the generalist perspective and the basic familiarity with social work processes (such as problem identification, assessment, contracting, plan implementation, and outcome evaluation) in the context of (1) existing psychosocial intervention modalities; (2) the particular client values, personal goals, treatment preferences, and characteristics such as racial, ethnic, gender, sexual orientation, age, and ability identities; and (3) selection of change modalities appropriate in relation to clients' characteristics, social justice, and the client's presenting issues. Required of all Direct Practice students. Prerequisite: Advanced Standing OR SOCW 5304 AND SOCW 5681 OR SOCW 5881.

SOCW 5312. COMMUNITY AND ADMINISTRATIVE PRACTICE. 3 Hours.

This course surveys theory and builds skills in roles associated specifically with understanding the complex history and multilayered intersections, e.g. discrimination, oppression, disparities or other lived experiences that influence diverse community practice (e.g. community/locality history and development, social planning, social action) and culturally inclusive and sensitive administrative practice (e.g. supervision, administration, diverse management and management systems). Students complete an advanced culturally informed assignment in community and/or organizational assessment and program design. Required of all CAP (Community and Administrative Practice) students. Prerequisite: Advanced Standing Student OR SOCW 5306 AND SOCW 5681 OR SOCW 5881.

SOCW 5313. RESEARCH AND EVALUATION METHODS IN SOCIAL WORK II. 3 Hours.

This course is designed to provide students with an understanding of and ability to analyze, monitor, and evaluate evidence informed interventions and human service programs. In this course quantitative and qualitative research methods and approaches are applied to the scientific and ethical evaluation of evidence informed interventions and human service programs. Research skills and knowledge are presented from the perspective of promoting diversity and social and economic justice in anti-oppressive research and evaluation of social work. Prerequisite: Advanced Standing OR SOCW 5308.

SOCW 5314. INTIMATE PARTNER VIOLENCE. 3 Hours.

This course covers interdisciplinary theoretical frameworks for understanding and addressing intimate partner violence in diverse relationships, including critical feminism, psychological, and sociological models, as well as prevention and intervention practices that reflect a stance of cultural and critical humility. This course is also offered at the Bachelor's level as SOCW 4314. Students who receive credit for this course in the undergraduate program may not repeat the course at the Master's level. Co-requisite: SOCW 5311. If the co-requisite is dropped, this course will be as well.

SOCW 5315. BRAIN AND BEHAVIOR. 3 Hours.

The focus of this course is on current advances in knowledge of the neurobiological underpinnings of human behavior and development, the interaction between those underpinnings and the social context and environment, the relevance to social work practice with individuals, families, groups, programs/organizations, and communities, and related assessment and intervention practice behaviors across several practice domains. The domains include human development, genetics, mental health and substance abuse, cognition, stress and trauma, and violence and aggression. The implications of neurobiological and environmental influences (including public health issues and health disparities) will be examined in terms of social justice, social work values, knowledge, and skills, as well as in terms of those populations who have historically been harmed by structural and systematic arrangement and delivery of social welfare services at the micro, mezzo, and macro levels. Co-requisite: SOCW 5311. Please note that if the co-requisite course is dropped, this one will be also.

SOCW 5316. STRESS, CRISIS, AND COPING. 3 Hours.

The impact of specific crises on individuals and families will be examined including the unique stresses, crises and coping responses of diverse cultural and social identities as these relate to the stresses of oppression and social injustice and inequity. Variations in cultural wellness and health relative to stress and recovery will also be explored. Typical crises will include life-threatening illness, trauma, physical and mental disability, and death. Assessment and evaluation of an individual's coping ability and appropriate strategies for social work interventions will be studied. Differential therapeutics relative to ethnicity, cultural norms, inclusiveness and access to wellness resources, will be infused into course assignments and discussion. Co-requisite: SOCW 5311. Please note that if the co-requisite is dropped, this will be also.

SOCW 5318. DEATH & DYING. 3 Hours.

This course will give students an overview of the principles of thanatology from anthropological, sociological, psychological, medical, historical, spiritual, cultural, and political perspectives and the role(s) that social work can play in helping individuals, families, and communities from diverse backgrounds. Using life course and life span approaches, course content will include personal death awareness, the integration of theoretical perspectives and evidence-based practice interventions in working with dying, death, and bereavement with emphasis on cultural and religious/spiritual perspectives, bioethical principles, and end-of-life decision making, social justice, and advocacy for the dying. Particular attention is given to the intersections of older adults with gender, race, sexuality, age, education level, and other aspects of identity. Therefore, the class content promotes individual self-reflection and discussion through the lens of diversity and intersectionality across the developmental life span and life course about the meaning of life and death and implications for social work practice. This dialog is a precursor to engagement with clients, caregivers, grieving persons, and health care personnel about sensitive and culturally diverse issues around the experience of dying and death. Co-requisite: 5311. Please note that if the co-requisite is dropped, this course will be dropped as well.

SOCW 5320. ADVANCED ADMINISTRATIVE PRACTICE. 3 Hours.

Focuses on selected topics, issues, and skills for effective social work administration. Content includes inclusive and anti-oppressive approaches to leadership, worker motivation, resource development, stakeholder engagement, interagency relations, and managing conflict and diversity in a climate of scarce resources. Prerequisite: SOCW 5312 or concurrent enrollment. Please note that if SOCW 5312 is dropped, this course will be dropped as well.

SOCW 5321. ADVANCED COMMUNITY PRACTICE. 3 Hours.

This course explores research, theory and evidence-based approaches to community practice. Content is focused on the development of skills for partnering with neighborhoods, communities, and groups to address community problems rooted in structural inequalities. Major topics include the politics of empowerment, mobilizing coalitions, locating resources, and mediating conflict. Prerequisite: SOCW 5312 or concurrent enrollment.

SOCW 5323. PROGRAM EVALUATION. 3 Hours.

This course explores research, theory and evidence-based approaches to community practice. Content is focused on the development of skills for partnering with neighborhoods, communities, and groups to address community problems rooted in structural inequalities. Major topics include the politics of empowerment, mobilizing coalitions, locating resources, and mediating conflict. Prerequisite: SOCW 5308.

SOCW 5324. SOCIAL WORK SUPERVISION. 3 Hours.

This course introduces the culturally diverse roles, functions, and contexts of social work supervision between the supervisor and supervisee. Covers culturally sensitive administrative and clinical perspectives on the social work supervisor as a manager, educator, mentor, mediator, and leader in diverse human service organizations. Co-requisite: SOCW 5311 or SOCW 5312. Please note if co-requisite is dropped, this course will be dropped as well.

SOCW 5325. BUDGETING AND FINANCIAL MANAGEMENT. 3 Hours.

This course provides a basic overview of financial management applied specifically to human service agencies. Grounded in a historical lens that examines power relationships in human service financial management, this course emphasizes basic concepts and skill building in budgeting and fund raising; accounting principles; financial statements, and computerized financial information systems. Special emphasis is given to the role of participatory approaches in resource allocation and distribution for human services. Co-requisite: SOCW 5312. Please note that if the co-requisite is dropped, these course will be dropped also.

SOCW 5326. GRANT PROPOSAL DEVELOPMENT SEMINAR. 3 Hours.

Grant proposal development is a fundamental method of accessing funds and developing new programs in the social service arena. In this class, students will identify key funding opportunities in their fields of interest and will write a proposal using an actual federal application and a foundation funding announcement. The majority of the course will be devoted to the development of the skills and knowledge necessary to produce a competitive proposal. These include, but are not limited to: a) needs and capacities assessment, b) program development, c) strategic planning, d) budgeting, e) evaluation, and f) community collaboration. Co-requisite: SOCW 5312. If the co-requisite is dropped, this one will be as well.

SOCW 5327. HUMAN BEHAVIOR IN MACRO ENVIRONMENTS. 3 Hours.

Offers advanced students the opportunity to study diverse people's behavior within large and complex social settings including: natural helping networks and ontological communities, organizations, and bureaucracies, and social and political movements. Prerequisite: Advanced Standing OR SOCW 5301 and SOCW 5307.

SOCW 5328. ADVOCACY AND SOCIAL POLICY. 3 Hours.

Politics are key to developing equitable social policy. Students learn theory and skills to impact social and distributive justice at local, state, and national levels. Examines the role of the social work profession in politics. Prerequisite: SOCW 5303.

SOCW 5329. POVERTY, INEQUALITY AND SOCIAL POLICY. 3 Hours.

This course examines the nature and extent of poverty and inequality in the United States, their causes and consequences, and the debate concerning the role of government in providing anti-poverty programs. Many points of view concerning social and distributive justice are presented, from the radical left to radical right. Prerequisite: SOCW 5303.

SOCW 5332. DIRECT PRACTICE WITH AGING. 3 Hours.

Course presents an overview of current issues, trends, and practice in the care, treatment, and delivery of social services to diverse older adults and their families. Students learn practice procedures designed to equip them with the skills needed for effective social work practice, review major theories on aging, as well as evaluate needs and gaps in services to diverse older adults and their families. Particular attention is given to the intersections of older adults with gender, race, sexuality, age, education level, and other aspects of identity. Co-requisite: 5311. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5333. AGING AND SOCIAL POLICY. 3 Hours.

Social welfare policies and programs are examined in terms of the overall impact on older adults and society. Needs and gaps in services to older adults and their families are evaluated. Current issues in aging policy are examined. Particular attention is given to the intersections of policy with gender, race, sexuality, age, education level, and other aspects of identity. Prerequisite: SOCW 5303.

SOCW 5334. FAMILY CAREGIVING & AGING. 3 Hours.

This course will give students an overview of the individual and social impact of family caregiving and aging within a bio-psycho-social-spiritual context and the role(s) of social workers in helping individuals, families, and communities face the contemporary challenges of caregiving. Course content will be underscored by a strengths-based framework and will include the effects of culture on family caregiving, families' process of providing care to persons with chronic and/or complex illness across levels of care (e.g. hospital/rehabilitation/hospice), working with family caregivers within long-term care settings (e.g. nursing homes), dementia caregiving, end of life care as well as evidence-based assessment and intervention with family caregivers. Social services and policy related to effective practice with older adults and family caregivers are also discussed, including innovative and emerging approaches (e.g. technology). Particular attention is given to the intersections of family caregiving with gender, race, sexuality, age, education level, and other aspects of identity. Co-requisite: SOCW 5311. Please note if the co-requisite is not met, the course will be dropped.

SOCW 5335. AGING IN AMERICAN SOCIETY. 3 Hours.

This course presents the major theories of aging, in the United States and across cultures, and explores the diverse factors of aging through the lens of intersectionality taking into account intersections of race, gender, sexuality, educational level and other aspects of identity. It includes various perspectives including psychological, biological, sociological, and spiritual. Theories are integrated into practice thus providing students a sound foundation for social work practice with diverse older adults. Students develop skills for completing multi-dimensional assessments, and effective social work interventions with and on behalf of older adults. Prerequisite: SOCW 5301 and SOCW 5307.

SOCW 5342. DIRECT PRACTICE IN HEALTH CARE. 3 Hours.

Using a bio-psycho-social risk and resilience perspective this direct practice course focuses on assessment, intervention and appropriate evidence based practices with those evidencing acute and chronic mental health problems, and disabilities in diverse populations. Applying a critical lens, students will explore the delivery of services, review historical and current service delivery systems (community mental health, transinstitutionalization, managed behavioral health care), and a wide range of community mental health problems. Additional topics include the function and critique of the Diagnostic Statistical Manual with a social justice perspective, mental health recovery principles, ethics, case management, treatment planning, person in environment, and substance abuse. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5343. HEALTH POLICY AND SOCIAL JUSTICE. 3 Hours.

Provides a critical historical overview of health policy in the United States, current and projected national and local health policies and roles of providers and consumers of health care and public health is examined; service demands, economic, access, and regulatory issues analyzed; relationships between governmental, voluntary, and commercial sectors studied; analytic frameworks for developing and understanding the impact of policy on diverse populations explored. Prerequisite: SOCW 5303.

SOCW 5344. HEALTH INSURANCE AND ACCESS TO CARE. 3 Hours.

Explores the history and underlying philosophy of managed care in health and social services, reviews interdisciplinary approaches and principles for understanding and critiquing health care systems, and covers current trends and practice issues. Assesses the potential for conflict between social work values and managed care systems. Builds skills for advancing health equity through administrative roles in managed care settings. Co-requisite: SOCW 5311 OR SOCW 5312. Please note that if the co-requisite is dropped, this course will be dropped as well. This course is offered at the undergraduate level as SOCW 4344. Students who take this at the undergraduate level may not repeat it at the graduate level.

SOCW 5345. SPECIAL TOPICS IN HEALTH EQUITY. 3 Hours.

Building on a social determinants of health theoretical perspective and research methods in health care, this course undertakes a critical examination of both historical and present day policies, research and practices that contribute to health inequities across communities disproportionately impacted by health inequities. Topics vary each semester depending on the needs and interests of students and faculty. Potential topics may include, but are not limited to: community health, homelessness, HIV/AIDS, maternal and child health, immigrant health, and veteran health. Emphasis is placed on the role of the social work practitioner in promoting health equity and reducing health inequities. Co-requisites: SOCW 5311 OR SOCW 5312. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5352. DIRECT PRACTICE IN MENTAL HEALTH. 3 Hours.

Using a bio-psycho-social risk and resilience perspective this direct practice course focuses on assessment, intervention and appropriate evidence based practices with those evidencing acute and chronic mental health problems, and disabilities in diverse populations. Applying a critical lens, students will explore the delivery of services, review historical and current service delivery systems (community mental health, transinstitutionalization, managed behavioral health care), and a wide range of community mental health problems. Additional topics include the function and critique of the Diagnostic Statistical Manual with a social justice perspective, mental health recovery principles, ethics, case management, treatment planning, person in environment, and substance abuse. Co-requisite: SOCW 5311. Please note that if the co-requisite is dropped, this course will be dropped as well.

SOCW 5353. SOCIAL POLICY AND MENTAL HEALTH. 3 Hours.

This course explores programs, policies and systems in the field of mental health, and their impact on mental health consumers. Disparities occurring within mental healthcare systems will be explored using a health equity framework focusing on the differential impact policies may have on women, children and youth, individuals from diverse racial/ethnic backgrounds, LGBTQ+ individuals, veterans and immigrants/refugees. Approaches to policy analysis and implementation will be presented. Prerequisite: SOCW 5303.

SOCW 5354. PRINCIPLES OF SUBSTANCE USE TREATMENT. 3 Hours.

This course provides a solid grounding in theory and treatment of substance use disorders (SUDs). In keeping with the social work values of respecting the worth and dignity of all persons, the use of affirming and destigmatizing language is paramount. The application of assessment and screening tools, and implementation of evidence-based interventions, skills and techniques will be examined to include culturally informed diagnosis and treatment across a variety of behavioral health treatment settings. We will consider the importance of integrating identity into treatment through the consideration of gender, race, ethnicity, culture, age, and SOGIE (sexual orientation, gender identity and expression). This course will be taught from a strength-based social justice and trauma-informed perspective, with a focus on harm reduction, relapse prevention and sustained recovery. Prerequisite: SOCW 5311.

SOCW 5355. MILITARY SOCIAL WORK. 3 Hours.

The focus of this course is to examine military culture using a diversity framework that involves considering ethical implications for practice, comprehending prevalent social and health issues, and the effects of policies and health disparities across diverse social identities within varied military environments. Students enrolled in this course will analyze current advances in knowledge on the neurobiological underpinnings of human behavior and development pertinent to social and health issues as well as resilience to stress and adversity among diverse members of the military population. Students will identify and evaluate the relevant implications for social work practice with individuals, families, groups, programs/organizations, and communities using a multicultural multidimensional perspective in connection with social justice, social work values, knowledge, and skills. Students will also examine the structural and systematic arrangement and delivery of social welfare services at the micro, mezzo, and macro levels of social work practice. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be dropped as well.

SOCW 5356. SEMINAR IN COGNITIVE-BEHAVIORAL INTERVENTION STRATEGIES. 3 Hours.

Explores the three historical phases CBT's development: (1) Behavioral, (2) Cognitive, and now (3) Mindfulness, Acceptance, and Commitment. Addresses interventions across life-span development, culture, etc., to address such clinical issues as depression, anxiety, trauma, substance abuse, cognitive disorders, bereavement, etc., using a multicultural multidimensional perspective. Teaches assessment and interventions drawn from evidence-based practice knowledge and informed practice wisdom and includes a variety of interventions, such as DBT, behavioral activation, cognitive restructuring, mindfulness, etc. Prerequisite: SOCW 5311.

SOCW 5357. GROUP DYNAMICS AND SOCIAL WORK PRACTICE. 3 Hours.

Examines contemporary social-psychological concepts and small group research using a multicultural framework, with a view to testing their applicability to practice propositions and operational principles, in work with both task and treatment groups that include diverse populations. Group work will be examined in terms of social justice, social work values, knowledge, and skills, as well as in terms of those populations who have historically been harmed by structural and systematic arrangement and delivery of social welfare services at the micro, mezzo, and macro levels. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be as well.

SOCW 5358. TREATMENT OF CHILDREN AND ADOLESCENTS. 3 Hours.

Overview of the literature which describes physical, psychological, and the multitude of diverse cultural characteristics unique to childhood and adolescence. Attention then turned to treatment principles, and the specification of procedures for the amelioration of problems common to children and adolescents of diverse populations. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be as well.

SOCW 5362. DIRECT PRACTICE WITH CHILDREN AND FAMILIES. 3 Hours.

This course focuses on the preparing students for social work practice who will work with children, youth, and families in various employment settings. Throughout this course students will examine evidence-based interventions (and their theoretical roots) that build on strengths and resources of families with the intention of promoting social justice and cultural competence in social work practice with children, youth, and families. The course will address key areas of diversity among children, youth, and families, such as family structure, age, ability, religion, spirituality, sexual orientation, gender (including gender identity and expression), racial and ethnic identity, class, and culture. Specific techniques considered include child therapy, play therapy, behavioral contracting, cognitive-behavioral interventions, and crisis intervention. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be as well.

SOCW 5363. SOCIAL POLICY FOR CHILDREN & YOUTH. 3 Hours.

Examination of current policies, programs and practices impacting children and youth. Disproportionality and disparities occurring within child and youth serving systems (such as child welfare, the education system, the healthcare system and the juvenile justice system) will be explored, focusing on the differential impact of these policies on youth from diverse racial/ethnic backgrounds, LGBTQ+ youth and immigrant/refugee youth. Through analysis, research, and advocacy, students will increase their knowledge of trauma informed, equitable policies and practice with children and youth. Prerequisite: SOCW 5303.

SOCW 5364. PERSONAL RELATIONSHIPS. 3 Hours.

Explores theoretical and empirical data on diverse personal relationships at the follow stages of relationship: initiation, maintenance, and termination. Identifies areas for intervention. This course is also offered as SOCW 4320 in the BSW Program. Prerequisite: SOCW 5301 and SOCW 5307.

SOCW 5365. CLINICAL ASSESSMENT OF CHILD MALTREATMENT. 3 Hours.

Examines knowledge/technique in child physical/emotional/sexual abuse, physical/emotional neglect, among diverse populations. Includes interviewing, identification, legal issues, assessment/evaluation, and follow-up with an intersectional lens to examine the role of each of these in diverse communities. Prerequisite: SOCW 5311; Co-requisite: SOCW 5362 OR SOCW 5352 OR SOCW 5342. Please note that if the co-requisite course is dropped, this will be as well.

SOCW 5366. SEMINAR IN WOMEN'S ISSUES. 3 Hours.

Explores women's issues in human behavior theory, practice theory, and policy. Using an intersectional lens, the historical, political, and socioeconomic forces that maintain sexism among diverse groups are discussed. Environmental influences are examined in relation to social justice, social work values, knowledge, and skills. This course is also offered as SOCW 4366 in the BSW Program. Prerequisite: SOCW 5301, SOCW 5307.

SOCW 5367. TREATING PARENT-CHILD RELATIONSHIPS. 3 Hours.

Evidence-based treatment strategies and evaluation methods relevant to treating parent-child relationships in diverse families; intervention strategies and evaluation methods will be explored taking into account the developmental, social, and cultural factors that may influence the diversified parent-child dynamics, such as gender, power, socialization practices, race, ethnicity, and among others. Co-requisite: SOCW 5311. Please note if the co-requisite course is dropped, this will be dropped as well.

SOCW 5368. SEMINAR IN DIRECT METHODS IN COUPLES COUNSELING. 3 Hours.

Examination of various psychological, social, and cognitive-behavioral treatment approaches to problems in intimate couples across a variety of client populations. Emphasis is placed on the social environment, and its impact on the sources and patterns of intimate partner dissatisfaction and conflict. An additional focus will be on identifying components of mutually satisfying intimate partner relationships. Ways to appropriately adapt intervention approaches to be inclusive of couples of diverse sexual orientations/gender identities and from a wide range of religious, ethnic and cultural backgrounds will be explored. Prerequisite: SOCW 5311 or concurrent enrollment. Please note if the co-requisite course is dropped, this will be dropped as well.

SOCW 5369. SEMINAR IN FAMILY THERAPY. 3 Hours.

SOCW 5369 aims to compare various approaches to working with the family as a total system; enhance cognitive understanding of similarities and differences in theory and goals of family treatment in many fields of practice; and integrate strategies and techniques of each method into an individual style of therapy. Additionally, in recognition of power structures that have silenced indigenous and minority voices in assessing and treating families, this course will assign readings from diverse authors, as well as encourage student discussion and assignments in an activist-oriented classroom environment that seeks to understand how social work benefits from and perpetuates colonialism. Prerequisite: SOCW 5311.

SOCW 5370. SOCIAL WORK IN SCHOOLS. 3 Hours.

The purpose of this course is to provide an overview of the various social work-related theoretical perspectives, models, and programs for intervention with diverse children and their families in the school setting. This includes skills in assessment, prevention, and intervention in providing services to students that are marginalized for numerous reasons including race, gender, skin color, religion, immigrant status, disability, sexual orientation, and socioeconomic status among other factors. Students will learn to use intervention skills that address each level of the ecosystem's perspective in schools. Co-requisite: SOCW 5311. Please note if the co-requisite is dropped, this course will be dropped also.

SOCW 5371. INEQUITIES AND INCARCERATION. 3 Hours.

This course surveys mass incarceration in the U.S. criminal justice system as a racialized and classist system of control. First, this course will contextualize the US criminal justice system, both historically and through global comparisons. Then students will be introduced to four broad content areas: entering the criminal justice system (school-to-prison pipeline and policing), who is detained (demographics and common mental health and substance use issues) and what they experience in detention (including COVID-19 in jails and prisons), experiences and problems encountered when returning citizens reenter society, and trends in criminal justice reform advocacy (including problem-solving courts and advocacy efforts such as Black Lives Matter). Finally, the course considers the social work grand challenge of smart decarceration as a path towards reform specific to social workers. Also offered as SOCW 4371 in the BSW program. Students who take this course at the undergraduate level may not repeat it at the graduate level.

SOCW 5390. INDEPENDENT STUDY. 3 Hours.

Arrangements may be made for a directed and supervised independent study in a select area of special interest to the student.

SOCW 5392. SELECTED TOPICS IN SOCIAL WELFARE. 3 Hours.

Topics vary from semester to semester depending on the needs and interest of the students.

SOCW 5395. INTEGRATIVE SEMINAR. 3 Hours.

This course focuses on the cycle of practice from assessment and engagement to termination and evaluation. This course serves as the capstone for non-thesis MSW students and integrates an anti-oppressive lens toward promoting social justice across all aspects of practice. Prerequisite: SOCW 5482 or SOCW 5882.

SOCW 5396. THESIS RESEARCH. 3 Hours.

Initial research in the student's area of concentration, leading to thesis.

SOCW 5398. THESIS. 3 Hours.

Requires an individual research project in the individual's area of concentration, with a minimum of six semester hours total needed for the project. Satisfactory completion requires approval of the instructor in charge, a supervising committee appointed by the Dean of Graduate Studies. Defense in a final oral examination is required.

SOCW 5482. ADVANCED FIELD SPLIT I. 4 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate advanced (Aging, Children & Families, Community and Administrative Practice, Health, or Mental Health) social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362.

SOCW 5483. ADVANCED FIELD SPLIT II. 4 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate advanced (Aging, Children & Families, Community and Administrative Practice, Health, or Mental Health) social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362.

SOCW 5485. ADVANCED FIELD BLOCK I. 4 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362; Co-requisite: SOCW 5486.

SOCW 5486. ADVANCED FIELD BLOCK II. 4 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate advanced (Aging, Children & Families, Community and Administrative Practice, Health, or Mental Health) social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Prerequisite: SOCW 5312 OR SOCW 5311 AND SOCW 5332 OR SOCW 5342 OR SOCW 5352 OR SOCW 5362; Co-requisite: SOCW 5485.

SOCW 5681. FOUNDATION FIELD SPLIT I. 6 Hours.

Students will complete a minimum of 240 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Prerequisite: SOCW 5301, SOCW 5304, SOCW 5306, SOCW 5307.

SOCW 5685. FOUNDATION FIELD BLOCK I. 6 Hours.

Students will complete a minimum of 480 clock hours in a supervised field placement. Students will gain social work experience in an agency that will integrate generalist social work practice concepts into professional social work experience. Students will follow the NASW Code of Ethics and work with an anti-oppressive lens while in their field placements. Additionally, students will spend two hours a week in a seminar course to reflect and integrate social work knowledge, theory, and skills learned over the course of the program that they are applying in their field placement. Prerequisite: SOCW 5307. Co-requisite: SOCW 5285. Please note that if the co-requisite is dropped, this course will also be dropped.

SOCW 5698. THESIS. 6 Hours.

Requires an individual research project in the individual's area of concentration, with a minimum of six semester hours total needed for the project. Satisfactory completion requires approval of the instructor in charge, a supervising committee appointed by the Dean of Graduate Studies. Defense in a final oral examination is required.

SOCW 6190. TUTORIAL. 1 Hour.

Arrangements may be made for a directed and supervised tutorial in a select area of special interest to the student.

SOCW 6328. SOCIAL POLICY RESEARCH AND ANALYSIS. 3 Hours.

Seminar examining methods for analyzing social policies and for assessing effects of policy. Students evaluate and apply different models for social policy analysis, including comparative models. Students work with social indicators and other data sources used in policy research. Prerequisite: acceptance into the Ph.D. program.

SOCW 6340. ADVANCED RESEARCH METHODS IN HUMAN SERVICES. 3 Hours.

Acquaints students at an advanced level with research methodology as it applies to the human services. Includes techniques and tools of research, problem conceptualization, measurement, research and instrument design and data collection methods. Prerequisite: acceptance into the Ph.D. program.

SOCW 6341. ADVANCED STATISTICAL METHODS IN HUMAN SERVICES. 3 Hours.

Advanced statistical applications in the human services. Emphasis on multivariate statistical approaches including multiple regression analysis, logistic regression, and advanced general linear modeling approaches to analyzing data from social work research. Prerequisite: SOCW 6347.

SOCW 6346. TEACHING PRACTICUM. 3 Hours.

Introduces students to the academic role through teaching practice at graduate and/or undergraduate level supervised by a full-time faculty member. Prerequisite: SOCW 6328, SOCW 6340, SOCW 6348, SOCW 6373.

SOCW 6347. INTERMEDIATE STATISTICS. 3 Hours.

Statistical applications for doctoral social work students. Emphasizes both parametric and non-parametric techniques, including t-tests, ANOVA, correlation and regression, chi-square, and other non-parametrics. Designed to provide a foundation for advanced multivariate statistical techniques. Prerequisite: acceptance into the Ph.D. program.

SOCW 6348. SEMINAR IN QUALITATIVE RESEARCH METHODS. 3 Hours.

Explores a variety of qualitative approaches to knowledge building and research. Designed to prepare students to carry out research projects within their areas of interest. Content includes discussions of knowledge development, study designs, data collection, analysis, and report writing. Prerequisite: acceptance into the Ph.D. program.

SOCW 6356. SEMINAR IN PROGRAM AND PRACTICE EVALUATION. 3 Hours.

This course provides hands on opportunities to develop program and clinical evaluation plans for social work/welfare agencies. Educational principles and theoretical foundations are discussed as the actual plans are developed. Students work with agency decision makers and the instructor to generate a plan acceptable to the agency for implementation. Prerequisite: SOCW 6347.

SOCW 6367. SEMINAR IN ADVANCED STATISTICAL APPLICATIONS. 3 Hours.

This seminar covers statistical analysis of complex data and statistical modeling including latent variables. Emphasis is on structural equation model analysis using AMOS, LISREL, or EQS. The course focuses on applications of statistics using various data sets. Prerequisite: Knowledge of SPSS; SOCW 6341 and SOCW 6347.

SOCW 6373. THEORY AND MODELING BUILDING IN SOCIAL WORK RESEARCH. 3 Hours.

This course gives special emphasis on ways in which theory informs social work research. This course prepares students to perform application and critical analysis of social science and social work theory and theory-driven research. The course involves students in integrating theory, research, and social work practice with the goal of producing models of interventions, programs, and policies. Prerequisite: acceptance into the Ph.D. program.

SOCW 6390. TUTORIAL. 3 Hours.

Arrangements may be made for a directed and supervised tutorial in a select area of special interest to the student.

SOCW 6392. SELECTED TOPICS IN SOCIAL WELFARE. 3 Hours.

Topics vary from semester to semester based on the needs and interests of students.

SOCW 6393. GRANT WRITING. 3 Hours.

This course introduces the student to the process of writing grants. This includes knowledge of sponsors and opportunities as well as practical "know-how" in writing competitive grants for supporting research in social service and health service provision. The emphasis of the course will be on federal grants, but state and foundation grants will also be cited as case illustrations. Prerequisite: Doctoral standing or permission of the instructor.

SOCW 6394. APPLIED RESEARCH PRACTICUM. 3 Hours.

Students engage in an active program of applied research under direct supervision of a faculty member.

SOCW 6395. PSYCHOMETRICS AND MEASUREMENT IN HUMAN SERVICES. 3 Hours.

This course focuses on psychometrics and measurement within social work research. Highlighting the importance of measurement in research, the course emphasizes the defining key theoretical constructs and the methodology needed to measure them. This course prepares students to develop and validate instruments. Prerequisite: Doctoral standing or permission of the instructor.

SOCW 6396. SOCIAL WORK EDUCATION: PRINCIPLES AND SKILLS. 3 Hours.

Considers a range of ideas in educational thought relevant to the formulation of an analytical appraisal of social work education and training. Educational methods and skills relevant to social work are addressed and practice opportunities offered. Prerequisite: acceptance into the Ph.D. program.

SOCW 6397. WRITING FOR PUBLICATION. 3 Hours.

This course will explore the world of academic publishing. Students will provide peer reviews of manuscripts, prepare and critique their ideas and draft sections of a manuscript, and present a final manuscript and publication plan. The intent is to help the students increase their chance of publishing manuscripts as a Ph.D. student and as a new faculty member. Although nothing can substitute for having information and research relevant for the field, the art of writing for publication should not be underestimated. Journal publishing, like any other human service endeavor, is easier as you become proficient. Most academics become proficient at communicating their ideas and research through trial and error. However, one's chances of becoming published can be increased by learning from experts in the field. Prerequisite: acceptance into the Ph.D. program.

SOCW 6399. DISSERTATION. 3 Hours.

Preparation and submission of a doctoral dissertation in an area in social work.

SOCW 6694. APPLIED RESEARCH PRACTICUM. 6 Hours.

Students engage in an active program of applied research under direct supervision of a faculty member.

SOCW 6699. DISSERTATION. 6 Hours.

Preparation and submission of a doctoral dissertation in an area in social work.

SOCW 6999. DISSERTATION. 9 Hours.

Preparation and submission of a doctoral dissertation in an area in social work.

SOCW 7399. DOCTORAL DEGREE COMPLETION. 3 Hours.

This course may be taken during the semester in which a student expects to complete all requirements for the doctoral degree and graduate. Enrolling in this course meets minimum enrollment requirements for graduation, for holding fellowships awarded by The Office of Graduate Studies and for full-time GTA or GRA positions. Students should verify that enrollment in this course meets other applicable enrollment requirements. To remain eligible in their final semester of study for grants, loans or other forms of financial aid administered by the Financial Aid Office must enroll in a minimum of 5 hours as required by the Office of Financial Aid. Other funding sources may also require more than 3-hours of enrollment. Additional hours may also be required to meet to requirements set by immigration law or by the policies of the student's degree program. Students should contact the Financial Aid Office, other sources of funding, Office of International Education and/or their graduate advisor to verify enrollment requirements before registering for this course. This course may only be taken once and may not be repeated. Students who do not complete all graduation requirements while enrolled in this course must enroll in a minimum of 6 dissertation hours (6699 or 6999) in their graduation term. Graded P/F/R.

Sociology (SOCI)

COURSES

SOCI 1200. PERSONAL AND PROFESSIONAL SUCCESS IN THE SOCIAL SCIENCES. 2 Hours.

A first year experience course for new students and new transfer students interested in a career in the social sciences. Provides the necessary foundation for success in a college environment while balancing personal and/or work obligations. Orients students to life on campus, demonstrates how to leverage campus resources to achieve career and academic goals, and emphasizes engagement outside the classroom through collaborative and co-curricular opportunities. Fulfills the University requirement for either UNIV 1101 or UNIV 1131. Offered as SOCI 1200 and ANTH 1200; credit will be granted only once.

SOCI 1310. INTRODUCTION TO POPULAR CULTURE. 3 Hours.

This course will introduce students to the role of popular culture in American society. It examines culture as a process through which people make symbolic meaning out of the world. Since everyone has access to popular culture, it constructs the way that people think about the world around them. The course will explore the creation, production, dissemination, reception and consumption of popular culture.

SOCI 1311. INTRODUCTION TO SOCIOLOGY. 3 Hours. (TCCN = SOCI 1301)

(SOCI 1301). A scientific approach to the analysis and explanation of culture, personality, and social organization. The social processes and mechanisms of interaction involved in the natural process of cultural development, dissemination, assimilation, and the institutions of the group. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

SOCI 2312. SOCIAL PROBLEMS. 3 Hours. (TCCN = SOCI 1306)

A survey of contemporary social problems in the United States. Emphasis is on applying different theoretical perspectives and systematic procedures to understand social problems as public issues rather than personal problems. This course satisfies the University of Texas at Arlington core curriculum requirement in Social and Behavioral Sciences.

SOCI 3312. JUVENILE DELINQUENCY. 3 Hours.

The delinquent as a person and delinquency as a social problem, theories of delinquency, and methods of correctional treatment and preventive programs.

SOCI 3313. CRIMINOLOGY. 3 Hours.

Crime-related social issues. Defining and measuring crime, surveying major theoretical explanations of criminal behavior, and society's formal responses to crime and criminals.

SOCI 3314. THE LATINA EXPERIENCE. 3 Hours.

Examines the social, cultural and economic experiences of Latin American women in the United States, with particular emphasis on Mexican-origin women. The course surveys the historical and contemporary experiences of Latinas in the United States with respect to family dynamics, religion, education, politics, health and illness, the labor market, mass media, and the arts. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

SOCI 3315. SOCIAL PSYCHOLOGY OF CRIME. 3 Hours.

Selected concepts in social psychology applied to issues in crime and justice, such as the actions of victims, criminals, and criminal justice professionals. Topics include aggression, social perception, cognitions, conformity, obedience, and deviance.

SOCI 3316. LATINO HEALTH ISSUES. 3 Hours.

A cross-cultural examination of issues in Latino health and relevant health practices in the United States through the lenses of social sciences. Themes include the Latino Threat Narrative, acculturation histories and health care status of major Latino ethnic enclaves in the U.S. Listed as SOCI 3316, MAS 3316, and ANTH 3316; may receive credit for either SOCI 3316, MAS 3316, or ANTH 3316.

SOCI 3317. INDIVIDUAL AND SOCIETY. 3 Hours.

How society influences individual thought, feeling, and behavior. Includes interpersonal perception, attitudes, norms, roles, conformity, and such social issues as aggression, helping behavior, prejudice, and interpersonal attraction.

SOCI 3318. SELF AND SOCIAL IDENTITY. 3 Hours.

The social self. Topics include factors in the development, organization, evaluation and presentation of self in everyday life and processes by which social categories and roles influence self concept.

SOCI 3319. SMALL GROUPS. 3 Hours.

The process and structures of small-scale interaction systems, including an analysis of the process of leadership, the exercise of influence, the effect of groups on individuals and of individuals on groups, the relation and function of the small group as a part of a larger whole, and the process of group formation, development, and disintegration.

SOCI 3320. DEVIANCE: SOCIAL AND PERSONAL. 3 Hours.

Theoretical perspectives on societal definitions of behavior as deviant or disorganized. Selected studies, representative of current problems, examined critically in terms of the structural-cultural conditions of contemporary society.

SOCI 3321. SOCIALIZATION AND SOCIAL CONTROL. 3 Hours.

The relationship between social structure and the individual. The influence of social factors on cognitive development, personality formation, and the behavior of individuals throughout the lifecycle. The effect of socialization on conformity and deviance. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3323. COLLECTIVE BEHAVIOR. 3 Hours.

Provides an overview of the elementary forms of collective behavior including riots, panics, fads, fashion, cults and crazes. Explanatory theories and specific instances of the different forms of collective behavior are examined. Prerequisite: SOCI 1311.

SOCI 3324. SOCIAL MOVEMENTS. 3 Hours.

Focuses on twentieth and twenty-first century social movements, including the U.S. civil rights movement, the student and anti-war movements of the 1960s, the women's movement, the environmental movement, and anti-globalization movements. Status politics movements, such as pro-choice/pro-life and gay rights movements, are also explored. Compares these movements with their counterparts in other countries and identifies the reasons for their successes and failures.

SOCI 3327. INTERCULTURAL INTERACTION. 3 Hours.

Patterns and variations in interactions involving people from different cultures and subcultures. Intercultural interaction, both within multicultural societies and between persons from different societies.

SOCI 3328. MARITAL AND SEXUAL LIFESTYLES. 3 Hours.

Contemporary American lifestyles selected from: singles, traditional marriage, homosexuals, single-parent families, open marriage, non-marital sexuality, cohabitation, dual-career marriage, childless couples, egalitarian marriage, families in later life. Offered as DIVR 3328, SOCI 3328 and WOMS 3328; credit will be granted only once.

SOCI 3331. SOCIOLOGY OF THE FAMILY. 3 Hours.

The family's role in American society and in other cultures past, present, and future. Family research methods, comparative family systems, child development/parenting, culture and personality, minority families, social class variation in families, work and family. Prerequisite: sophomore standing or permission of the instructor. Offered as SOCI 3331 and WOMS 3331; credit will be granted only once.

SOCI 3332. SOCIOLOGY OF REPRODUCTION. 3 Hours.

Investigates historical and contemporary cultural customs, social institutions, and personal experiences related to reproduction. Topics may include assisted reproduction, pregnancy loss, living "child-free," sperm/egg donation, and surrogacy. Examines how changing economic conditions, technologies, and social norms shape the meaning of children, childbirth education, infertility, and the experience of birth for both men and women.

SOCI 3334. SOCIOLOGY OF GENDER. 3 Hours.

Examination of theoretical and empirical approaches to understanding the formation of gender. Assesses individual and structural dimensions of gender in various social institutions including work, education, and families. Offered as SOCI 3334 and WOMS 3334; credit will be granted only once.

SOCI 3336. SOCIAL INEQUALITY. 3 Hours.

Examines the processes, characteristics, and consequences of social inequality in society. Topics include the social class structure, status groups, and elite power structure as they influence people's life chances. Offered as AAST 3336 and SOCI 3336; credit will be granted in only one department.

SOCI 3337. RACIAL & ETHNIC GROUPS IN US. 3 Hours.

Compares the immigration, acculturation, and adjustment processes of various racial/ethnic groups in the U.S. Examines historical and contemporary discrimination in relation to the social conditions of racial/ethnic minority groups in the U. S. Topics include classical and contemporary theory; individualistic, cultural, and structural arguments about social arrangements; and conflict among majority and minority groups. Offered as AAST 3337, MAS 3337, and SOCI 3337; credit will be granted in only one department. Credit will not be granted for both SOCI 3337 and SOCI 4310 or for MAS 3337 and MAS 4310.

SOCI 3338. CONTEMPORARY BLACK EXPERIENCE. 3 Hours.

An overview of recent research concerning the African American experience in the post-civil rights era. Topics include explanations for racial differences across spheres of society such as income, education, and occupation; the debate over race versus social class; the persistence of racial discrimination; and emerging disputes within the black community regarding "what it means to be black." Offered as AAST 3338 and SOCI 3338; credit will be granted in only one department.

SOCI 3339. RACE, SPORT AND MEDIA. 3 Hours.

The media, including television, film, print, audio, and online outlets, influence how we view the world. This course analyzes overt, subtle and subliminal messages about culture, race, ethnicity, and sport as presented to us through various forms of the media. Through examinations of media portrayals of race, both past and present, students will analyze media artifacts, identify recurring themes, and examine research focused on the societal effects of stereotypical media portrayals. Offered as AAST 3339 and SOCI 3339; credit will be granted in only one department.

SOCI 3340. SOCIOLOGY OF EDUCATION. 3 Hours.

Social relations between the school and society, teachers and parents, teachers and school management, and other relevant relationships. Studying cooperation and conflict, values, complex organizational structure, and social change. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3341. SOCIOLOGY OF SPORT. 3 Hours.

Sociological examination of the institution of sport in U.S. society. By examining selected topics such as sport and socialization, sport and politics, sport and education, the Olympics, race and sport, violence in sport, women in sport, and the business of sport, this course will address the social significance of sport and its function as a major social institution.

SOCI 3342. SOCIOLOGY OF THE HUMAN BODY. 3 Hours.

Drawing from the social sciences, cultural and gender studies, and exercise physiology, this course in body sociology addresses several contemporary issues relating to diet, nutrition and exercise. Specific topics include eating disorders, factory farming, and "body industries" involving weight-loss diets, gyms, fashion, and cosmetic and bariatric surgery. The medical model of bodies is also examined. Also listed as KINE 3342; credit will not be granted for both.

SOCI 3343. SOCIOLOGY OF RELIGION. 3 Hours.

This course provides an overview of the scientific study of religion from a sociological perspective. The focus is on theories, research and trends relevant to religion in the contemporary United States. Topics include, but are not limited to, religious traditions, practices, and beliefs; declining religious participation; and religion and social change. The relationship between religion, politics, race relations, sex and gender will also be examined. Offered as SOCI 3343 and AAST 3342; credit will be granted in only one department.

SOCI 3345. SOCIOLOGY OF THE 1960S. 3 Hours.

This course presents a sociological analysis of the sixties, stressing the connection between grassroots mobilization and large structures of power, war, race and gender. The legacy of the sixties is examined through stories told by and about activists of the period. Parallels between the sixties and the present are identified. Movements covered may include civil rights, black power, anti-war and women's rights. Offered as AAST 3344 and SOCI 3345; credit will be granted in only one department.

SOCI 3346. U.S. INTO THE TWENTY-FIRST CENTURY. 3 Hours.

Selected problems, prospects, and dilemmas examined in the context of contemporary perspectives in sociology as the United States enters the new millennium as a global actor.

SOCI 3347. ENVIRONMENT AND SOCIETY. 3 Hours.

Explores the causes, consequences, and potential resolutions of environmental issues as they relate to human society. Topics include the social roots of environmental problems, inequalities in the distribution of environmental risks and harms, and new directions in sustainable development.

SOCI 3348. SOCIAL ASPECTS OF RISK. 3 Hours.

An examination of the social aspects of risk in everyday life. The course covers the relationship between risk and thrill-seeking behavior, risk assessment and the management of risk by technical experts, risk perceptions among the general public, and how technology and culture change the nature and meaning of risk over time.

SOCI 3351. WORK, OCCUPATIONS, AND CAREER DEVELOPMENT. 3 Hours.

Combines applied information on career development with a sociological perspective on work and occupations. Career development topics may include academic majors and career options, networking, career mentorship and sponsorship, job searches, resume writing, and interviewing. Other topics may include the historical development of work, occupational structures (professional, managerial, service, and blue-collar occupations), inequalities, work satisfaction, work-life balance, and the future of work.

SOCI 3352. SOCIAL STATISTICS. 3 Hours.

Descriptive statistics including measures of central tendency, measures of dispersion, and measures of association. Emphasis is on probability theory and testing hypotheses. Specific models include T-Test, chi-square, gamma, lambda, theta, analysis of variance and covariance, regression and correlation analysis. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3353. SOCIAL CLIMATE OF CITIES. 3 Hours.

A comparative study of urban communities and metropolitan areas in terms of their distinctive social life and culture. Topics touching on power and urban politics, race and ethnic relations, poverty, and leisure and lifestyles will be examined in terms of their contribution to the unique social climate of cities. Offered as AAST 3353 and SOCI 3353; credit will be granted in only one department.

SOCI 3355. COMPUTER APPLICATIONS IN THE SOCIAL SCIENCES. 3 Hours.

Students will learn how to develop a research proposal, collect and analyze data based on the proposal, and present the results. The course will emphasize computer analysis, graphics and presentation skills through the use of popular software packages such as Word, Excel, Access, Power Point, and SPSS. Internet data collection and web publishing will also be covered. Individual and group oral presentation is a cornerstone of the course mission. Satisfies the university requirements for computer literacy and oral communication. Prerequisite: SOCI 3352 or equivalent.

SOCI 3356. WOMEN, WORK AND SOCIAL CHANGE. 3 Hours.

Women's work experiences, how these experiences are changing, and relationship between paid employment and non-wage household labor. Paid and unpaid work experiences are empirically examined in terms of a variety of theoretical perspectives. Offered as DIVR 3356, SOCI 3356 and WOMS 3356; credit will be granted only once.

SOCI 3357. LAW AND SOCIETY. 3 Hours.

Law as a social institution. The processes of defining criminal conduct and the social functions of law and of legal processes and systems. Prerequisite: sophomore standing or permission of the instructor.

SOCI 3360. TOPICS IN SOCIOLOGY. 3 Hours.

Selected topics in social issues, policy, processes and/or structure. May be repeated for credit with departmental permission.

SOCI 3365. PROGRAM EVALUATION & NEEDS ASSESSMENT. 3 Hours.

Introduces basic concepts in evaluation research addressing the need for and implementation, effectiveness, and efficiency of social intervention efforts. Students will advance their skills in quantitative and qualitative research in partnership with community organizations. The course provides an opportunity to learn about and apply techniques for needs assessment, formative and summative program evaluation, developing and testing social impact models, examining costs and benefits, and communicating findings. Prerequisite: SOCI 3462.

SOCI 3366. POPULATION TRENDS AND PROCESSES. 3 Hours.

Examines the fact that all people are born, usually move from one place to another, and inevitably die. Societal patterns in human fertility, migration and mortality contribute to widely varied life-chances for people over time and across the planet. This course explores theories and research on demographic dimensions of human behavior as they affect social and economic issues. The course provides an understanding of how vital population trends and processes are for assessing social problems and offering solutions. Credit will not be granted for both SOCI 4325 and SOCI 3366.

SOCI 3372. SOCIOLOGICAL THEORY. 3 Hours.

This course introduces students to major theories and figures who have provided sociology with interpretations of the social world. Students will consider how sociologists use theoretical concepts to understand social interactions, social problems, and social change. Students will apply sociological theories to social phenomena. Prerequisite: junior standing or permission of the instructor.

SOCI 3373. SOCIAL THEORY THROUGH POPULAR CULTURE. 3 Hours.

This course examines major theories and figures who have provided sociology with interpretations of the social world. Students will read major social, cultural, and political theories through popular culture texts (including movies, television, music, video games, and comic books) in order to interpret sociological theory. The course is designed to demonstrate the relevance of social theory in students' everyday lives.

SOCI 3380. SCIENCE AND TECHNOLOGY IN SOCIETY. 3 Hours.

Explores the complex relationship between society, science, and technology. Themes include historical perspectives on the production and deployment of scientific knowledge, critical approaches to the social, cultural, and ethical impacts of scientific and technological developments, and the role of democracy in the advancement of science and technology.

SOCI 3381. GIG WORKERS. 3 Hours.

This course examines the way employers increasingly rely on temporary flexible labor, and what it feels like to be employed precariously. Themes may include creative labor, cultural production, automation, algorithmic hiring, labor contracts, and exploitation.

SOCI 3390. HONORS COLLOQUIUM. 3 Hours.

An interdisciplinary course designed to meet the needs of advanced undergraduates in the Honors College. Prerequisite: participation in the Honors College and/or permission of the instructor.

SOCI 3462. SOCIAL RESEARCH. 4 Hours.

Required of all sociology majors. Examines the major quantitative and qualitative techniques for sociological research. Topics include setting up and implementing a research project, interpreting findings, and preparing a final report. Lab includes sampling, instrumentation, data analysis, and communicating results. Prerequisite: SOCI 3352 or permission of the instructor.

SOCI 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering personal research or study in the designated areas. Prerequisite: permission of the instructor.

SOCI 4193. INTERNSHIP IN SOCIOLOGY. 1 Hour.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of sociology in a non-academic setting. Students may complete a maximum of 6 hours in any combination of SOCI 4193, SOCI 4293, and SOCI 4393. Prerequisite: SOCI 1311 or SOCI 2313; permission of the instructor; and junior standing.

SOCI 4195. SERVICE LEARNING INDEPENDENT STUDY. 1 Hour.

This course involves the investigation and application of sociological knowledge through community based service. Involves structured academic analysis of service experiences. The student and supervising faculty will identify the partner agency and social issue to be addressed. Prerequisite: permission of the instructor.

SOCI 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering personal research or study in the designated areas. Prerequisite: permission of the instructor.

SOCI 4293. INTERNSHIP IN SOCIOLOGY. 2 Hours.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of sociology in a non-academic setting. Students may complete a maximum of 6 hours in any combination of SOCI 4193, SOCI 4293 and SOCI 4393. Prerequisite: SOCI 1311 or SOCI 2312; permission of the instructor; and junior standing.

SOCI 4295. SERVICE LEARNING INDEPENDENT STUDY. 2 Hours.

This course involves the investigation of sociological knowledge through community based service. Involves structured academic analysis of service experiences. The student and supervising faculty will identify the partner agency and social issue to be addressed. Prerequisite: permission of the instructor.

SOCI 4303. WOMEN IN SOCIETY. 3 Hours.

Women's status in contemporary American society, including the family, workplace, and politics. Women's status will also be examined in historical and crosscultural perspectives. Offered as SOCI 4303 and WOMS 4303; credit will be granted only once.

SOCI 4306. QUALITATIVE RESEARCH METHODS. 3 Hours.

Conceptual frameworks and techniques for planning, conducting, analyzing, reporting and evaluating qualitative research. Topics include interviewing, participant observation, coding, case studies and focus groups. Prerequisite: sophomore standing or permission of the instructor.

SOCI 4309. WRITING FOR THE SOCIAL SCIENCES. 3 Hours.

This course blends the theory and practice of social science writing in order to teach students how to move from the first draft to the final draft of term papers, theses, dissertations, and articles. The primary skill taught is self-editing --appraising one's work from the outside. The goal is to learn how to write for publication, drawing from postmodern perspectives on writing. Prerequisite: SOCI 1311 or permission of instructor.

SOCI 4315. VIOLENCE IN SOCIETY. 3 Hours.

Violence as a group process directed toward social change. Historical perspectives, current events, preventive and control techniques, public reaction, and individual behavior. Prerequisite: sophomore standing or permission of the instructor.

SOCI 4320. MEDICAL SOCIOLOGY. 3 Hours.

The relationships between different societies and social groups and their incidence of disease and mortality. Also examines culture-related causes of disease and treatment approaches, medicine as an occupation, healer-patient relationships, and the modern hospital as a bureaucratic organization.

SOCI 4331. RACE, ETHNICITY & FAMILY FORMATION. 3 Hours.

Investigates the ways in which cultural understandings of race and ethnicity have shaped historical and contemporary variations in family structure, familial experiences, and the legal possibilities for family formation. Junior standing (60 hours) or permission of the instructor required to enroll in this course. Offered as AAST 4331 and SOCI 4331; credit will be granted in only one department.

SOCI 4341. INEQUALITIES IN PUBLIC EDUCATION. 3 Hours.

This course examines the manner in which race, ethnicity, and class affect the quality of education in the public schools. Topics include the resegregation of schools, class and race based achievement and funding gaps, and the role the schools play in reproducing inequality. This course has a service learning component and requires volunteering in programs designed to reduce inequality in the schools. Offered as AAST 4341 and SOCI 4341; credit will be granted in only one department.

SOCI 4365. TOPICS IN SOCIOLOGY. 3 Hours.

Selected topics in social issues, policy, processes and/or structure. Prerequisite: junior standing or permission of the instructor. May be repeated for credit with departmental permission.

SOCI 4370. SENIOR RESEARCH SEMINAR. 3 Hours.

Provides sociology majors with an opportunity to gain practical experience in social research through in-depth participation in a cooperative research project. Integrates substantive knowledge with methodological and statistical skills. Oral, written, and computer application components are included. Prerequisite: SOCI 3352 and SOCI 3462 or permission of the instructor.

SOCI 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering personal research or study in the designated areas. Prerequisite: permission of the instructor.

SOCI 4393. INTERNSHIP IN SOCIOLOGY. 3 Hours.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of sociology in a non-academic setting. Students may complete a maximum of 6 hours in any combination of SOCI 4193, SOCI 4293, and SOCI 4393. Prerequisite: SOCI 1311 or SOCI 2312; permission of instructor; and junior standing.

SOCI 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department.

SOCI 4395. SERVICE LEARNING INDEPENDENT STUDY. 3 Hours.

This course involves the investigation and application of sociological knowledge through community based service. Involves structured academic analysis of service experiences. The student and supervising faculty will identify the partner agency and social issue to be addressed. Prerequisite: Permission of the Instructor.

SOCI 4396. INTERNSHIP IN POPULAR CULTURE. 3 Hours.

Supervised internship program in which a student interns at a company, non-profit organization, or governmental agency. Involves the application of popular culture knowledge in a non-academic setting. Prerequisite: SOCI 1310; permission of instructor; and junior standing.

SOCI 5191. CONFERENCE COURSE. 1 Hour.**SOCI 5301. SOCIOLOGICAL THEORY. 3 Hours.**

A comprehensive review, analysis, and evaluation of the dominant conceptual perspectives, and their proponents, in sociological theory.

SOCI 5303. RESEARCH DESIGN. 3 Hours.

This seminar course overviews the process of designing, conducting, and presenting research. Topics include writing literature reviews, formulating research questions and hypotheses, designing measures for concepts, crafting research instruments, collecting data, analyzing data, and reporting the results. The course examines both quantitative methods, such as surveys and experiments, as well as qualitative methods, such as interviews and ethnographic observation.

SOCI 5304. SOCIAL STATISTICS I. 3 Hours.

This course reviews univariate and bivariate descriptive and inferential statistics, focuses on ordinary least squares multivariate regression (including statistical control, path analysis, dummy variables, interaction effects, nonlinear relationships, and regression assumptions), and introduces the generalized linear model (binary logistic regression). Emphasis is on the application of these methods to social science data.

SOCI 5305. RACIAL AND ETHNIC GROUPS IN THE UNITED STATES. 3 Hours.

This seminar course compares and contrasts the immigration, acculturation, and adjustment processes of various racial and ethnic groups in the United States. We will examine conventional and controversial arguments, as well as classical and contemporary theories concerning the dynamics of inter-group relations in America. Some of the more controversial topics in sociology-such as debates over assimilation, Americanization, and enduring conflicts between groups-are the foremost intellectual topics to be addressed. The reading list includes a diverse group of scholars who advance relevant research on race and ethnic relations.

SOCI 5306. SEMINAR IN RACE AND ETHNICITY. 3 Hours.

An advanced seminar on Race and Ethnicity in the United States. Past and present discrimination will be examined in relation to the current social conditions of minority groups living in the United States. A sociological approach to the topic begins with the assumption that race and ethnicity are socially and politically constructed phenomena. Race/ethnic categories within the United States have varied significantly across time and place. Sociology connects the concepts of race and ethnicity to social structures of inequality, power, and stratification. Scholarship on race and ethnicity is central to American sociology. We will empirically and theoretically explore: 1) the social, political and historical conditions under which segregation, racial hierarchies and racial conflict emerge, and 2) the institutions through which racial boundaries and hierarchies are produced and reproduced in the United States.

SOCI 5307. INEQUALITY, POVERTY, AND MOBILITY. 3 Hours.

This seminar course provides a graduate-level introduction to inequality, poverty, and mobility. We will focus on the United States, exploring the contemporary structure as well as long term trends in the distribution of material and nonmaterial resources and the economic, social, and cultural forces that generate and perpetuate the unequal distribution of resources. Our focus will be on inequalities in the areas and intersections of social class, gender, and race.

SOCI 5308. COMPARATIVE ETHNIC AND RACIAL CONFLICT. 3 Hours.

This seminar course provides a graduate-level introduction to ethnic and racial conflict from a comparative perspective. The course will focus on topics, such as the creation and maintenance of ethnic, racial, and national identities; the sources of conflict; the consequences of conflict; conflict prevention and resolution; and attaining justice. We will use a variety of cases to examine conflict, such as former Yugoslavia and Rwanda.

SOCI 5309. CONTEMPORARY BLACK EXPERIENCE. 3 Hours.

This seminar course is an overview of the contemporary sociological literature on the black experience in America. Some of the topics to be addressed include (but are not limited to) the debate over the "significance of race," tensions over the cultural/attitudinal adaptation to inequality, and emerging disputes within the black community regarding what it "means to be black" in the post-Civil Rights Era. By the end of this course, students should be more aware of the important role that class position plays in shaping African-American identities and ideologies.

SOCI 5310. SEMINARS IN SOCIAL PSYCHOLOGY. 3 Hours.

Introduction and discussion of theoretical and methodological perspectives in social psychology. Focusing on particular domains of social life, these seminars examine fundamental processes of social interaction and the influence of social situations and social experience on the thought, feeling, and behavior of individuals. (May be repeated for credit when topics vary.).

SOCI 5311. SOCIOLOGY OF FAMILIES. 3 Hours.

This seminar course explores major areas of inquiry in the sociological study of families in the contemporary U.S. We will examine the evolution of American families and the historical processes that have shaped them. Throughout the course, the interconnections between families and social structures will be emphasized. Particular attention will be given to the ways in which gender, class, race and ethnicity influence families.

SOCI 5312. SOCIOLOGY OF REPRODUCTION. 3 Hours.

This seminar course investigates the history and sociology of reproduction in the United States. We examine the history of reproductive politics, the changing meaning of children, childbirth education, the experience of birth for both men and women, pre-natal diagnostic testing, pregnancy loss, adoption, infertility, living "child-free," new reproductive technologies, sperm/egg donation, surrogacy, and the burgeoning "baby business." The course explores the cultural norms, social institutions, and experiences of women and men as they navigate contemporary reproduction, mindful of variations by race, class, and gender.

SOCI 5313. RACE AND FAMILY. 3 Hours.

Who can become a family? This seminar course investigates this question from a socio-historical perspective, focusing on the ways in which dominant cultural understandings of race and ethnicity have shaped the legal possibilities for family formation, family structure, and the experiences of families in the U.S. The course inspects historical and contemporary families, looking at the intersection of race and family formation.

SOCI 5314. GENDER AND FAMILY. 3 Hours.

This seminar course focuses on current issues in the sociology of families, focusing on the intersection of gender and family. The course is organized to provide an overview of the issues of particular interest to contemporary scholars, with theoretical, conceptual and empirical research/work included in the readings. We focus particularly on how gender affects how family is experienced.

SOCI 5315. WOMEN AND WORK. 3 Hours.

This seminar course focuses on current issues in the sociology of women and work. We address contemporary and historical patterns of women's paid and unpaid work focusing on theoretical, conceptual and empirical research.

SOCI 5316. THE SOCIAL MIND AND INTERPERSONAL PROCESSES. 3 Hours.

This seminar course is a study of the influence of the social context on human thoughts, feelings and actions, and on the processes that constitute social interaction. Relevant theories in social psychology and microsociology and original-source readings will be covered.

SOCI 5317. CULTURAL SOCIOLOGY. 3 Hours.

This seminar course examines the relationship between culture and society. Students will study contemporary debates around culture. Students will pay special attention to the use and experience of popular symbols for the ways that their use involves the creation of meanings.

SOCI 5318. MEDIA, CULTURE, AND SOCIETY. 3 Hours.

Media saturate our everyday lives. As such, they have a tremendous impact on the way we understand and interact with society. This seminar course will take a critical approach to the study of culture in order to examine the fundamental role of media in society. We will pay particular attention to the influence of the Culture Industry.

SOCI 5319. SEMINARS IN SOCIAL INSTITUTIONS AND CHANGE. 3 Hours.

Seminars in this area are concerned with the structure and change of the basic elements of society that represent ordered and regulated aspects of social life. Also examined are collective behavior and social movements which result from instability in institutional arrangements and represent efforts to enact social change. (May be repeated for credit when topics vary.).

SOCI 5320. SOCIOLOGY OF EDUCATION. 3 Hours.

This seminar course will examine the relationships between U.S. education institutions and society by reviewing a variety of sociological theories and empirical studies. A primary area of focus will be on the relationship between formal education and class, race/ethnicity, and gender-based inequality. Topics will include, but are not limited to, the following: the history and development of U.S. educational institutions, social mobility and stratification, social reproduction, the dynamics of race, class and gender in education, student teacher relationships, teaching as a profession, higher education, and an exploration of educational reforms.

SOCI 5321. ENVIRONMENTAL SOCIOLOGY. 3 Hours.

This seminar course covers advanced topics in environmental sociology. We will investigate how human social organization affects environmental problems and responses. Specifically, we will explore topics such as environmental inequality, the social construction of nature, risk assessment, consumption and materialism, environmental values and identities, and environmental social movements. We will also look at social problems tied to environmental issues, such as those stemming from disasters, climate change, and food production. We will conclude with new directions in sustainable development.

SOCI 5322. SOCIOLOGY OF SPORT. 3 Hours.

An advanced seminar on the Sociology of Sport. This course is a sociological examination of the institution of sport in American society. By examining selected topics (such as sport and socialization, sport and politics, sport and education, race and sport, violence in sport, women in sport, and the business of sport) this course will address the social significance of sport and its function as a major social institution. We will examine the manner in which society has been shaped by the institution of sport and how sport has been shaped by society.

SOCI 5323. SOCIOLOGY OF RELIGION. 3 Hours.

This seminar course provides an overview of the scientific study of religion from a sociological perspective. The focus in the course will be on theories, research, and trends concerning religion in the contemporary United States. Some of the topics to be addressed include (but are not limited to) understanding the rich variety of religious traditions and affiliations, religious practices and beliefs, as well as the role that religion plays in facilitating and limiting social change as well as conflict in society. We will also examine differences across various religious traditions such as "mainline" and "fundamentalist" believers, secularization, and the often-controversial ways that religion intersects with other spheres of society such as morality, politics, race and ethnic relations, sex and gender.

SOCI 5324. QUALITATIVE RESEARCH METHODS. 3 Hours.

This seminar course introduces students to the qualitative tradition in sociology. We will study the assumptions underlying qualitative methods and important ethical and theoretical issues in field work. Students will become familiar with ethnographic research techniques (participant-observation and in-depth interviewing) and implement those methods in an individual small-scale research project.

SOCI 5325. READING THE QUALITATIVE CLASSICS. 3 Hours.

What makes a classic a classic? In this seminar course we will sample-read, examine, and analyze-the wealth of "classic" ethnographies within the field of Sociology. We will study the classics with an eye to exploring the qualities that make these exemplary texts which often connect people to and excite them about the field of Sociology.

SOCI 5326. SOCIAL MOVEMENTS. 3 Hours.

Examines core concepts and theoretical perspectives in social movements. Topics include recruitment and participation, tactics in activism, countermobilization, repression, and the effectiveness of movements in changing both policy and cultural norms.

SOCI 5330. SEMINARS IN SOCIAL DIFFERENTIATION. 3 Hours.

In all human societies, perceptions of differences in individuals, social positions and groups arise and form a basis for social evaluation. Seminars in this area examine the processes involved in social differentiation, social evaluation, and resulting forms of social inequality. (May be repeated for credit when topics vary).

SOCI 5341. SEMINARS IN THEORY AND RESEARCH METHODS. 3 Hours.

Research methods seminars address a variety of issues related to quantitative and qualitative approaches to data collection and analysis. Theory courses offer extended treatment of topics in theory and theory construction, reflecting systematic efforts to understand the nature and operation of human society and social behavior. (May be repeated for credit when topics vary.).

SOCI 5385. NON-THESIS PROJECT. 3 Hours.

A written essay synthesizing the students' coursework in response to one of two supplied prompts. The topic and scope of the written project must be approved by the non-thesis committee chair. A final presentation of the project to the non-thesis committee, composed of the non-thesis committee chair and two additional members of the graduate faculty, is required.

SOCI 5388. RESEARCH PRACTICUM / INTERNSHIP. 3 Hours.**SOCI 5389. TEACHING SOCIOLOGY. 3 Hours.**

To learn strategies of coping with practical problems of teaching undergraduate sociology, students assist one or more professors in lecture preparation, grading, and examination construction. Not to be counted toward the degree requirement.

SOCI 5392. CONFERENCE COURSE IN SOCIOLOGY. 3 Hours.

There is not currently a description listed for this course since the content varies.

SOCI 5393. THESIS SUBSTITUTE. 3 Hours.

An academic literature review, research design, or an internship report on a selected sociological topic of individual interest. The topic and scope of the written project must be approved by the final thesis committee, which is composed of three graduate faculty members. A proposal defense and a final oral defense of the project is required.

SOCI 5398. THESIS. 3 Hours.**SOCI 5698. THESIS. 6 Hours.**

Substantial original empirical or theoretical research project on a sociological topic of individual interest. The topic and scope of the written project must be approved by the final thesis committee, which is composed of three graduate faculty members. A proposal defense and a final oral defense of the project is required.

Spanish (SPAN)

COURSES

SPAN 1441. BEGINNING SPANISH I. 4 Hours. (TCCN = SPAN 1411)

Beginning study of Spanish language with emphasis on speaking, listening, reading, and writing. No prerequisites. Native or heritage speakers of Spanish may not take this course.

SPAN 1442. BEGINNING SPANISH II. 4 Hours. (TCCN = SPAN 1412)

Continuation of beginning Spanish. Prerequisite: SPAN 1441 with a grade of C or better. Native or heritage speakers of Spanish may not take this course.

SPAN 1491. CONFERENCE COURSE. 4 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

SPAN 2300. SPANISH IN THE UNITED STATES. 3 Hours.

An overview of the historical, social, and cultural issues related to the use of Spanish in the United States alongside other languages, mainly English. Explores topics such as bilingualism, code-switching, Spanglish, and language maintenance vs. loss. Taught in English.

SPAN 2301. TOPICS IN SPANISH LITERATURE IN TRANSLATION. 3 Hours.

Study of the works of major authors and intellectual trends of a given period or periods. May be repeated for credit as topics or periods vary. SPAN 2301 may be taken to fulfill the foreign language literature requirement. Prerequisite: ENGL 1301 and ENGL 1302.

SPAN 2310. HISPANIC CULTURE IN THE WORLD. 3 Hours.

An overview of the cultures of the Spanish-speaking world in a global context, examining cultural products such as food, art, music, popular culture, literature, and/or film. Taught in English.

SPAN 2313. INTERMEDIATE SPANISH I. 3 Hours. (TCCN = SPAN 2311)

Intermediate study of Spanish language with emphasis on speaking, listening, reading, and writing. Prerequisite: SPAN 1442 with a grade of C or better. Native or heritage speakers of Spanish may not take this course.

SPAN 2314. INTERMEDIATE SPANISH II. 3 Hours. (TCCN = SPAN 2312)

Continuation of intermediate Spanish. Prerequisite: SPAN 2313 with a grade of C or better. Native or heritage speakers of Spanish may not take this course.

SPAN 2315. INTERM SPAN HERITAGE SPEAKERS. 3 Hours. (TCCN = SPAN 2315)

This course focuses on the development of reading, writing, speaking and listening skills in Spanish, as well as an understanding of Hispanic cultures and issues of identity of heritage speakers in the United States. This course is intended for heritage speakers of Spanish and is the equivalent of SPAN 2314. This course satisfies the University of Texas at Arlington core curriculum requirement in language, philosophy and culture. Prerequisite: SPAN 2313 with a Grade of C or better or the equivalent, or consent of the department.

SPAN 2391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. Prerequisite: Permission of the instructor.

SPAN 3302. HISPANIC LITERATURE IN TRANSLATION. 3 Hours.

The works of major authors and intellectual trends of a given period. May be repeated for credit as topics or periods vary. SPAN 3302 cannot be applied toward the B.A. in Spanish or toward a Spanish minor, but may be taken to fulfill the foreign language literature requirement. Prerequisite: 2314 of a Modern or Classical language and six hours of English.

SPAN 3303. ADVANCED SPANISH CONVERSATION. 3 Hours.

Practice in oral expression with an emphasis on vocabulary building and grammar review. Of special interest to students who wish to improve their skills in pronunciation, comprehension, and oral expression. Credit will not be granted to native or heritage speakers of Spanish. Prerequisite: SPAN 2314 with a grade of C or better.

SPAN 3304. LANGUAGE IN MEXICO. 3 Hours.

An analysis of language in Mexico. Topics may include language variation, language and society, languages in contact, indigenous languages, or the history of Spanish in Mexico. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3305. ADVANCED SPANISH FOR HERITAGE SPEAKERS. 3 Hours.

A detailed study of Spanish grammar for heritage speakers. Capitalizes upon students' existing language skills, expands their knowledge base, and develops their ability to read, write, and communicate more effectively. Special attention is given to regional and dialectal differences. Prerequisite: SPAN 2315, or the equivalent, with a grade of C or better.

SPAN 3308. SPANISH FOR HEALTH AND HUMAN SERVICES. 3 Hours.

Practice in Spanish-language skills needed in the fields of healthcare, social work, and other human services. Emphasis on specialized vocabulary building, grammar, role play, and an understanding of Hispanic/Latino culture. For students interested in working with Spanish-speaking clients in nursing/medicine, translation/interpreting, social work, or mental health settings. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better or consent of instructor.

SPAN 3309. SPANISH FOR THE PROFESSIONS. 3 Hours.

Practice in Spanish-language skills needed in the professional fields in order to communicate with Spanish-speaking individuals. Emphasis on specialized vocabulary building, role play, and an understanding of Hispanic culture. Topics may include Spanish for law enforcement, social services, education, medicine, business, and communications. Prerequisite: SPAN 2314 or SPAN 2315, or the equivalent, with a grade of C or better.

SPAN 3310. SPANISH LOCALIZATION AND TRANSLATION I. 3 Hours.

Introduction to linguistic and cultural issues in the translation of Spanish language texts. Students will explore current technologies used in various real-world localization and translation contexts and how to adapt texts, products, and services to the locale for which they are intended. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 2314 or SPAN 2315 or the equivalent with a grade of B or better.

SPAN 3311. SPANISH CULTURE AND CIVILIZATION. 3 Hours.

Spanish history with emphasis on cultural, intellectual, and artistic trends and existing social institutions. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3312. LATIN AMERICAN CULTURE AND CIVILIZATION. 3 Hours.

An interdisciplinary introduction to Latin American society, history and culture. Offered as MAS 3312 and SPAN 3312; credit will be granted for either MAS or SPAN. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3313. TOPICS IN HISPANIC LANGUAGE, LITERATURE & CULTURE. 3 Hours.

Topics may include Peninsular or Latin American film, music, radio, politics, human rights movements, literature, language or Hispanic linguistics. May be repeated as the topic changes. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3314. ADVANCED SPANISH GRAMMAR. 3 Hours.

A detailed study of Spanish grammar for non-native speakers. Credit will not be granted to native or heritage speakers of Spanish. Prerequisite: SPAN 2314 with a grade of C or better.

SPAN 3315. SPANISH COMPOSITION. 3 Hours.

Practice in writing and original composition in Spanish, including the study of a variety of texts. Of special interest to students who wish to improve their reading comprehension and their writing skills. Prerequisite: SPAN 3305 or SPAN 3314, with grade C or better.

SPAN 3316. SPANISH LANGUAGE STUDY. 3 Hours.

An overview of the Spanish language as a system. Topics include sounds and spelling, language structure, word meanings, language functions, and varieties of Spanish. Prerequisite: SPAN 3305 or SPAN 3314, with a grade of C or better.

SPAN 3317. MEXICAN CULTURE AND CIVILIZATION. 3 Hours.

An examination of Mexican society, history, and culture with emphasis on intellectual and artistic trends. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3318. MEXICAN POPULAR CULTURE. 3 Hours.

An interdisciplinary examination of Mexican popular culture. Topics include: Mexican popular literature, film, comics, television, music, mass media, and the internet. Prerequisite: SPAN 2314 or SPAN 2315 with a grade of C or better.

SPAN 3320. INTRODUCTION TO HISPANIC LITERATURE AND CULTURE. 3 Hours.

An introduction to the tools of literary and cultural criticism as well as Spanish and Latin American literary history. Study of representative literary texts with the object of developing students' understanding of historical change and cultural crosscurrents. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 3321. SPANISH LOCALIZATION AND TRANSLATION II. 3 Hours.

Continued study of linguistic and cultural issues in the translation of Spanish and English language texts. Systematic development of advanced skills in localization and computer-aided translation tools. Students will build and train machine translation engines and explore text analytics in modern research and the enterprise. Prepares localization and translation specialists for real-world careers in the language-services industry of the 21st Century. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 3310 with a grade of B or better.

SPAN 3340. INTRODUCTION TO TRANSLATION. 3 Hours.

This course is an introduction to the theory, methods and practice of English to Spanish translation and Spanish to English translation. The student will learn how to address translation problems related to culture and language as well as the fundamentals of translating general material from different fields such as journalism, advertisement, tourism, gastronomy, health, business, etc. The student will also acquire basic knowledge of translation theory. SPAN 3340 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3315 with grade of B or better.

SPAN 3341. INTRODUCTION TO INTERPRETING. 3 Hours.

Introduction to the theory, methods and practice of interpreting. The student will become familiar with community interpreting (interpreting in school, medical and legal settings) and interpreting theory. The student will begin to interpret in the simultaneous and consecutive (bilateral) modes. The student will also learn about sight translation. Non-native/heritage speakers are also encouraged to take SPAN 3303 prior to enrolling in SPAN 3341. SPAN 3341 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of B or better.

SPAN 3345. INTRODUCTION TO COMPUTER-ASSISTED TRANSLATION. 3 Hours.

Introduction to computer-assisted translation (CAT), machine translation (MT), translation memory (TM) and terminology management tools in modern translation and localization workflows. Prepares students for real-world careers in the language services industry. For students enrolled in Localization and Translation/Interpreting programs only. Exclusively for students pursuing a minor in Localization and Translation-Spanish. SPAN 3310 is strongly recommended before SPAN 3345.

SPAN 3346. BUSINESS OF LOCALIZATION AND TRANSLATION. 3 Hours.

This course examines the business of localization with an emphasis on translation relevance, speed, and quality. This course will address the art of machine translation as well as the areas of cost and metrics. Students will undertake two real-world case studies and will end the course with a final project and/or exam addressing the management of translations in a major industry. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 3310.

SPAN 3347. LANGUAGE SERVICES INDUSTRY. 3 Hours.

This course will focus on the language services industry and language services for the modern enterprise, including website globalization, transcreation, video localization, multilingual Search Engine Optimization (SEO), International testing and machine translation. It will also provide an overview of industry best practices for tools that automate and streamline localization, translation, and global content creation and use. Exclusively for students pursuing a minor in Localization and Translation-Spanish. Prerequisite: SPAN 3310 or SPAN 3321.

SPAN 3391. CONFERENCE COURSE. 3 Hours.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of Instructor.

SPAN 3393. SPANISH INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing, outside readings, reflection papers, and formal presentations. Prerequisite: Permission of Instructor.

SPAN 4191. CONFERENCE COURSE. 1 Hour.

Independent study; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: Permission of the instructor.

SPAN 4310. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE TO THE EIGHTEENTH CENTURY. 3 Hours.

Topics may include: Medieval Spanish literature and culture, Golden Age Spanish literature and culture, or any particular movement, genre, work or author prior to the eighteenth century. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4311. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE, EIGHTEENTH CENTURY TO THE PRESENT. 3 Hours.

Topics may include: Neoclassical peninsular Spanish literature and culture, peninsular Spanish literature and culture of the Romantic period, Realist or Naturalist Spanish literature and culture, peninsular Spanish literature and culture since 1900, as well as any particular movement, genre, work or author from the eighteenth century to the present. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4312. INTERCULTURAL COMPETENCE FOR GLOBAL COMMUNICATION. 3 Hours.

A study of the cultural differences between the U.S. and the Hispanic world with a focus on the development of intercultural competence: verbal and non-verbal communication, interpersonal skills, effective management strategies, and professional etiquette in multicultural settings. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4313. TOPICS IN HISPANIC CULTURE. 3 Hours.

Among the topics are Spanish or Latin American music, television, radio, film, and literature as culture. May be repeated for credit as topic changes. Prerequisite: SPAN 3315 with a grade of C or better. Offered as MAS 4313 and SPAN 4313; credit will be given for MAS 4313 or SPAN 4313 but not both in a given semester.

SPAN 4314. TOPICS IN LATIN-AMERICAN LITERATURE AND CULTURE TO MODERNISM. 3 Hours.

Topics may include: Colonial Latin-American literature and culture, pre-modern Latin-American literature and culture, Latin-American literature and culture of the Enlightenment, or any particular movement, genre, work or author prior to Modernism. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4315. TOPICS IN CONTEMPORARY LATIN-AMERICAN LITERATURE AND CULTURE, MODERNISM TO THE PRESENT. 3 Hours.

Topics may include: Latin-American literature and culture of Modernism, modern Latin-American literature and culture, or any particular movement, genre, work or author from Modernism to the present. May be repeated for credit when content changes. Offered as MAS 4315 and SPAN 4315; credit will be given for MAS 4315 or SPAN 4315 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4316. ADVANCED SPANISH LANGUAGE STUDY. 3 Hours.

Study of the structure of the Spanish language including phonology, morphology, and syntax, as well as historical, regional, and social variation. Prerequisite: SPAN 3314 or SPAN 3305 with a grade of C or better.

SPAN 4317. CHICANO LITERATURE. 3 Hours.

Mexican-American literature, with special attention to its social, cultural, and linguistic background. Offered as MAS 4317 and SPAN 4317; credit will be given for MAS 4317 or SPAN 4317 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4318. MEXICAN LITERATURE. 3 Hours.

Studies in Mexican fiction, poetry, drama, and literary essay. Offered as MAS 4318 and SPAN 4318; credit will be given for MAS 4318 or SPAN 4318 but not both in a given semester. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4320. TOPICS IN SPANISH LANGUAGE, WRITING AND THEORY. 3 Hours.

Review of advanced research methods and topics in Spanish, Latino and Latin American literature, culture and linguistics. Topics may include: literary and cultural theory in relation to Hispanic literature and culture, research trends, and methods in Spanish linguistics. Students conduct original research or writing projects in relation to the course topic. May be repeated for credit as topic changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Considers women as characters in and writers of Hispanic literature. Includes the analysis of themes, language, and how the writings of women often give voice to lesser known aspects of culture. Offered as SPAN 4327, MAS 4327, and WOMS 4327; credit will be granted only once. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4330. TOPICS IN SPANISH LINGUISTICS. 3 Hours.

Topics may include: Spanish phonetics and phonology, morphology, syntax, semantics, lexicography, history of the Spanish language, Old Spanish, Spanish sociolinguistics, as well as the application of any theoretical approach to the study of the Spanish language, excluding the study of either peninsular or American Spanish dialectology. May be repeated for credit when content changes. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of C or better.

SPAN 4332. TOPICS IN SPANISH DIALECTOLOGY. 3 Hours.

Topics may include: Modern peninsular Spanish dialectology, modern Spanish-American dialectology, Old Spanish dialectology, early American Spanish dialectology, as well as a detailed study of any one dialect or regional dialect of Spanish from either a synchronic or a diachronic perspective. Emphasis may be given to phonetics, phonology, morphology, syntax, semantics, or lexicon, as applied to the study of peninsular or American Spanish dialectology. May be repeated for credit when content changes. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of C or better.

SPAN 4334. CONTEMPORARY HISPANIC CULTURE. 3 Hours.

An introduction to contemporary Spanish and/or Latin American culture, with special emphasis on globalization and current events affecting the Spanish-speaking world. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4335. BUSINESS SPANISH. 3 Hours.

The study of business terminology and skills needed for writing business letters, conducting telephone conversations, engaging in commercial transactions, and understanding international procedures. Operational and strategic issues involved in interaction with Hispanic firms and markets; international trade; competitive, vendor-customer, and collaborative relations. Prerequisite: SPAN 3315 with a grade of C or better. Exclusively for International Business Spanish students, or students pursuing a Certificate in Spanish for the Professions.

SPAN 4336. TOPICS IN SPANISH FOR THE PROFESSIONS. 3 Hours.

Development of Spanish-language skills needed to work in a specific profession. Emphasis on reading and formal communication, including technical papers, letters, reports, proposals, and presentations. Topics may include Spanish for legal, medical, educational, or communications fields. May be repeated for credit when content changes. Prerequisite: SPAN 3315 with a grade of C or better.

SPAN 4339. THE ACQUISITION OF SPANISH. 3 Hours.

Topics, methods, and techniques specific to the teaching of the Spanish language. Prerequisite: SPAN 3305 or SPAN 3314 with a grade of C or better.

SPAN 4341. BUSINESS AND LEGAL TRANSLATION. 3 Hours.

An advanced course in translation with a focus on business and legal texts. Students deepen their knowledge of translation theory and are trained to build and consolidate their skills in specialized translation. May be taken concurrently with SPAN 4342. SPAN 4341 cannot be applied toward the B.A. in Spanish. Prerequisite: SPAN 3340 with a grade of C or better.

SPAN 4342. TRANSLATION IN HEALTHCARE SETTINGS. 3 Hours.

An advanced course in translation with a focus on healthcare translation. Particular attention will be paid to healthcare terminology in English and Spanish, text types, and cultural elements. Students deepen their knowledge of translation theory and are trained to build and consolidate their skills in specialized translation. May be taken concurrently with SPAN 4341. SPAN 4342 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3340 with a grade of C or better.

SPAN 4343. INTERPRETING IN HEALTHCARE SETTINGS. 3 Hours.

A study of different types of interpretation. Healthcare terminology in English and Spanish will be addressed with a special emphasis on the diverse roles of healthcare interpreters as well as various locations where they are needed, such as hospital clinics, doctors' offices, and hearings that deal with medical issues. Ethical standards of practice in healthcare interpreting will be examined. SPAN 4343 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3341 with a grade of B or better.

SPAN 4344. INTERPRETING IN LEGAL SETTINGS. 3 Hours.

A study of different types of interpretation. Legal terminology in English and Spanish will be addressed with special emphasis on the diverse roles of legal interpreters as well as various locations where they are needed, such as courtrooms, lawyer's offices, and state, federal, or local law-enforcement facilities. Ethical standards of practice in legal interpreting will be examined. SPAN 4344 cannot be applied toward the B.A. in Spanish for Global Competence. Prerequisite: SPAN 3341 with a grade of B or better.

SPAN 4391. CONFERENCE COURSE. 3 Hours.

Independent study in the preparation of a paper on a research topic; consultation with instructor on a regular basis. May be repeated for credit. Prerequisite: two 3000 level courses and permission of the instructor.

SPAN 4392. SPANISH TRANSLATION AND INTERPRETING INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Spanish, outside readings, and formal presentations. Prerequisite: Two Spanish 3000 level courses and permission of the instructor.

SPAN 4393. SPANISH INTERNSHIP. 3 Hours.

A combination of field-related experience in the business or service sector with an academic component. Coursework may include journal writing in Spanish, outside readings, and formal presentations. Prerequisite: Two SPAN 3000 level courses and permission of the instructor.

SPAN 4394. HONORS THESIS / SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or a project under the direction of a faculty member in the major department. May not be repeated for credit. Prerequisite: two 3000 level courses and permission of the instructor.

SPAN 5101. TEACHING PRACTICUM I. 1 Hour.

Required of all teaching assistants in Spanish in their first semester. May not be counted toward a master's degree. Graded P/F/R.

SPAN 5102. TEACHING PRACTICUM II. 1 Hour.

Required of all teaching assistants in Spanish in their second semester. May not be counted toward a master's degree. Graded P/F/R.

SPAN 5190. CONFERENCE COURSE IN SPANISH LANGUAGE AND LITERATURE. 1 Hour.

Graded P/F/R.

SPAN 5300. HISTORY OF THE SPANISH LANGUAGE. 3 Hours.

Study in topics related to the development of the Spanish language, from its earliest forms to the present.

SPAN 5302. SPANISH DIALECTOLOGY. 3 Hours.

Phonological, grammatical, and lexical features of Spanish dialects worldwide.

SPAN 5303. APPLIED SPANISH LINGUISTICS. 3 Hours.

Pedagogy, pronunciation and orthography, morphology, syntax, semantics, and culture.

SPAN 5310. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE TO THE EIGHTEENTH CENTURY. 3 Hours.

Topics may include: Medieval Spanish literature and culture, Golden Age Spanish literature and culture, or any particular movement, genre, work or author prior to the eighteenth century. May be repeated for credit when content changes.

SPAN 5311. TOPICS IN PENINSULAR SPANISH LITERATURE AND CULTURE, EIGHTEENTH CENTURY TO THE PRESENT. 3 Hours.

Topics may include: Neoclassic peninsular Spanish literature and culture, peninsular Spanish literature and culture of the Romantic period, Realist or Naturalist Spanish literature and culture, peninsular Spanish literature and culture since 1900, as well as any particular movement, genre, work or author from the eighteenth century to the present. May be repeated for credit when content changes.

SPAN 5313. TOPICS IN HISPANIC LITERATURE AND CULTURE. 3 Hours.

Special studies in areas not ordinarily covered by regular course offerings. Different topics may be repeated for credit.

SPAN 5314. TOPICS IN SPANISH-AMERICAN LITERATURE AND CULTURE TO MODERNISM. 3 Hours.

Topics may include: Colonial Spanish-American literature and culture, pre-modern Spanish-American literature and culture, Spanish-American literature and culture of the Enlightenment, or any particular movement, genre, work or author prior to Modernism. May be repeated for credit when content changes.

SPAN 5315. TOPICS IN CONTEMPORARY SPANISH-AMERICAN LITERATURE AND CULTURE, MODERNISM TO THE PRESENT. 3 Hours.

Topics may include: Spanish-American literature and culture of Modernism, modern Spanish-American literature and culture, or any particular movement, genre, work or author from Modernism to the present. May be repeated for credit when content changes.

SPAN 5317. U.S. LATINO LITERATURE AND CULTURE. 3 Hours.

Readings of poetry, theater, and prose in relation to the specific socio-historical and political context of U.S. Latino life. Charts changing concepts of cultural identity and the evolution of cultural coding in texts written after 1960.

SPAN 5318. MEXICAN LITERATURE AND CULTURE. 3 Hours.

Readings in all Mexican literary genres from various critical perspectives. Particular attention given to the novel, poetry, and essay of the 20th Century and to interrelationships between text and culture.

SPAN 5320. TOPICS IN SPANISH LINGUISTICS. 3 Hours.

Special studies in linguistics not ordinarily covered by regular course offerings. May be repeated for credit when content changes.

SPAN 5327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Readings of literary texts by women writers from medieval Spain to contemporary Spanish America. Attention to recurrent motifs as well as to the literary expression of historical and cultural transformation.

SPAN 5330. ADVANCED STUDIES IN SPANISH LINGUISTICS I. 3 Hours.

Topics may include: sociolinguistics, bilingualism, modern Spanish dialectology, as well as a detailed study on any one dialect or regional dialect of contemporary Spanish. May be repeated for credit when content changes.

SPAN 5332. ADVANCED STUDIES IN SPANISH LINGUISTICS II. 3 Hours.

Topics may include: Old Spanish, Spanish philology, Spanish text linguistics, and Old Spanish dialectology, as well as a detailed study of any one dialect or regional dialect of Spanish. May be repeated for credit when content changes.

SPAN 5366. SPANISH FOR SCHOOL ADMINISTRATORS AND TEACHERS. 3 Hours.

Development of Spanish proficiency for teachers and administrators through an immersion approach. Emphasis on concepts and terminology related to education, program administration, community involvement and communication with Spanish-speaking parents. This course can be repeated.

SPAN 5391. CONFERENCE COURSE IN SPANISH LINGUISTICS AND LITERATURE. 3 Hours.

Graded R.

SPAN 5393. GRADUATE SPANISH INTERNSHIP. 3 Hours.

Graduate internship with the student performing duties within the field of Spanish. A combination of field-related experience at the graduate level with an academic component. Students are required to submit an approved academic project related to the work performed. May be repeated with approval of Graduate Advisor.

SPAN 5398. THESIS. 3 Hours.**SPAN 5698. THESIS. 6 Hours.****SPAN 5998. THESIS. 9 Hours.**

Special Education (SPED)

COURSES

SPED 3301. CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES. 3 Hours.

This course focuses on the characteristics of students with mild disabilities and their (a) related academic and social outcomes, and (b) implications for assessment and intervention. The course is specifically designed for students who seek certification in teaching children with mild disabilities, to include children who are defined by Federal and state regulations as experiencing learning disabilities (LD), intellectual disability (ID), emotional and/or behavioral disabilities (EBD), and attention deficit disorders/hyperactivity disorders (ADD/ADHD).

SPED 3302. APPLIED BEHAVIOR ANALYSIS FOR TEACHERS. 3 Hours.

This course is designed to present students with applied behavior analysis strategies and tactics to ensure they are able to make effective instructional decisions and to evaluate the results of those decisions. Procedures covered in class include those to accelerate, decelerate, and maintain student academic and social behavior. Application of learning theory, measurement procedures, and verification of functional relationships will be emphasized. Knowledge of current significant research in Applied Behavior Analysis will be facilitated through research readings.

SPED 4301. STRATEGIES FOR TEACHING INDIVIDUALS WITH HIGH INCIDENCE DISABILITIES: READING AND WRITING. 3 Hours.

This course is designed to prepare future special educators to plan and provide content area instruction to elementary and secondary students with mild disabilities in reading and writing. Course content will include information on assessment, curriculum and instruction, and the professional role as a teacher of students with mild disabilities.

SPED 4302. COLLABORATIVE PRACTICES AND TRANSITION PLANNING IN SPECIAL EDUCATION. 3 Hours.

The purpose of this course is to learn about the concepts, tools, and strategies considered essential for effective collaboration and teamwork. Methods of collaborating and consulting with other professionals in the field of education and family members of students with disabilities will be discussed. Transition planning and collaborative interagency issues related to transition will be examined. Context, process, and content of collaborative school consultation will be presented.

SPED 4303. ADVANCED CONTENT AREA STRATEGIES FOR TEACHING INDIVIDUALS WITH HIGH INCIDENCE DISABILITIES. 3 Hours.

This course is designed to prepare future special educators to plan and provide content area instruction to elementary and secondary students with mild disabilities across the content areas. Course content will include information on assessment, curriculum and instruction, and the professional role as a teacher of students with mild disabilities.

SPED 4304. ASSISTIVE TECHNOLOGY. 3 Hours.

This course will address the use of technology in special education, including microcomputers, interactive video, auditory and visual enhancement, and other adaptive devices with individuals experiencing disabilities including learning disabilities, intellectual impairments, sensory and physical impairments. Current developments and research findings concerning rehabilitative, adaptive, and learning technologies applied to needs of individuals with learning, intellectual, physical, or sensory disabilities will also be addressed. Topics include selection and evaluation, instructional and administrative applications, and personal productivity tools.

SPED 4307. SPECIAL EDUCATION LEGAL AND POLICY ISSUES. 3 Hours.

This introductory course will discuss historical legal foundations of special education and the present legal and policy challenges facing the field. Course content will include information on the Individuals with Disabilities Education Act, the Americans with Disabilities Act, and Section 504 of the Vocational Rehabilitation Act. Students will also understand how important rules from the court system have interpreted laws governing special education and how current policies and issues could impact special education. At the undergraduate level, special focus will be given to applied aspects of the law (e.g., Individualized Education Plans; ARD meetings, etc.).

SPED 4601. PRACTICUM IN SPECIAL EDUCATION. 6 Hours.

This course is designed to provide practical opportunities for the pre-service candidate to develop skills in assessment and instruction of individuals with severe disabilities. In addition to providing direct services, an important component of the practicum is to collaborate with both classroom and school staff regarding all aspects of service provision. Finally, general professional protocol is emphasized in this course including dependability, attitude, and communication skills (both written and spoken).

SPED 4687. CLINICAL TEACHING IN EC-6 AND SPECIAL EDUCATION. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theory to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice. Prerequisite: Completion of program coursework, program approval.

SPED 5301. CHARACTERISTICS OF INDIVIDUALS WITH DISABILITIES. 3 Hours.

This introductory course focuses on the characteristics of students with mild disabilities and their (a) related academic and social outcomes, and (b) implications for assessment and intervention. The course is specifically designed for students who seek certification in teaching children with mild disabilities, to include children who are defined by Federal and state regulations as experiencing learning disabilities (LD), intellectual disability (ID), emotional and/or behavioral disabilities (EBD), and attention deficit disorders/hyperactivity disorders (ADD/ADHD). Graduate level students' understanding will be assessed and measured through additional readings and assignments designed to encourage deeper thinking regarding classroom level interventions for students with disabilities.

SPED 5302. APPLIED BEHAVIOR ANALYSIS FOR TEACHERS. 3 Hours.

This course is designed to present students with applied behavior analysis strategies and tactics to ensure they are able to make effective instructional decisions and to evaluate the results of those decisions. Procedures covered in class include those to accelerate, decelerate, and maintain student academic and social behavior. Application of learning theory, measurement procedures, and verification of functional relationships will be emphasized. Graduate level students' understanding will be assessed and measured through the direct application of concepts in the field and a written functional behavioral assessment inclusive of a behavior intervention plan.

SPED 5303. COLLABORATIVE PRACTICES AND TRANSITION PLANNING IN SPECIAL EDUCATION. 3 Hours.

This course focuses on the concepts, tools, and strategies considered essential for effective collaboration and teamwork. Methods of collaborating and consulting with other professionals in the field of education and family members of students with disabilities will be discussed. Transition planning and collaborative interagency issues related to transition will be examined. Graduate students will facilitate a mock ARD and transition planning meeting.

SPED 5304. INSTRUCTIONAL STRATEGIES FOR STUDENTS WITH DISABILITIES. 3 Hours.

This course is designed to prepare future special educators to plan and provide specialized instruction to elementary and secondary students with mild disabilities in reading, writing, mathematics, and across the content areas. Course content will include information on assessment, curriculum and instruction, and the professional role as a teacher of students with mild disabilities. Graduate students will demonstrate mastery of evidence-based practices for students with disabilities by teaching a lesson.

SPED 5305. ADVANCED LEARNING DISABILITIES. 3 Hours.

This course is designed to teach the definitions, characteristics, theories, and etiologies of students with specific learning disabilities. Students will analyze definitions of specific learning disabilities from the Individuals with Disabilities Education Act and professional learning disability organizations. Students will also analyze research describing the nature and characteristics of learning disabilities and how to best serve these students in an educational setting.

SPED 5306. ASSISTIVE TECHNOLOGY. 3 Hours.

This course will address the use of technology in special education, including microcomputers, interactive video, auditory and visual enhancement, and other adaptive devices with individuals experiencing disabilities including learning disabilities, intellectual impairments, sensory and physical impairments. Students will examine current developments and conduct research concerning rehabilitative, adaptive, and learning technologies applied to needs of individuals with disabilities.

SPED 5307. SPECIAL EDUCATION LEGAL AND POLICY ISSUES. 3 Hours.

This introductory course will discuss historical legal foundations of special education and the present legal and policy challenges facing the field. Course content will include information on the Individuals with Disabilities Education Act, the Americans with Disabilities Act, and Section 504 of the Vocational Rehabilitation Act. Students will also understand how important rules from the court system have interpreted laws governing special education and how current policies and issues could impact special education. At the undergraduate level, special focus will be given to applied aspects of the law (e.g., Individualized Education Plans; ARD meetings, etc.).

SPED 5308. ADVANCED INTELLECTUAL DISABILITIES. 3 Hours.

This course is designed to teach the definitions, characteristics, theories, and etiologies of students with intellectual disabilities. Students will analyze definitions of intellectual disabilities from the Individuals with Disabilities Education Act and professional intellectual disability organizations. Students will also analyze research describing the nature and characteristics of intellectual disabilities and how to best serve these students in an educational setting.

SPED 5309. THE NEUROSCIENCE OF TYPICAL & ATYPICAL LANGUAGE DEVELOPMENT. 3 Hours.

This course will examine the many levels of language including phonetics, phonology, semantics, syntax and pragmatics from both functional and neuroscientific perspectives. This will be closely tied to language acquisition and early language development. The focus on the pre-reading years will provide a solid basis for further study of literacy-related skills and overall learning. Sub-skills and precursors of reading will be examined from a neurological point of view and applied to researching reading difficulties as well as the teaching and learning in the classroom. Course offered as EDUC 5362 and SPED 5309; co-list credit will be granted only as one.

SPED 5310. ADVANCED BEHAVIORAL DISORDERS. 3 Hours.

This course will cover advanced principles, concepts, and practices related to educating students with Emotional/Behavioral Disorders and other IDEA disabilities categories with behaviorally related characteristics. Emphasis will be on school-based services, including advanced instructional and behavioral interventions for improving academic, social, and behavioral outcomes, as well as mental health and juvenile justice services.

SPED 5311. CLASSROOM ASSESSMENT OF STUDENTS WITH DISABILITIES. 3 Hours.

This course is designed to equip teachers with practical assessment strategies for students with a wide range of disabilities. Course content will include standardized norm-referenced assessments, curriculum-based assessment, curriculum-based measurement, and other progress monitoring strategies. Students will create various assessment tools and plans to collect meaningful instructional data from students with disabilities.

SPED 5312. SPECIAL EDUCATION FIELD EXPERIENCE. 3 Hours.

This course is designed to engage students in multiple field-based activities such as, direct observations, functional-behavior assessments, data-based instruction and decision making, and research as part of an independent field experience. At the conclusion of the field experience, students will be assessed on a written product and presentation (e.g., portfolio, research poster). Prerequisite: All other courses in program sequence; requires approval.

SPED 5313. SINGLE SUBJECT RESEARCH. 3 Hours.

This course is designed to provide students an introductory overview of single subject research methodology. Course content will include quality indicators of single subject research that can lead to identifying effective interventions. Students will design and implement a single-subject experiment.

SPED 5314. CURRENT TOPICS IN SPECIAL EDUCATION AND RESEARCH. 3 Hours.

This course is designed to discuss current events in special education with a focus on both practice and research. Students will think critically about intended and unintended consequences of various policy and practice issues. Specific topics for the course will be influenced by current policy concerns, problems of practice, and student interests.

SPED 5315. MULTI-TIERED SYSTEM OF SUPPORT. 3 Hours.

This course will focus on multi-tiered system of support frameworks for integrating instruction, evidence-based interventions, and assessments to meet the academic and behavior needs of all students. Specific frameworks such as, response to intervention and positive behavioral interventions and supports will be emphasized as systems for prevention of disabilities and identification of students with learning disabilities and emotional and behavioral disorders.

SPED 5316. ADVANCED APPLIED BEHAVIORAL ANALYSIS. 3 Hours.

This course is designed to present graduate students in special education with applied behavior analysis strategies and tactics to ensure they are able to make effective instructional decisions and to evaluate the results of those decisions in accordance with the master's degree program and initial and advanced licensure standards. This course is intended for students with foundational knowledge of Applied Behavior Analysis (ABA). Students will be required to plan, implement, and evaluate an applied behavior analysis project with a student in an educational setting.

SPED 5317. AUTISM SPECTRUM DISORDERS. 3 Hours.

This course focuses on the characteristics and issues encountered by individuals who experience autism spectrum disorders. Students will analyze definitions of ASD provided by IDEA, DSM-V, and professional organizations. Emphasis will be on characteristics, school-based and post-secondary supports, Applied Behavior Analysis (ABA), and assistive technology.

SPED 5318. MEDICAL AND PHYSICAL MANAGEMENT OF STUDENTS WITH MULTIPLE DISABILITIES. 3 Hours.

This course is designed to provide students with an examination of how the medical and physical needs of students affect a teacher's design of instruction. The medical and physical aspects of a wide variety of orthopedic, musculo-skeletal and sensory disorders, as well as the educational models of intervention and service delivery for individuals with multiple disabilities will also be discussed.

SPED 5319. METHODS OF TEACHING STUDENTS WITH MODERATE/SEVERE DISABILITIES AND AUTISM. 3 Hours.

This course is designed to prepare future special educators to plan and provide specialized instruction to elementary and secondary students with moderate/severe disabilities and Autism Spectrum Disorders. Course content will include information on assessment and evidence-based instructional practices for academic, functional, adaptive, and behavioral skills. Students will demonstrate mastery of evidence-based practices for students with moderate/severe disabilities and Autism Spectrum Disorders and receive feedback on the implementation of these practices.

SPED 5320. CHARACTERISTICS OF STUDENTS WITH SEVERE DISABILITIES. 3 Hours.

This course focuses on the characteristics and issues encountered by individuals who experience severe and profound levels of intellectual disabilities. Characteristics addressed include learning, behavioral, social-emotional, and communicative abilities. Special emphasis is placed on implementing evidence-based practices and empirically supported treatments.

SPED 5601. CLINICAL TEACHING. 6 Hours.

Supervised and directed clinical teaching in student's targeted area of certification. The student will be assigned full time for the Independent School District calendar. Required seminars provide students with theory to integrate and apply during clinical teaching. Students will apply theory and research to practice through daily teaching and interaction with students, major assignments, and data analysis of practice.

Special Topics (SPEC)

COURSES

SPEC 3300. TOPICS COURSE. 3 Hours.

SPEC 3301. TOPICS COURSE. 3 Hours.

SPEC 4300. CROSS REG-DEC. 3 Hours.

SPEC 4301. TOPICS COURSE. 3 Hours.

SPEC 5300. CROSSREG-UCD. 3 Hours.

SPEC 5301. TOPICS COURSE. 3 Hours.

SPEC 5306. ASSISTIVE TECHNOLOGY. 3 Hours.

This course will address the use of technology in special education, including microcomputers, interactive video, auditory and visual enhancement, and other adaptive devices with individuals experiencing disabilities including learning disabilities, intellectual impairments, sensory and physical impairments. Students will examine current developments and conduct research concerning rehabilitative, adaptive, and learning technologies applied to needs of individuals with disabilities.

Statistics (STATS)

COURSES

STATS 1308. ELEMENTARY STATISTICAL ANALYSIS. 3 Hours.

Topics may include collection, analysis, presentation, and interpretation of data. Analysis includes descriptive statistics, probability, relationships between variables and graphs, elementary statistical models, hypothesis testing, inference, estimation, correlation, regression and confidence intervals. The use of mathematical software and calculators is required. See course syllabus for details.

STATS 3302. MULTIVARIATE STATISTICAL METHODS. 3 Hours.

Topics in multivariate data analysis with applications in various areas of interest, including multiple regression, analysis of experimental designs, covariate adjustment, non-linear regression and the use of standard multivariate statistical packages. Offered as MATH 3302 and STATS 3302; credit will be granted in only one department. Prerequisite: C or better in MATH 3313 or STATS 3313 or MATH 3316 or STATS 3316 or MATH 3351 or BIOL 3351 or consent of the instructor.

STATS 3313. INTRODUCTION TO PROBABILITY. 3 Hours.

Basic concepts in probability, random variables, probability distributions, functions of random variables, moment generating functions, central limit theorem and its role in statistics, joint probability functions and joint probability density functions, joint cumulative distribution functions, conditional and marginal probability distributions, covariance and correlation coefficients, transformation and order statistics. Offered as MATH 3313 and STATS 3313; credit will be granted in only one department. Prerequisite: C or better in MATH 2326, or student group.

STATS 3316. STATISTICAL INFERENCE. 3 Hours.

A comprehensive study of basic data analysis, focused on reasoning process of statistical investigations from asking question and collecting data to analyzing data and drawing inferences. Topics include exploratory data analysis, sampling, sampling distribution, estimation, hypothesis tests, regression, and ANOVA, with an emphasis on applications of these techniques using statistical software. Offered as MATH 3316 and STATS 3316; credit will be granted in only one department. Prerequisite: C or better in 6 hours from the following: MATH 1302, MATH 1308, MATH 1322, MATH 1323, MATH 1330, MATH 1331, MATH 1332, MATH 1421, MATH 1426, MATH 2425, MATH 2326, MATH 3300, MATH 3307, MATH 3314, MATH 3319, or MATH 3330; HONR-SC 1426, HONR-SC 2425, or student group.

STATS 4311. STOCHASTIC MODELS AND SIMULATION. 3 Hours.

A study of processes, whose outcomes are governed by chance, through a combination of lectures and computer lab sessions. Experiments include random number generation, coin tossing and other games of chance, random walks, Markov Chains, Poisson processes, birth-death processes, branching processes, and Brownian Motion. A foundation for modeling random phenomena in sciences, engineering and business. Prerequisite: C or better in MATH 2326 and knowledge of basic probability (MATH 3313/STATS 3313 or MATH 3351/BIOL 3351 or equivalent), or consent of instructor, or student group.

STATS 4313. MATHEMATICAL STATISTICS. 3 Hours.

A continuation of MATH 3313. Random sampling and sampling distributions, estimation of unknown parameters and main properties of estimators, confidence intervals for unknown parameters, testing of hypotheses. Prerequisite: C or better in MATH 3313 or STATS 3313.

STATS 5305. STATISTICAL METHODS. 3 Hours.

Topics include descriptive statistics, numeracy, and report writing; basic principles of experimental design and analysis; regression analysis; data analysis using the SAS package. Prerequisite: consent of the instructor.

STATS 5312. MATHEMATICAL STATISTICS I. 3 Hours.

Random variables and their expectations, some special distributions, moment generating functions, transformations of bivariate random variables, sampling distribution of statistics, Central Limit Theorem, confidence intervals, maximum likelihood estimation, introduction to hypothesis testing, maximum likelihood tests. Prerequisite: MATH 3335 or consent of instructor.

STATS 5313. MATHEMATICAL STATISTICS II. 3 Hours.

Multivariate distributions, consistency and limiting distributions, Rao-Cramer lower bound and efficiency, sufficiency and completeness, most powerful tests, uniformly most powerful tests, likelihood ratio test, the sequential probability ratio test, minimax and classification procedures. Prerequisite: MATH 5312/STATS 5312.

STATS 5314. EXPERIMENTAL DESIGN. 3 Hours.

This course covers the classical theory and methods of experimental design, including randomization, blocking, one-way and factorial treatment structures, confounding, statistical models, analysis of variance tables and multiple comparisons procedures. Prerequisite: MATH 5305/STATS 5305 or MATH 5355/STATS 5355 or permission of instructor.

STATS 5353. APPLIED LINEAR MODELS. 3 Hours.

The course covers, at an operational level, three topics: 1) the univariate linear model, including a self-contained review of the relevant distribution theory, basic inference methods, several parameterizations for experimental design and covariate-adjustment models and applications, and power calculation; 2) the multivariate linear model, including basic inference (e.g. the four forms of test criteria and simultaneous methods), applications to repeated measures experiments and power calculation; and 3) the univariate mixed model, including a discussion of the likelihood function and its maximization, approximate likelihood inference, and applications to complex experimental designs, missing data, unbalanced data, time series observations, variance component estimation, random effects estimation, power calculation and a comparison of the mixed model's capabilities relative to those of the classical multivariate model. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis) or equivalent.

STATS 5354. CATEGORICAL DATA ANALYSIS. 3 Hours.

This course covers classical methods for analyzing categorical data from a variety of response/factor structures (univariate or multivariate responses, with or without multivariate factors), based on several different statistical rationales (weighted least squares, maximum likelihood and randomization-based). Included are logistic regression, multiple logit analysis, mean scores analysis, observer agreement analysis, association measures, methods for complex experimental designs with categorical responses and Poisson regression. The classical log-linear model for the association structure of multivariate responses is briefly reviewed. Randomization-based inference (e.g. Mantel-Haenzel) is discussed as well. The necessary distribution theory (multinomial, asymptotics of weighted least squares and maximum likelihood) are discussed at an operational level. Knowledge of the SAS package is required. Prerequisite: MATH 5358/STATS 5358 (Regression Analysis).

STATS 5355. STATISTICAL THEORY FOR RESEARCH WORKERS. 3 Hours.

Designed for graduate students not majoring in mathematics. Topics include basic probability theory, distributions of random variables, point estimation, interval estimation, testing hypotheses, regression, and an introduction to analysis of variance. Graduate credit not given to math majors. Prerequisite: calculus MATH 1426/MATH 2425/MATH 2326 or permission of instructor.

STATS 5356. APPLIED MULTIVARIATE STATISTICAL ANALYSIS. 3 Hours.

Statistical analysis for data collected in several variables, topics including sampling from multivariate normal distribution, Hotelling's T^2 , multivariate analysis of variance, discriminant analysis, principal components, and factor analysis. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

STATS 5357. SAMPLE SURVEYS. 3 Hours.

A comprehensive account of sampling theory and methods, illustrations to show methodology and practice, simple random sampling, stratified random sample, ratio estimates, regression estimates, systematic sampling, cluster sampling, and nonsampling errors. Prerequisite: MATH 5312/STATS 5312 or consent of instructor.

STATS 5358. REGRESSION ANALYSIS. 3 Hours.

A comprehensive course including multiple linear regression, non-linear regression and logistic regression. Emphasis is on modeling, inference, diagnostics and application to real data sets. The course begins by developing a toolbox of methods via a sequence of guided homework assignments. It culminates with projects based on consulting-level data analysis problems involving stratification, covariate adjustment and messy data sets. Some knowledge of the SAS package is required. Prerequisites: Math 5312/STATS 5312 or Math 5305/STATS 5305 with a B or better or permission of the instructor.

STATS 5359. SURVIVAL ANALYSIS. 3 Hours.

This course covers analysis of lifetime data with applications in engineering and biomedical research. Topics may include survival function, hazard function, cumulative hazard function, parametric distributions to model lifetime data, censoring, Kaplan-Meier estimator, testing for survival times for two or more groups, Cox proportional hazards model (both fixed and time dependent covariate), parametric regression models, regression diagnostics, accelerated failure time models, sample size determination, extensive use of R statistical software. Prerequisites: MATH 5305/STATS 5305 or MATH 5312/STATS 5312 or permission of instructor.

STATS 6353. GENERALIZED LINEAR MODELS. 3 Hours.

This course covers modern methods for analyzing Bernoulli, multinomial and count data. It begins with a development of generalized linear model theory, including the exponential family, link function and maximum likelihood. Second is a discussion of the case of models for independent observations. Next is a discussion of models for repeated measures, based on quasi-likelihood methods. These include models (such as Markov chains) for categorical time series. Next is a treatment of models with random effects. Finally is a discussion of methods for handling missing data. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and preferably MATH 5313/STATS 5313. (Students without 5313 can still succeed but must deal with the slightly higher mathematical level of this course.).

STATS 6356. TIME SERIES ANALYSIS. 3 Hours.

This course covers classical methods of time series analysis, for both the time and frequency domains. For covariance stationary series, these include ARIMA modeling and spectral analysis. For nonstationary series, they include methods for detrending and filtering. Also included is a treatment of multivariate series, as well as a discussion of the Kalman filter state-space model. Knowledge of the SAS package is required. Prerequisites: MATH 5358/STATS 5358 (Regression Analysis) and MATH 5313/STATS 5313.

STATS 6357. NONPARAMETRIC STATISTICS. 3 Hours.

This is a survey of classical nonparametric methods for inference in standard observational settings (one-sample, two-sample, k-samples and the univariate linear model), and includes a development of U-statistics, rank statistics and their asymptotic distribution theory. The mathematical level is fairly high. Prerequisite: MATH 5313/STATS 5313.

Students Obtain Acad Readiness (SOAR)

COURSES

SOAR 0010. RDG SKILLS REVW. 0 Hours.

SOAR 0020. WRTG SKILLS REV. 0 Hours.

SOAR 0030. MATH SKILLS REV. 0 Hours.

SOAR 0040. ESOL WRITING. 0 Hours.

Substance Use Treatment (SUT)

COURSES

SUT 1231. PROFESSIONALISM IN SUBSTANCE USE TREATMENT. 2 Hours.

Equips students with skills and resources to prepare for academic and professional success in a substance use treatment career. Empowers diverse students to identify their individual needs, reflect on opportunities for growth, determine what resources and self-care strategies are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. This course is reserved exclusively for students planning to with a Bachelor of Science in Substance Use & Treatment (e.g., SUT-Intended status) who are freshmen; this will be taken concurrently with UNIV 1131. This course or SUT 3300 is required for admission to the BSSUT major.

SUT 1350. SPECIAL ISSUES IN SUBSTANCE USE TREATMENT. 3 Hours.

Relevant substance use treatment topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration.

SUT 2350. SPECIAL ISSUES IN SUBSTANCE USE TREATMENT. 3 Hours.

Relevant substance use treatment topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration.

SUT 3300. STUDENT SUCCESS & PROFESSIONALISM IN SUBSTANCE USE TREATMENT. 3 Hours.

Equips students with skills and resources to prepare for academic and professional success in a substance use treatment career. Empowers diverse students to identify their individual needs, reflect on opportunities for growth, determine what resources and self-care strategies are appropriate, recognize the faculty role in their development, and formulate a plan for an actively engaged and enriched experience from campus to career. Each class section has a Peer Academic Leader (PAL), who are students who have already taken the course and assist as a discussion leader for the class under the supervision of the instructor. This course is reserved exclusively for students planning to major with a Bachelor of Science in Substance Use & Treatment (e.g., SUT-Intended status) who have changed majors or have transferred from another institution; this fulfills the university requirement for UNIV 1131. This course or SUT 1231 is required for admission to the BSSUT major.

SUT 3315. INTRODUCTION TO SUBSTANCE USE DISORDERS. 3 Hours.

This is an entry-level course that provides foundation-level social work students with the fundamental concepts of Substance Use Disorders (SUD) and the addictive process. Students will examine the prevalence and characteristics of substance use disorders and the impact of such disorders on the individual, family, and the community. Theories of addiction and application of these theories will be examined. Students will develop conceptual knowledge and self-awareness concerning the etiology of addiction, assessment strategies, and wellness strategies for facilitating optimal development and preventing SUD. The course will cover the prevalence of SUD varies among ethnic and cultural groups, between men and women, across the life span, and through different socio-economic levels. This course is taught as SOCW 3315 and SUT 3315. Credit will be granted only once.

SUT 3318. SCREENING, ASSESSMENT, & ENGAGEMENT. 3 Hours.

Introduces screening and diagnostic instruments and techniques appropriate for determining whether a substance use disorder might exist. Explores the therapeutic alliance and practice engagement techniques taking into account intersections of race, gender, sexuality, age, educational level, and other aspects of identity. Students learn to assess suicide risk and a client's readiness for change. Students learn to diagnose substance use disorders and recognize intoxication, withdrawal, substance, and medication induced disorders. Offered as SUT 3318 and SOCW 3318. Credit will be granted only once. Prerequisite: Prerequisite OR Corequisite: SUT 3315 or SOCW 3315.

SUT 3319. TREATMENT PLANNING, COLLABORATION & REFERRAL. 3 Hours.

This course addresses the clinical application of the biopsychosocial assessment in the development of a treatment plan. Potential treatment issues will be identified and a client-specific problem list will be developed. Individualized treatment goals will be established in collaboration with diverse clients. Client objectives and clinical interventions will also be developed. This course explores dynamics of the therapeutic alliance, and clinician-client collaboration within the context of a strengths and empowerment-based perspective. The student will gain insight into and an appreciation of collaboration, consultation, and referral throughout the continuum of care. Offered as SUT 3319 and SOCW 3319. Credit will be granted only once. Prerequisite: SOCW 3318 or SUT 3318.

SUT 3321. SUBSTANCE USE TREATMENT. 3 Hours.

This course is the culmination of the fundamentals of substance use disorders, treatment planning, collaboration and referral, and substance use treatment. Students will learn and acquire the special skills necessary to assist individuals, families, and groups through the sequela of substance use and addiction. Focus on cognitive-behavioral therapy, motivational interviewing, 12-step programs, nutrition and exercise, meditation, and other alternative treatment options. Students will study treatment modalities that consider the social, cultural, and economic influences that shape the client's world view and substance use experience. Offered as SUT 3321 and SOCW 3321. Credit will be granted only once. Prerequisite: Prerequisite or corequisite: SUT 3319 or SOCW 3319.

SUT 4350. SPECIAL ISSUES IN SUBSTANCE USE TREATMENT. 3 Hours.

Relevant substance use treatment topics generated and explored in depth according to student and professional needs. The topic will be determined prior to registration.

Sustainability (SUST)

COURSES

SUST 5301. SUSTAINABILITY ISSUES SEMINAR I. 3 Hours.

A survey and analysis of current and historical sustainability efforts with an emphasis on the psychological and socio-economic dynamics of this cultural paradigm shift. The significance of organizational and societal direct cost issues will be emphasized.

SUST 5302. SUSTAINABILITY ISSUES SEMINAR II. 3 Hours.

Financing and valuation issues impacting sustainability.

SUST 5303. SUSTAINABILITY ISSUES SEMINAR III. 3 Hours.

Governmental and regulatory issues as they relate to sustainability.

SUST 5304. SUSTAINABILITY PROJECT STUDIO A. 3 Hours.

A studio based course focused on the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Program, Continental Automated Buildings Association (CABA), Energy Star, and Hi-Performance Building Systems.

SUST 5305. SUSTAINABILITY PROJECT STUDIO B. 3 Hours.

A studio based course focused on High Density Development.

SUST 5306. INDEPENDENT STUDIES IN SUSTAINABILITY. 3 Hours.

Extensive analysis of a sustainability topic.

SUST 5307. INTERNSHIP IN SUSTAINABILITY. 3 Hours.

Practical training in sustainability. Analysis of theory applied to real life situations.

SUST 5308. SELECTED TOPICS IN SUSTAINABILITY. 3 Hours.

In-depth study of selected topics in sustainability.

SUST 6301. PhD TEACHING COLLOQUIUM IN SUSTAINABILITY. 3 Hours.

Review of teaching methods for effective classroom instruction.

SUST 6302. PhD RESEARCH COLLOQUIUM IN SUSTAINABILITY. 3 Hours.

Review of the research process and contemporary developments in the methodology and design of empirical research in the major fields of study related to sustainability.

SUST 6303. PhD SERVICE-LEARNING COLLOQUIUM IN SUSTAINABILITY. 3 Hours.

Review of service-learning methods for achieving sustainability.

Theatre Arts (THEA)

COURSES

THEA 0181. THEATRE PRACTICUM. 1 Hour. (TCCN = DRAM 1120)

Open to all students interested in participating in dramatic productions on-stage, backstage, or front of house. Considers aspects of play production which may include scenery construction, publicity, costumes, and lighting. Practicum students participate in auditions and are assigned to production crews. May be repeated for credit. All Theatre Arts majors register for THEA 0181 each semester. Prerequisite: Permission of advisor.

THEA 1101. THEATRE ARTS SYMPOSIUM. 1 Hour.

An orientation to academic and professional theatre skills and resources. Prerequisite: Permission of advisor.

THEA 1140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1140 and THEA 1140; credit will be granted only in one department. Prerequisite: Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 1141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 1141 and THEA 1141; credit will be granted only in one department. Prerequisite: C or better in MUSI 1140 or THEA 1140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 1302. VOCAL FUNDAMENTALS. 3 Hours. (TCCN = DRAM 2336)

Introduction to the fundamentals of vocal production for the stage and oral communication skills in presentations, including interaction in the classroom setting to meet the needs of course work. Emphasis on relaxation, breathing techniques, the creation of vocal sound, the interconnection of voice and body, and the use of acceptable grammar and pronunciation in formal presentations. Prerequisite: Permission of advisor.

THEA 1303. FUNDAMENTALS OF PRESENTATION. 3 Hours.

The fundamentals of vocal performance as it relates to effective oral communication. Students develop ideas for the purpose of communication and learn effective techniques for clarity of expression, ideas, and message while considering the effect on an audience. Theatrical communication techniques are one of several skill sets taught. Oral, aural, written, and visual literacy are all explored, with intense focus on oral presentation. This course satisfies the University of Texas at Arlington core curriculum requirement in Communication.

THEA 1304. STAGECRAFT I. 3 Hours. (TCCN = DRAM 1330)

An introduction to all areas of theatre craft, technology, and production. The development and application of technical skills, production organization, and an orientation to production facilities, equipment, and materials. Prerequisite: Permission of Advisor.

THEA 1305. INTRODUCTION TO THEATRICAL DESIGN. 3 Hours.

Fundamentals of design elements, theory and practice as applied to costume, scenic, properties, lighting, and sound design. Prerequisite: Permission of advisor.

THEA 1307. ACTING I: BASIC TECHNIQUES. 3 Hours. (TCCN = DRAM 1351)

Study and exercise in fundamentals of the actor's craft utilizing the Stanislavsky Method. Emphasis on the development of basic acting techniques including: characterization, objectives, beats, action, and script analysis. Performance requirements include improvisation, monologues, and scene study. Attendance at productions outside of the classroom may be required. Prerequisite: Permission of advisor.

THEA 1315. THEATRICAL MAKEUP. 3 Hours.

Types, styles, and techniques of make-up application for stage, television, and film. May not be repeated for credit. Prerequisite: Permission of advisor.

THEA 1342. THEATRE AND FILM APPRECIATION. 3 Hours.

Develops awareness of and appreciation for dramatic art as reflected in theatre and film. Designed to increase the student's enjoyment and knowledge of drama and its historical, social and cultural contexts. Students may be required to attend plays. Theatre Arts BFA and BA majors and minors may not use this course in place of THEA 1343. This course satisfies the University of Texas at Arlington core curriculum requirement in Creative Arts.

THEA 1343. INTRODUCTION TO THEATRE. 3 Hours. (TCCN = DRAM 1310)

Acquaints the student with major phases of theatrical activity and production research. Considers the duties and contributions of director, actor, scene designer, costumer, and others involved in play production. Students may be required to attend and review productions. This course satisfies the University of Texas at Arlington core curriculum requirement in Creative Arts.

THEA 2140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2140 and THEA 2140; credit will be granted only in one department. Prerequisite: C or better in MUSI 1141 or THEA 1141. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 2141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 2141 and THEA 2141; credit will be granted only in one department. Prerequisite: C or better in MUSI 2140 or THEA 2140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 2306. COSTUME TECHNOLOGY. 3 Hours. (TCCN = DRAM 1342)

Introduction to the process and application of the fundamental skills of costuming and costume design preparation methods. Prerequisite: Permission of advisor.

THEA 2309. SCRIPT ANALYSIS. 3 Hours.

An investigation of dramatic structure from the points of view of the director, actor, and designer. Elements of dramatic theory are included. Prerequisite: Permission of advisor.

THEA 2337. IMPROVISATION. 3 Hours.

The study of modern improvisational skills and techniques for the performer, director, playwright, and instructor. Improvisation I focuses on short form improv, defined as unrelated games, scenes, and exercises that encourage spontaneity and group cohesion. Prerequisite: Permission of advisor.

THEA 2352. ACTING II: SCENE STUDY. 3 Hours. (TCCN = DRAM 1352)

Acting technique exercise to enhance and develop acting skills through scene study. Methods of characterization, research, and role preparation. Prerequisite: THEA 1307 and permission of advisor.

THEA 3140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3140 and THEA 3140; credit will be granted only in one department. Prerequisite: C or better in MUSI 2141 or THEA 2141. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 3141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 3141 and THEA 3141; credit will be granted only in one department. Prerequisite: C or better in MUSI 3140 or THEA 3140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 3300. DIRECTING I. 3 Hours.

The techniques of staging plays. Play interpretation, casting, rehearsal procedure, staging, and the role of the director in character analysis and creation. Prerequisite: THEA 1305, THEA 1307, THEA 1343, and THEA 2309 or permission of advisor.

THEA 3301. SCENE DESIGN I. 3 Hours.

History, theory, and basic concepts of design methods with application for stage, television, and film. Aesthetic skills of color, line, texture, and form, and the interactions of these elements. Mechanics and techniques of illustration and rendering of design ideas. Prerequisites: THEA 1304, THEA 1305, THEA 1343, THEA 3309, THEA 3318, and permission of advisor.

THEA 3302. FILM STUDIES. 3 Hours.

Principles of film study, including history, genre, aesthetics, theory, and criticism of U.S. and international films. Lecture and discussion, including the viewing of selected films.

THEA 3303. SOUND DESIGN. 3 Hours.

The study of the fundamentals of sound design as related to the theatrical production environment. The study of basic sound design tools and the practical application of these tools through project work. Prerequisites: THEA 1305, THEA 3316, or permission of advisor.

THEA 3304. STAGECRAFT II. 3 Hours.

An overview of and hands-on training in advanced production techniques, including metalworking and welding, theatrical rigging, automation principles, advanced wood joinery, and fabrication utilizing new materials, as well as an in-depth study of theatrical safety practices. Prerequisites: THEA 1304 or permission of advisor.

THEA 3305. LIGHTING DESIGN I. 3 Hours.

The study of basic design principles and techniques and their application in theatrical lighting design. The practical application of computer-aided design tools and the use of theatrical lighting equipment in realized design projects. Prerequisites: THEA 1305, THEA 3316, and THEA 3318 or permission of advisor.

THEA 3306. SCENE PAINTING FOR THE STAGE. 3 Hours.

Instructional and demonstrative approaches to scenic painting for the stage. Prerequisite: THEA 1304 or permission of advisor.

THEA 3307. COSTUME HISTORY. 3 Hours.

Historical styles and trends of fashion to the present as applied to stage, television, and film. Prerequisite: Permission of advisor.

THEA 3308. ACTING FOR THE CAMERA. 3 Hours.

An advanced acting course to acquire performance technique on camera. Credit will be granted only once. Prerequisite: THEA 1307, THEA 2352, or permission of instructor.

THEA 3310. CREATIVE DRAMA. 3 Hours.

The theory and practice of creative dramatics exercises and activities. The application of the artistic elements in creative drama and interdisciplinary applications of creative drama activities.

THEA 3311. DIALECTS IN PERFORMANCE. 3 Hours.

The study and application of selected dialects for performance. Prerequisite: Permission of advisor.

THEA 3312. THEATRE FOR YOUNG AUDIENCES. 3 Hours.

The theory and practice of creating and producing plays for young audiences. Students shall be required to act in selected works. Prerequisite: Permission of advisor.

THEA 3313. PERIOD STYLES. 3 Hours.

Survey of architectural elements, fashion, and decorations throughout history and their relationship to theatrical design. Provides a foundation in visual history and an historical framework in which to develop inspiration for visual ideas and needs for stage design.

THEA 3314. VOICE AND MOVEMENT. 3 Hours.

An intermediate course in vocal production and its integration with movement. Primarily focuses on articulation, breath support, and voice/movement interaction. Only Theatre Arts majors or minors may enroll. Prerequisite: Must be a Theatre Arts major or minor; permission of advisor.

THEA 3316. LIGHTING AND SOUND TECHNOLOGY. 3 Hours.

An introduction to the equipment, technologies, terminology, and careers in the theatrical areas of lighting and sound. Examines the theories and application of optical control and distribution, the physics of audio, distribution of acoustical energy, and lighting color theory. Prerequisite: Permission of advisor.

THEA 3317. SINGING FOR THE ACTOR I. 3 Hours.

An applied study of the vocal apparatus, vocal placement, the voice/body relationship, character, working with text, phrasing, and auditioning as they relate to singing in musical theatre for the Broadway or West End theatre. Emphasis is placed on integrating singing and acting skills. Same as offering MUSI 3317; may not be repeated and credit will only be granted in one department. Prerequisites: THEA 1307 or permission of advisor.

THEA 3318. DRAFTING FOR THE ARTS. 3 Hours.

The principles and application of computer-aided drafting techniques for the entertainment industry. Prerequisite: Permission of advisor.

THEA 3320. PLAYWRITING I. 3 Hours.

The art and craft of constructing a play. Students write playlets, scenes, and one-act plays for in-house performance and/or instructor evaluation.

THEA 3337. IMPROVISATION II: LONG FORM. 3 Hours.

Revisits concepts learned from Improvisation I and applies them to an advanced structure of interrelated scenes, monologues, and stories based on a theme or idea. The students will explore this long-form structure as it applies to playwrighting, acting, and directing.

THEA 3340. MOVEMENT PERFORMANCE I: FUNDAMENTALS. 3 Hours.

Development of movement techniques and movement performances. Freeing the body through exercises and experiences in relaxation, physical awareness, and movement through space. Focus on body awareness and the release of habitual patterns that restrict the body. Prerequisite: THEA 1307 and permission of advisor.

THEA 3342. COSPLAY COSTUME FABRICATION. 3 Hours.

Exploration and practice of theatrical construction and fabrication techniques used in the cosplay industry.

THEA 3343. MAKEUP FOR THE CAMERA. 3 Hours.

Exploration and practice of styles, techniques, and types of make-up and make-up application for film, photography and fashion.

THEA 3346. STAGE COMBAT. 3 Hours.

An introduction to stage combat. Students will safely explore the choreographed illusion of stage violence through the skills of unarmed and armed combat. Prerequisite: Permission of advisor.

THEA 3350. FABRIC MODIFICATION AND COSTUME CRAFTS. 3 Hours.

Exploration and practice of the process and application of techniques in fabric modification and costume crafts. Prerequisite: Permission of advisor.

THEA 3351. ROBOTS, DIGITAL HUMANITIES, AND THEATRE. 3 Hours.

Lecture and applied practices of the emerging emotional interaction between robots and humans utilizing theatrical methodologies. Course will emphasize human and robot interactions from interdisciplinary approaches including cultural, historical, sociological, health-care, disability studies, and performing arts frameworks.

THEA 3352. STAGE MANAGEMENT & THEATRE ADMINISTRATION. 3 Hours.

Managerial activities and responsibilities as applicable to community or professional theatre. Prerequisite: THEA 1343 or permission of advisor.

THEA 3355. UNIVERSAL DESIGN & ACCESSIBILITY IN THE PERFORMING ARTS. 3 Hours.

Explores the principles of Universal Design using the performing arts as a case study: creating environments, events, buildings, and products to accommodate the broadest spectrum of human ability, size, age, and other characteristics. Investigates how to put into practice the accessibility guidelines of the Americans with Disabilities Act of 1990. Performing is not required. Offered as THEA 3355 and DS 3355; credit will only be granted in one department.

THEA 3360. GENDER AND THE PERFORMING ARTS. 3 Hours.

Examines the role of gender in the performing arts, including theory and practice focused on gender. Additional topics may include female pioneers in the performing arts, the image of gender in different media, the way gender affects actors and artists, and the effect of cultural definitions of gender on audience reception. Offered as THEA 3360 and WOMS 3360. Credit will be granted only once.

THEA 3361. WOMEN IN THEATRE. 3 Hours.

Examines the history, theory, and practice of women in theatre. Pioneering female writers, directors, producers, actors, designers, and activists will be explored as will their influence upon drama in its historical, social, and cultural contexts. Students will also be introduced to theory that examines female characters in plays and their impact on the artist and audience. Offered as THEA 3361 and WOMS 3361. Credit will be granted only once.

THEA 3387. ART DIRECTION I. 3 Hours.

The history, theory, and basic concepts of art direction methods and basic construction techniques for television and film. Prerequisite: Permission of advisor.

THEA 4110. THEATRE PEDAGOGY FIELD-BASED EXPERIENCE. 1 Hour.

Supervised and directed professional practice in local schools. The student will be assigned to a public-school site for five hours per week. Weekly seminars are required. Field-based experience must be taken the semester immediately preceding student teaching residency. Prerequisite: Permission of advisor.

THEA 4140. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4140 and THEA 4140; credit will be granted only in one department. Prerequisite: C or better in MUSI 3141 or THEA 3141. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 4141. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 1 Hour.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music degree. Offered as MUSI 4141 and THEA 4141; credit will be granted only in one department. Prerequisite: C or better in MUSI 4140 or THEA 4140. Open to Musical Theatre majors only or by permission of the Department Chair.

THEA 4191. CONFERENCE COURSE. 1 Hour.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

THEA 4270. PRIVATE LESSONS IN VOICE-MUSICAL THEATRE. 2 Hours.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music Degree. Prerequisite: THEA 3141 and permission of Advisor.

THEA 4271. PRIVATE LESSONS IN VOICE - MUSICAL THEATRE. 2 Hours.

This sequence of courses is required of students who are pursuing the BFA in Musical Theatre. These courses may not be used as substitute voice lessons for those students pursuing a Bachelor of Music Degree. Prerequisite: C or better in THEA 4270 and permission of advisor.

THEA 4291. CONFERENCE COURSE. 2 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

THEA 4300. DIRECTING II. 3 Hours.

Continuation of THEA 3300. Students will direct scenes and/or one-act plays. Prerequisite: THEA 3300 and permission of advisor.

THEA 4301. ACTING III: ADVANCED ACTING ENSEMBLE. 3 Hours.

Students will perform solo and/or group performances devised from their own and/or other artists' research and development in a collaborative, ensemble environment. May not be repeated for credit. Prerequisite: THEA 1307, THEA 2352, THEA 3340, or permission of advisor.

THEA 4303. CLASSICAL THEATRE HISTORY. 3 Hours.

The development of world theatre from its beginnings through the Renaissance. Analysis of representative plays of each period with particular emphasis on drama in its historical context. History of acting, costuming, and directing. Prerequisite: THEA 1343 and permission of advisor.

THEA 4304. MODERN THEATRE HISTORY. 3 Hours.

The development of Western theatre from the Renaissance to the present. Analysis of representative plays from Europe, England, and America. Development of the modern stage, acting methods, and production techniques. Prerequisite: THEA 1343 and permission of advisor.

THEA 4305. SCENE DESIGN II. 3 Hours.

Continuation of THEA 3301. Distinctions among stage, television, and film design, interaction of one with another, advanced methods, and application of scene design concepts. Prerequisite: THEA 3301 and permission of advisor.

THEA 4306. LIGHTING DESIGN II. 3 Hours.

Specialized topics and advanced design technique and application principles. Participation on light crews in departmental productions required. Prerequisite: THEA 3305 and permission of advisor.

THEA 4310. MUSICAL THEATRE HISTORY. 3 Hours.

The history, development, and contemporary manifestations of the musical theatre art form in America and London's West End, and its relation to the continually changing social milieu. The course follows the development of musical theatre from its inception to the present.

THEA 4311. SHAKESPEARE AND VERSE IN PERFORMANCE. 3 Hours.

The study and performance of iambic pentameter and verse as found in Shakespearean and verse plays. Prerequisite: THEA 1303 and permission of instructor.

THEA 4314. ADVANCED PRODUCTION TECHNIQUES. 3 Hours.

An advanced examination of theatre craft, technology, and production. Prerequisite: THEA 3304.

THEA 4315. SPECIAL EFFECTS MAKEUP DESIGN. 3 Hours.

The examination of styles and techniques of specialty makeup applications for the stage and how these relate to television and film.

THEA 4317. SINGING FOR THE ACTOR II. 3 Hours.

The advanced study of musical theatre performance as it relates to the integration of acting, singing and dance skills into an effective performance.

The script, score, character, vocal demands, and movement requirements of both solo and ensemble works will be studied, and the works will be performed in a culminating, musical revue-styled performance. This course may be repeated once for credit. Prerequisite: THEA 1307 and THEA 3317, or permission of instructor.

THEA 4320. STAGE WELDING, RIGGING, AND FABRICATION. 3 Hours.

Styles and techniques of welding, rigging, and specialized materials fabrication for the stage and in video and film production. Prerequisite: THEA 1304 and permission of advisor.

THEA 4322. PLAYWRITING II. 3 Hours.

The art and craft of constructing a full-length, two-act play. Course content will include references to the work of major playwrights and playwriting theory. Students will receive course content through a combination of class lectures and one-on-one writing conferences with the instructor.

Prerequisites: THEA 3320 or permission of faculty.

THEA 4330. U.S. THEATRE HISTORY. 3 Hours.

The evolution of theatre in the United States from its beginning in colonial times to the present day. Representative plays from various periods are studied.

THEA 4333. MUSICAL THEATRE PORTFOLIO AND SHOWCASE. 3 Hours.

Advanced principles of character development for musical theatre are explored with emphasis on the development of a role through script, music, and character analysis. The semester is structured toward the development of an actor's final portfolio culminating in an audition context presentation or showcase. Prerequisite: THEA 2352, THEA 4317, DNCE 3335 and permission of instructor.

THEA 4340. MOVEMENT PERFORMANCE II: PHYSICAL THEATRE. 3 Hours.

The study and performance of physical theatre techniques. Prerequisites: THEA 3340 and permission of advisor.

THEA 4341. ACTING IV: PERFORMANCE, PORTFOLIO & SHOWCASE. 3 Hours.

The development and presentation of a professional audition with an additional emphasis on advanced character development, acting as a business, entrepreneurial opportunities, and the planning and research needed to establish an acting career in a city or region. (Formerly THEA 3341; may not be repeated for credit). Prerequisite: THEA 1303, THEA 1307, THEA 1343, THEA 2352, THEA 2309, and THEA 3340, or permission of advisor.

THEA 4343. COSTUME DESIGN. 3 Hours.

Theory and practice of costume design and application of those principles to theatrical production. Prerequisites: THEA 1343, THEA 1305, THEA 2309 or permission of instructor.

THEA 4344. PORTFOLIO AND RENDERING. 3 Hours.

The application of the principles of developing and disseminating professional materials in the 21st century, including résumés, business cards, digital portfolios, and web-based portfolios. Includes developing interview skills and practices, accounting for the independent contractor, job searching, and research into unions on the theatrical industry. The lab component focuses on rendering techniques, both traditional and digital. Prerequisite: Permission of advisor.

THEA 4345. SUMMER THEATRE ACTIVITIES. 3 Hours.

The study and application of specialized production and performance activities in a summer repertory theatre setting.

THEA 4346. THEATRICAL WEAPONRY. 3 Hours.

This course fosters a practical and theoretical understanding for the process of creating the illusion of safe and credible violence for the stage. Emphasis is placed on textual characterization and working with the weapons most frequently used in stage violence. Depending upon the semester, the student may be trained in broadsword, single rapier, rapier and dagger, small sword, or quarterstaff.

THEA 4355. STRATEGIES, ASSESSMENT, AND CHILD DEVELOPMENT IN THEATRE PEDAGOGY. 3 Hours.

Open to theatre majors only. Current trends in theatre education will be examined. Topics include effective differentiated instruction, classroom management, strategies for working with diverse learners, and examination of major learning theories and principles of cognitive, social, emotional, physical and aesthetic development. This course will also examine a variety of assessment techniques that are used in a theatre classroom. Assessment tools such as rubrics, rating scales, National Standards, TEKS, STAAR, and TExES will be examined and implemented into lesson planning. Prerequisite: For Theatre Arts majors only. Admission into the College of Education.

THEA 4387. ART DIRECTION II. 3 Hours.

An applied course in art direction methods, construction practices and techniques in video and film production. Prerequisite: Permission of faculty.

THEA 4391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of advisor.

THEA 4393. SPECIAL TOPICS. 3 Hours.

Special studies in drama and theatre. Topic varies from semester to semester. May be repeated as topic changes or until a maximum of six credit hours is attained. Prerequisite: Permission of advisor.

THEA 4394. HONORS THESIS/SENIOR PROJECT. 3 Hours.

Required of all students in the University Honors College. During the senior year, the student must complete a thesis or project of equivalent difficulty under the direction of a faculty member in the major department. Prerequisite: Permission of advisor.

THEA 4395. THEATRE INTERNSHIP LEVEL I. 3 Hours.

Individual research through working with a professional theatre or performing arts organization. Individual conference to be arranged. Graded on a pass/fail basis. Prerequisite: Theatre Arts major with permission of advisor and department chair.

THEA 4695. THEATRE INTERNSHIP LEVEL 2. 6 Hours.

Individual research through working with a professional theatre or performing arts organization. Individual conference between sponsor and departmental advisor required. Graded on a pass/fail basis. Prerequisite: Theatre Arts major with permission of advisor and department chair.

THEA 4995. THEATRE INTERNSHIP LEVEL 3. 9 Hours.

Individual research through working with a professional theatre or performing arts organization. Individual conference between sponsor and departmental advisor required. Graded on a pass/fail basis. Prerequisite: Theatre Arts major with permission of advisor and department chair.

THEA 5391. CONFERENCE COURSE. 3 Hours.

Topics assigned on an individual basis covering individual research or study in a designated area. May be repeated as the topic changes. Prerequisite: Permission of instructor.

THEA 5393. TOPICS IN THEATRE ARTS. 3 Hours.

Special topics in theatre; offered periodically with subject matter determined by instructor and student interest. Previous topics have included: Design Portfolio Workshop; Alternative Actor Training Workshop; Playwriting; Improvisation; and Styles in Acting. Prerequisite: Permission of advisor.

Urban Design (UDES)

COURSES

UDES 1301. INTRODUCTION TO PRINCIPLES OF SUSTAINABLE URBAN DESIGN. 3 Hours.

This course is an introduction to sustainable urban design and its principles through the lenses of the college's four disciplines: landscape architecture, architecture, planning and public affairs. How these disciplines interface with environmental, economic, socio-cultural and design sustainability is the focus of the course, culminating with an exploration of urban ecology.

UDES 2303. HISTORY OF URBAN DESIGN, FORM, AND INFRASTRUCTURE. 3 Hours.

This course examines the history of urban design, form and infrastructure in a variety of cities, providing students with an understanding of how decisions about design, form and infrastructure impact the lives of inhabitants. Prerequisite: C or better in UDES 2441. Restricted to Sustainable Urban Design-intended students.

UDES 2441. URBAN DIAGRAMMING AND COMMUNICATION I. 4 Hours.

This course establishes a framework for understanding how design is used to create sustainable urban communities. An interdisciplinary course, its focus is upon heightening student awareness of the built environment by investigative sketching and measuring, as well as by digital means. This process of documenting encompasses the human uses of objects and systems that comprise an urban community: buildings, public spaces, landscape, transportation systems, waterways, and other infrastructure. Issues of social and economic equity are introduced, as well as the roles that human interaction and participation play in successful design strategies. Prerequisite: Restricted to Sustainable Urban Design-intended students.

UDES 2442. URBAN DIAGRAMMING AND COMMUNICATION II. 4 Hours.

This course continues developing students' abilities to visually document urban environments in relation to urban ecologies, while beginning to investigate how designs are created to address the range of scales and ecological impact in a city, from the individual site to a neighborhood. This course focuses upon the impact of infrastructure upon a city's human and ecological systems, encompassing the plant and animal species that are part of urban environments. Prerequisite: C or better in UDES 2441. Restricted to Sustainable Urban Design-intended students.

UDES 3551. URBAN DESIGN STUDIO I: URBAN RESILIENCY. 5 Hours.

This studio focuses upon the planning and design for disaster recovery and the impact upon infrastructure caused by natural events such as earthquakes, flooding and tornadoes. The studio explores the latest and most reliable recovery strategies for rebuilding and repairing a city's human and ecological systems. Students document streets, waterways, transportation and landscape, examining issues of congestion, pollution, storm water management, and transportation access. Group design projects are based on both the scale of neighborhoods and regions. Prerequisite: C or better in UDES 2442. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 3552. URBAN DESIGN STUDIO II: MOBILITY. 5 Hours.

This studio examines the major shifts in the organization and spatial allocation of cities that are transforming urban mobility infrastructures, from light rail to pedestrian zones to cyclist lanes. The interface of transportation, public open spaces, buildings and landscape architecture is explored as well as issues of diversity, equity, and inclusion. A series of group design projects at the neighborhood scale continues the refinement of students' graphic and written skills. Prerequisite: C or better in UDES 1301, UDES 3551. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 4304. URBAN SUSTAINABILITY PROJECT CAPSTONE. 3 Hours.

In the Capstone Course, students will culminate their learning by completing a sustainability project at the Institute for Sustainability and Global Impact (ISGI) at UT Arlington under the supervision of the Chief Sustainability Officer. Student capstone projects will address pressing issues concerning sustainable urban communities. Students may collaborate and work on a project for an external organization, or work on sustainability programs and projects at UT Arlington. Potential capstone sites will range from local non-profits and government agencies to faculty research projects and private sector initiatives. The Capstone Course is a one-semester project. Prerequisite: C or better in UDES 3552. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 4551. URBAN DESIGN STUDIO III: CLIMATE CHANGE. 5 Hours.

This studio examines specific climate change issues as selected by the instructor. The studio is a recognition of an evolving set of data with shifting timelines and levels of impact for evaluating the ecological impact of climate change, upon the built environment. One of the areas of study will include sea-level rising and its global impact upon coastal cities. The students will engage in problem solving, using contemporary design and planning strategies on a regional scale. Prerequisite: C or better in UDES 3552. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

UDES 4552. URBAN DESIGN STUDIO IV: ADVANCED SUSTAINABLE URBAN DESIGN. 5 Hours.

This studio examines the roles that smart city technologies play in sustainable urban design. The group design projects in the Urban Resiliency and Urban Mobility studios are reassessed, and the course culminates with individual design projects based upon new locations. Prerequisite: C or better in UDES 4551. Restricted to Sustainable Urban Design majors. Students must have a minimum cumulative GPA of 2.8 and a minimum major course GPA of 2.8.

Women's Studies (WOMS)

COURSES

WOMS 2301. TOPICS IN WOMEN'S AND GENDER STUDIES. 3 Hours.

Special topics of interest in the disciplines of Women's and Gender Studies. May be repeated for credit when the topic changes.

WOMS 2307. WOMEN IN THE ANCIENT WORLD. 3 Hours.

Exploration of roles and images of women in ancient Greece and Rome, using a variety of primary (ancient) sources: literature, legal and medical texts, visual art, and inscriptions. Offered as CLAS 2307 and WOMS 2307. Credit will be granted only once.

WOMS 2310. INTRO TO WOMEN'S & GENDER STUDIES. 3 Hours.

Provides an introduction to Women's Studies and Gender Studies as fields that place women and gender at the center of inquiry. Examines topics such as work, family, reproduction, sexuality, politics, art, literature, and contemporary media. Explains the diversity of methods and theories employed in Women's and Gender Studies scholarship, emphasizing the intersection of gender, sexuality, race, ethnicity, and class. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture.

WOMS 2315. INTRODUCTION TO LGBTQ+ STUDIES. 3 Hours.

Provides an introduction to Gay and Lesbian Studies, including the study of transsexual, transgender, and queer identities. May address topics such as LGBTQ history; sexuality and civil rights; the representation of LGBTQ in art, literature, and popular culture; and/or feminist analysis of sex, gender, and sexuality. Explains the methods and theories employed in gay and lesbian studies, emphasizing the intersection of gender, sexuality, race, ethnicity, class, and ability/disability. Satisfies the University of Texas at Arlington core curriculum requirement in Language, Philosophy, and Culture. This course is offered as WOMS 2315 and DIVR 2315. Credit will be granted in only one department.

WOMS 2317. BASIC CONCEPTS IN HUMAN SEXUALITY. 3 Hours.

The physiological, psychological, and sociological aspects of human sexuality. Offered as BIOL 2317, HEED 2317, PSYC 2317, and WOMS 2317. Credit will be granted for one of these courses only. Students seeking certification in Health Education must enroll in HEED 2317. Students seeking credit toward their science requirement must enroll in BIOL 2317. May not be used for biology grade point calculation or biology credit toward a BS degree in biology, microbiology, medical technology, psychology, or sociology.

WOMS 3300. TOPICS IN WOMEN'S AND GENDER STUDIES. 3 Hours.

Special topics of interest in the disciplines of Women's and Gender Studies. May be repeated for credit when the topic changes. Offered as WOMS 3300 and AAST 3300; credit will be granted in only one department.

WOMS 3301. INTRODUCTION TO LATINA/HISPANIC FEMINISM. 3 Hours.

This interdisciplinary course explores Latina/Hispanic feminism through the intersection of race, class, gender, and sexuality. This course is organized around the following issues: colonization, immigration, globalization, sexism, health, and violence. Through an analysis of cultural production, politics, socio-economics, literary texts, and feminist methodology, the goal of this course is to develop a robust understanding of how Latina/Hispanic feminist methodologies can be used as tools for social change and social justice. Offered as WOMS 3301, MAS 3301, and DIVR 3301. Credit will only be granted in one department.

WOMS 3305. WOMEN'S HEALTH ISSUES. 3 Hours.

Will address specific issues of importance to women and their health, including growth and development, nutrition, reproductive health, pregnancy, chronic diseases, and relationship/family issues. Offered as DIVR 3305, HEED 3305 and WOMS 3305. Credit will be granted only once.

WOMS 3313. CULTURAL PSYCHOLOGY. 3 Hours.

Theory and research regarding psychological issues related to gender and cultural diversity. These issues will be approached from different perspectives within psychology, including clinical, developmental, social, health, and cognitive psychology. Prerequisite: PSYC 1315. Offered as PSYC 3313 and WOMS 3313; credit will be granted only once.

WOMS 3314. THE LATINA EXPERIENCE. 3 Hours.

A course on the social, cultural, and economic experiences of Latina and Latin American origin women in the United States. Offered as MAS 3314, SOCI 3314, SOCW 3314, WOMS 3314, and AAST 3321. Credit will be granted in only one department.

WOMS 3324. U.S. WOMEN'S HISTORY. 3 Hours.

An examination of women in US politics, work and society from the colonial era to the present. Offered as HIST 3324 and WOMS 3324; credit will be granted only once.

WOMS 3328. MARITAL AND SEXUAL LIFESTYLES. 3 Hours.

Contemporary American lifestyles selected from: singles, traditional marriage, homosexuals, single-parent families, open marriage, non-marital sexuality, cohabitation, dual-career marriage, childless couples, egalitarian marriage, families in later life. Offered as DIVR 3328, SOCI 3328 and WOMS 3328; credit will be granted only once.

WOMS 3331. SOCIOLOGY OF THE FAMILY. 3 Hours.

The family's role in American society and in other cultures past, present, and future. Family research methods, comparative family systems, child development/parenting, culture and personality, minority families, social class variation in families, work and family. Prerequisite: sophomore standing or permission of the instructor. Offered as SOCI 3331 and WOMS 3331; credit will be granted only once.

WOMS 3334. SOCIOLOGY OF GENDER. 3 Hours.

Examination of theoretical and empirical approaches to understanding the formation of gender. Assesses individual and structural dimensions of gender in various social institutions including work, education, and families. Offered as SOCI 3334 and WOMS 3334; credit will be granted only once.

WOMS 3338. COMPARATIVE KINSHIP AND FAMILY SYSTEMS. 3 Hours.

Variation in kinship and family systems from crosscultural and evolutionary perspectives. Structure, function, and dynamics of kinship and family systems as adaptations to diverse ecological, social, and historical circumstances. Implications of this approach for understanding kinship and family in American society also addressed. Formerly listed as ANTH 4338. Credit cannot be given for both ANTH 3338 and ANTH 4338. Also offered as WOMS 3338; credit will be granted only once. Offered as AAST 3332 and ANTH 3338; credit will be granted in only one department.

WOMS 3356. WOMEN, WORK AND SOCIAL CHANGE. 3 Hours.

Women's work experiences, how these experiences are changing, and relationship between paid employment and non-wage household labor. Paid and unpaid work experiences are empirically examined in terms of a variety of theoretical perspectives. Offered as DIVR 3356, SOCI 3356 and WOMS 3356; credit will be granted only once.

WOMS 3360. GENDER AND THE PERFORMING ARTS. 3 Hours.

Examines the role of gender in the performing arts, including theory and practice focused on gender. Additional topics may include female pioneers in the performing arts, the image of gender in different media, the way gender affects actors and artists, and the effect of cultural definitions of gender on audience reception. Offered as THEA 3360 and WOMS 3360. Credit will be granted only once.

WOMS 3361. WOMEN IN THEATRE. 3 Hours.

Examines the history, theory, and practice of women in theatre. Pioneering female writers, directors, producers, actors, designers, and activists will be explored as will their influence upon drama in its historical, social, and cultural contexts. Students will also be introduced to theory that examines female characters in plays and their impact on the artist and audience. Offered as THEA 3361 and WOMS 3361. Credit will be granted only once.

WOMS 3364. TOPICS IN LGBTQIA+ LITERATURE AND THEORY. 3 Hours.

Studies representations of the sexual and/or gender identities of LGBTQIA+ people and the intersectionality among them through a variety of texts. Specific topics may include the history of marginalized sexualities, crossdressing in literature, or transvestite saints; the texts may be philosophical, political, literary, and/or scientific. Offered as ENGL 3364 and WOMS 3364; credit will be granted in only one department. May be repeated for credit as course content changes. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 3366. SEX, GENDER, AND CULTURE. 3 Hours.

The ways gender and sexuality are culturally constructed. Readings include ethnographies, life histories, and fiction. Debates within anthropology and within specific cultures over maleness and femaleness. Offered as ANTH 3366 and WOMS 3366; credit will be granted only once.

WOMS 3368. TOPICS IN FEMINIST THEORY, GENDER, AND SEXUALITY. 3 Hours.

Examines issues of gender and sexuality through literary, theoretical, and philosophical texts that foreground questions feminist theory raises about desire, sexual identity, and gender asymmetry. Considers how gender and sexuality shape and are shaped by race, ethnicity, class, ability/disability, religion, and age. May be repeated for credit as course content changes. Offered as ENGL 3368 and WOMS 3368; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 3370. HISTORY OF WOMEN'S WRITING. 3 Hours.

Examines women's writing in English from the Medieval period to the present. Offered as ENGL 3370 and WOMS 3370; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 3385. WOMEN AND CRIME. 3 Hours.

This course examines criminology and criminal justice issues as they relate specifically to women. The three major areas of coverage include (1) women and girls as victims of crime, (2) women and girls as criminal offenders; and (3) women working in the criminal justice system. Offered as DIVR 3385, CRCJ 3385 and WOMS 3385; credit will be granted only once.

WOMS 4190. CONFERENCE COURSE. 1 Hour.

Independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for credit when the subject matter varies, but only with permission of director of Women's and Gender Studies Program.

WOMS 4290. CONFERENCE COURSE. 2 Hours.

Independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for credit when the subject matter varies, but only with permission of director of Women's and Gender Studies Program.

WOMS 4301. ART AND GENDER. 3 Hours.

Approaches to the interpretation of art from the stance of gender and feminism. Emphasis is placed on the work of significant female artists and on the gendered representations of art. Offered as ART 4301 and WOMS 4301; credit will be granted only once. Fulfills the Social/Cultural Studies requirement. Prerequisite: Any two of the three courses ART 1309, ART 1310, and ART 1317; or permission from the instructor.

WOMS 4302. WOMEN AND WORK IN TRANSATLANTIC PERSPECTIVE. 3 Hours.

Examines the history of women and work, both waged and nonwaged, in Europe and the Americas, including the United States. Highlights differences within women's work cultures as well as variation in women's employment opportunities and their efforts to achieve equality with men in the workplace, by ethnicity, region, and nation. Offered as HIST 4302 and WOMS 4302; credit will be granted only once.

WOMS 4303. WOMEN IN SOCIETY. 3 Hours.

Women's status in contemporary American society, including the family, workplace, and politics. Women's status will also be examined in historical and crosscultural perspectives. Offered as SOCI 4303 and WOMS 4303; credit will be granted only once.

WOMS 4305. TRANSNATIONAL FEMINISMS. 3 Hours.

Explores transnational feminist frameworks and the heterogeneous processes used in the cultural construction of gender in a global context. Centering non-Western perspectives, the class analyzes the intersectional inequalities experienced by women in different cultural contexts and explores the workings of power and gender that shape the lives of women around the world. Topics may include reproductive rights, poverty, education, and religious, economic, political, and legal mechanisms of women's subordination and inequality.

WOMS 4307. 'EVIL' WOMEN: WITCHES, HARLOTS & 'MADWOMEN'. 3 Hours.

Examines the definition of "evil" women as a mechanism for the control of women and the maintenance of patriarchal gender relations in Western societies. Will address the philosophical and religious ideologies that underpin manifestations of misogyny and the extreme, narrow boundaries Western societies historically used in defining female gender roles. Topics include witch hunts, policing of women's sexual behavior, and using labels of mental illness to punish women for social transgressions.

WOMS 4316. WOMEN IN THE POLITICAL PROCESS. 3 Hours.

This course introduces students to the unique experiences of women in the political process, the impact of these experiences on the political system, and theories of gender and politics. Offered as POLS 4316 and WOMS 4316; credit will be granted only once.

WOMS 4318. LANGUAGE AND GENDER. 3 Hours.

The role of language in the expression and creation of gender identities. Gender differences in language structure and use, women's and men's language in other cultures, the acquisition of gendered ways of speaking, and sexism in language. Offered as LING 4318 and WOMS 4318; formerly offered as LING 4392/WOMS 4392; credit will be granted only once. Prerequisite: LING 3311.

WOMS 4323. FEMINIST POLITICAL THOUGHT. 3 Hours.

Issues raised by the feminist critique of political theory; the exclusion of women from the political sphere until the 20th century; Marxist, liberal, and radical feminist political thought; alternative feminist conceptions of the political. Offered as POLS 4323 and WOMS 4323; credit will be granted only once.

WOMS 4325. WOMEN IN SCIENCE. 3 Hours.

Explores the role of women in science. Emphasis on gender and science, the history of women in science, gender equity in the classroom, strategies for the retention of women scientists, the current culture/climate for women in science, and contemporary women in science. Offered as EDUC 4325, SCIE 4325, and WOMS 4325. Credit will be granted only once.

WOMS 4326. DIVERSITY IN ORGANIZATIONS. 3 Hours.

This course examines the implications of employee diversity in organizations, an issue of increasing importance. It includes study of the changing demographics of workers, including multiple demographic groups and areas of difference important to organizational treatment and outcomes. This course examines research on treatment, access, and customer discrimination. Legislation related to diversity is also reviewed. This course also provides suggestions for individuals and organizations to increase opportunities and outcomes for workers of all backgrounds. Offered as MANA 4326, AAST 4326 and WOMS 4326; credit will be granted in only one department. Prerequisite: Junior standing.

WOMS 4327. WOMEN IN HISPANIC LITERATURE. 3 Hours.

Considers women as characters in and writers of Hispanic literature. Includes the analysis of themes, language, and how the writings of women often give voice to lesser known aspects of culture. Offered as SPAN 4327, MAS 4327, and WOMS 4327; credit will be granted only once. Prerequisite: SPAN 3315 with a grade of C or better.

WOMS 4340. TOPICS IN WOMEN'S WRITING. 3 Hours.

Focuses on women's writing in a particular genre or historical period or on a concept or issue of importance to women writers. May be repeated for credit as course content changes. Offered as ENGL 4340 and WOMS 4340; credit will be granted in only one department. Prerequisite: English majors must have earned a C or better in ENGL 3350 or must be concurrently enrolled in ENGL 3350. Non-majors must have earned a C or better in 6 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329) or an A in 3 hours of sophomore literature (ENGL 2303, ENGL 2309, ENGL 2319, ENGL 2329).

WOMS 4390. CONFERENCE COURSE. 3 Hours.

Independent study for the advanced undergraduate. A close examination of a chosen topic through research and/or reading; format designed by instructor and student. May be repeated for credit when the subject matter varies, but only with permission of director of Women's and Gender Studies Program.

WOMS 4392. SPECIAL TOPICS IN WOMEN'S STUDIES. 3 Hours.

Special topics related to women's and gender studies. May be repeated for credit when the topic changes, with permission of the director of the Women's and Gender Studies Program.

WOMS 4393. WOMEN'S STUDIES INTERNSHIP. 3 Hours.

Supervised internship through which students apply the academic skills they have acquired in Women's and Gender Studies courses by working in a related business or non-profit environment. Required coursework will be determined by instructor. Prerequisite: WOMS 2310 and permission of Director of Women's and Gender Studies.

WOMS 5301. TOPICS WOMEN'S & GENDER STUDIES. 3 Hours.

Special topics of interest in the discipline of Women's and Gender Studies. May be repeated for credit when the topic changes.

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